identified objectives for students in their state and created tests to measure whether students were meeting those objectives. This approach became national policy in 2002 when the No Child Left Behind (NCLB) legislation was signed into law.

Advocates argue that statewide standardized testing will have a number of positive effects. These include improved student performance; more time teaching the subjects that are tested; high expectations for all students; identification of poorly performing schools, teachers, and administrators; and improved confidence in schools as test scores rise.

Critics argue that the NCLB legislation is doing more harm than good (Sadker & Zittleman, 2012). One criticism stresses that using a single test as the sole indicator of students' progress and competence presents a very narrow view of students' skills (Lewis, 2007). This criticism is similar to the one leveled at IQ tests. To assess student progress and achievement, many psychologists and educators emphasize that a number of measures should be used, including tests, quizzes, projects, portfolios, classroom observations, and so on. Also, the tests used as part of NCLB don't measure creativity, motivation, persistence, flexible thinking, and social skills (Stiggins, 2008). Teachers may end up spending far too much class time "teaching to the test" by drilling students and having them memorize isolated facts rather than focusing on thinking skills needed for success in life (Brookhart & Nitko, 2015). Also, some individuals are concerned that gifted students are neglected as schools focus on raising the achievement level of students who are not doing well (Clark, 2008).

Each state is allowed to have different criteria for what constitutes passing or failing grades on tests designated for NCLB inclusion. An analysis of NCLB data indicated that almost every fourth-grade student in Mississippi knows how to read but only half of Massachusetts' students do (Birman & others, 2007). Clearly, Mississippi's standards for passing the reading test are far below those of Massachusetts. Many states have taken the safe route and kept the standard for passing low. Thus, while one of NCLB's goals was to raise standards for achievement in U.S. schools, apparently allowing states to set their own standards likely has lowered achievement standards.

In 2009, the Common Core State Standards Initiative was endorsed by the National Governors Association in an effort to implement more rigorous state guidelines for educating students. The Common Core Standards specify what students should know and the skills they should develop at each grade level in various content areas (Common Core State Standards Initiative, 2016). A large majority of states have agreed to implement the Standards but they have generated considerable controversy, with some critics arguing that they are simply a further effort by the federal government to control education and that they emphasize a "one-size-fits-all" approach that pays little attention to individual variations in students. Supporters say that the Standards provide much-needed detailed guidelines and important milestones for students to achieve.

Every Student Succeeds Act (ESSA)

The most recent accountability initiative is the *Every Student Succeeds Act (ESSA),* which was passed into law in December 2015 and will be fully implemented during the 2017–2018 school year (Rothman, 2016). The law replaced *No Child Left Behind,* in the process modifying but not completely eliminating standardized testing. ESSA retains annual testing for reading and writing in grades 3 to 8, then once more in high school. The new law also allows states to scale back the role that tests have in holding schools accountable for student achievement. And schools must use at least one nonacademic factor—such as student engagement—when tracking schools' success.

The new law continues to require states and districts to improve their lowest-performing schools and to increase their effectiveness in teaching historically underperforming students, such as English-language learners, ethnic minority students, and students with a disability. Also, states and districts are required to put in place challenging academic standards, although they can opt out of state standards involving Common Core.

Socioeconomic Status, Ethnicity, and Culture

Children from low-income, ethnic minority backgrounds have more difficulties in school than do their middle-socioeconomic-status, White counterparts. Why? Critics argue that schools have not done a good job of assisting low-income, ethnic minority students to overcome the barriers to their achievement (Crosnoe & Benner, 2015; Duncan, Magnuson, & Vtroba-Drzal, 2015). And recent comparisons of student achievement indicate that U.S. students have lower achievement in math and science than students in a number of other countries, especially those in eastern Asia (National Center for Education Statistics, 2009).

The Education of Students from Low-Income Backgrounds

Many children in poverty face problems that present barriers to their learning (Bradley, 2015; Leventhal, Dupere, & Shuey, 2015; Wadsworth & others, 2016). They might have parents who don't set high educational standards for them, who are incapable of reading to them, or who can't afford educational materials and experiences such as books and trips to zoos and museums. They might be malnourished or live in areas with more crime and violence. One study revealed that neighborhood disadvantage (involving such characteristics as low neighborhood income and high unemployment) was linked to less consistent, less stimulating, and more punitive parenting, and ultimately to negative child outcomes such as behavioral problems and low verbal ability (Kohen & others, 2008). Another study revealed that the longer children experienced poverty, the more detrimental the poverty was to their cognitive development (Najman & others, 2009).

How Would You...?

As a **health-care professional,** how would you advise school administrators about health and nutrition challenges faced by low-income students that may influence their performance on achievement tests?



In *The Shame of the Nation,* Jonathan Kozol (2005) criticized the inadequate quality and lack of resources in many U.S. schools, especially those in the poverty areas of inner cities that have high concentrations of ethnic minority children. Kozol praises teachers like Angela Lively (*above*), who keeps a box of shoes in her Indianapolis classroom for students in need.

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The schools that children from impoverished backgrounds attend often have fewer resources than schools in higher-income neighborhoods. Compared with schools in higher-income areas, schools in low-income areas are more likely to have more students with low achievement test scores, low graduation rates, and small percentages of students going to college; they are more likely to have young teachers with less experience; and they are more likely to encourage rote learning than to work with children to improve their thinking skills (Banks, 2015; Bennett, 2015). Many of the school buildings and classrooms are old and crumbling. These are the types of undesirable conditions Jonathan Kozol (2005) observed in many inner-city schools. In sum, far too many schools in low-income neighborhoods provide students with environments that are not conducive to effective learning (Bradley, 2015; Gardner, Brooks-Gunn, & Chase-Lansdale, 2016; Leventhal, Dupere, & Shuey, 2015).

Much of the focus on the lives of children living in poverty has emphasized improving their future prospects in educational and economic development. A recent analysis concluded that their social and emotional functioning has often been ignored and should be given more attention (Crosnoe & Leventhal, 2014). Further, efforts to intervene in the lives of children living in poverty need to jointly focus on schools and neighborhoods (Gershoff & Benner, 2014).

Ethnicity in Schools

More than one-third of African American and almost one-third of Latino students attend schools in the 47 largest city school districts, compared with only 5 percent of White and 22 percent of Asian American students. Many of these inner-city schools are still segregated, are grossly underfunded, and do not provide adequate opportunities for children to learn effectively. Thus, the effects of low socioeconomic status (SES) and of ethnicity are often intertwined (Banks, 2015).

The school experiences of students from different ethnic groups vary considerably (Bennett, 2015). African American and Latino students are much less likely than non-Latino White or Asian American students to be enrolled in college preparatory programs and more likely to be enrolled in remedial and special education programs. Asian American students are far more likely to take advanced math and science courses in high school. African American students are twice as likely as Latinos, Native Americans, or Whites to be suspended from school. However, diversity characterizes every ethnic group (Cushner, McClelland, & Safford, 2015). For example, the higher percentage of Asian American students in advanced classes mainly applies to students from Chinese, Taiwanese, Japanese, Korean, and East Indian cultural backgrounds; students with Hmong and Vietnamese cultural backgrounds have had less academic success. Following are some strategies for improving relationships among ethnically diverse students:

- *Turn the class into a jigsaw classroom.* When Eliot Aronson was a professor at the University of Texas at Austin, the school system contacted him for ideas on how to reduce the increasing racial tension in classrooms. Aronson (1986) developed the concept of a "jigsaw classroom" in which students from different cultural backgrounds are placed in a cooperative group in which they have to construct different parts of a project to reach a common goal. Aronson used the term *jigsaw* because he saw the technique as much like a group of students cooperating to put different pieces together to complete a jigsaw puzzle. How might this work? Team sports, drama productions, and music performances are examples of contexts in which students participate cooperatively to reach a common goal; however, the jigsaw technique also lends itself to group science projects, history reports, and other learning experiences involving a variety of subject matter.

How Would You...?

As an **educator,** how would you structure a lesson plan using the jigsaw strategy?



- *Encourage students to have positive personal contact with diverse other students.* Mere contact does not do the job of improving relationships with diverse others. For example, busing ethnic minority students to predominantly White schools, or vice versa, has not reduced prejudice or improved interethnic relations. What matters is what happens after children get to school. Especially beneficial in improving interethnic relations is sharing one's worries, successes, failures, coping strategies, interests, and other personal information with people of other ethnicities. When this happens, people tend to look at others as individuals rather than as members of a homogeneous group.
- *Reduce bias.* Teachers can reduce bias by displaying images of children from diverse ethnic and cultural groups, selecting play materials and classroom activities that encourage cultural understanding, helping students resist stereotyping, and working with parents to reduce children's exposure to bias and prejudice at home.
- *Be a competent cultural mediator.* Teachers can play a powerful role as cultural mediators by being sensitive to biased content in materials and classroom interactions, learning more about different ethnic groups, being sensitive to children's ethnic attitudes, viewing students of color positively, and thinking of positive ways to get parents of color more involved as partners with teachers in educating children.
- *View the school and community as a team.* James Comer (1988, 2004, 2006, 2010) advocates a community, team approach as the best way to educate children. Three important aspects of the Comer Project for Change are (1) a governance

and management team that develops a comprehensive school plan, assessment strategy, and staff development plan; (2) a mental health or school support team; and (3) a parents' program. Comer believes that the entire school community should have a cooperative rather than an adversarial attitude. The Comer program is currently operating in more than 600 schools in 26 states. Read further about James Comer's work in the *Careers in Life-Span Development* profile.

Careers in life-span development

James Comer, Child Psychiatrist

James Comer grew up in a low-income neighborhood in East Chicago, Indiana, and credits his parents with leaving no doubt about the importance of education. He obtained a B.A. degree from Indiana University. He went on to obtain a medical degree from Howard University College of Medicine, a Master of Public Health degree from the University of Michigan School of Public Health, and psychiatry training at the Yale University School of Medicine's Child Study Center. He currently is the Maurice Falk Professor of Child Psychiatry at the Yale University Child Study Center and an associate dean at the Yale University Medical School. During his years at Yale, Comer has concentrated his career on promoting a focus on child development as a way of improving schools. His efforts in support of healthy development of young people are known internationally.



James Comer is shown with some of the inner-city children who attend a school that became a better learning environment because of Comer's intervention.

© Chris Volpe

Comer is, perhaps, best known for founding the School Development Program in 1968, which promotes the collaboration of parents, educators, and community to improve social, emotional, and academic outcomes for children.

Cross-Cultural Comparisons

In the past three decades, the poor performance of American children in math and science has become well publicized (Educational Testing Service, 1992). In a large-scale comparison of math and science achievement in fourth-grade students in 2007, the average U.S. fourth-grade math score was higher than 23 of the 35 countries and lower than 8 countries (all in Asia and Europe) (National Center for Education Statistics, 2009). Fourth-graders from Hong Kong had the highest math score. The average U.S. fourth-grade math score did improve slightly (11 points) from the same assessment in 1995, but some Asian countries improved their scores considerably more—the Hong Kong score was 50 points higher and the Slovenia score 40 points higher in 2007 than in 1995, for example.

In 2007, the U.S. fourth-grade science score was higher than those in 25 countries and lower than those in 4 countries (all in Asia). However, the average U.S. fourth-grade science score decreased 3 points from 1995 to 2007 while the science scores for some countries increased dramatically—63 points in Singapore, 56 points in Latvia, and 55 points in Iran, for example.

Harold Stevenson's (1995, 2000; Stevenson, Hofer, & Randel, 1999; Stevenson & others, 1990) research explores reasons for the poor performance of U.S. students compared with students in selected Asian countries. Stevenson and his colleagues have completed five cross-cultural comparisons of students in the United States, China, Taiwan, and Japan. In these studies, Asian students consistently outperform American students. And the longer the students are in school, the wider the gap becomes between Asian and American students—the lowest difference is in the first grade, the highest in the eleventh grade (the highest grade studied). Stevenson and his colleagues spent thousands



How do U.S. students fare against Asian students in math and science achievement? What were some findings in Stevenson's research that might explain the results of those international comparisons?

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of hours observing in classrooms, as well as interviewing and surveying teachers, students, and parents. They found that the Asian teachers spent more of their time teaching math than did the U.S. teachers. More than one-fourth of total classroom time in the first grade was spent on math instruction in Japan, compared with only one-tenth of the time in the U.S. first-grade classrooms. Also, the Asian students were in school an average of 240 days a year, compared with 178 days in the United States.

Differences were also found between the Asian and American parents. The U.S. parents had much lower expectations for their children's education and achievement than did the Asian parents. Also, the U.S. parents were more likely to believe that their children's math achievement was due to innate ability; the Asian parents were more likely to say that their children's math achievement was the consequence of effort and training (see Figure 4). The Asian students were more likely to do math homework than were the U.S. students, and the Asian parents were far more likely to help their children with their math homework than were the U.S. parents (Chen & Stevenson, 1989). A recent study examined factors that might account for the superior academic performance of Asian American children (Hsin & Xie, 2014). In this study, the Asian American advantage was mainly due to children exerting greater academic effort and not to advantages in tested cognitive abilities or sociodemographic factors.

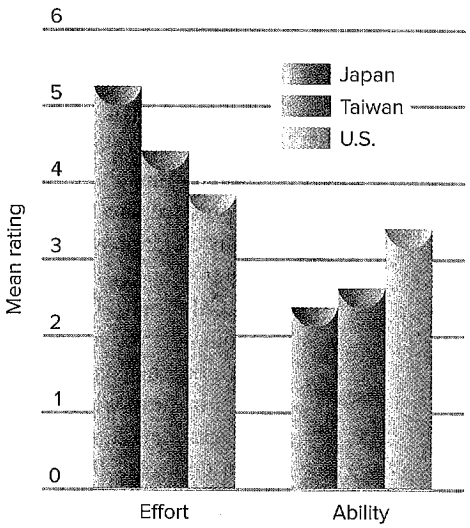


Figure 4 Mothers' Beliefs About the Factors Responsible for Children's Math Achievement in Three Countries

In one study, mothers in Japan and Taiwan were more likely to believe that their children's math achievement was due to effort rather than innate ability, while U.S. mothers were more likely to believe their children's math achievement was due to innate ability (Stevenson, Lee, & Stigler, 1986). If parents believe that their children's math achievement is due to innate ability and their children are not doing well in math, the implication is that they are less likely to think their children will benefit from putting forth more effort.

There is rising concern that U.S. children are not reaching their full potential, which ultimately will reduce the success of the United States to compete globally (Pomerantz, 2016). Interested in determining how parents can maximize their children's motivation and achievement in school while also maintaining positive emotional adjustment. To this end, Eva Pomerantz and her colleagues are conducting research with children and their parents in the United States and China, where children often attain higher levels of achievement than their U.S. counterparts (Pomerantz, Cheung, & Qin, 2012; Pomerantz & Kempner, 2013; Pomerantz, Kim, & Cheung, 2012; Qu & others, 2016).

East Asian parents spend considerably more time helping their children with homework than U.S. parents do (Chen & Stevenson, 1989). Pomerantz's research indicates that East Asian parental involvement in children's learning is present as early as the preschool years and continues during the elementary school years (Cheung & Pomerantz, 2012; Ng, Pomerantz, & Deng, 2014; Ng, Pomerantz, & Lam, 2013). In East Asia, children's learning is considered to be a far greater responsibility of parents than it is in the United States (Ng, Pomerantz, & Lam, 2013; Pomerantz, Kim, & Cheung, 2012). However, a recent study revealed that when U.S. parents are more involved in their children's learning, the children's achievement benefits (Cheung & Pomerantz, 2012). In this study, more than 800 U.S. and Chinese children (average age = 12.73 years) reported on their parents' involvement in their learning and their motivation in school every six months from the fall of seventh grade to the end of eighth grade. The researchers also collected data on children's self-regulated learning strategies and grades. Over time, the greater the extent to which parents were involved in their children's learning, the more strongly motivated children were to do well academically for

parent-oriented reasons, which improved children's self-regulated learning and grades. In a recent study, a decline in U.S. young adolescents' but not Chinese young adolescents' sense of responsibility to parents occurred (Qu & Pomerantz, 2015). The U.S. adolescents' decline in sense of responsibility to parents was linked to the lower value they placed on school and their lower engagement in school as they went from the beginning of the seventh to the end of the eighth grade (Qu & Pomerantz, 2015).

Pomerantz and her colleagues also are conducting research on the role of parental control in children's achievement. In a recent study in which the title of the resulting article included the phrase "My Child Is My Report Card," Chinese mothers exerted more control (especially psychological control) over their children than did U.S. mothers (Ng, Pomerantz, & Deng, 2014). Chinese mothers' self-worth was more contingent on their children's achievement than was the case for U.S. mothers. Pomerantz's research reflects a variation of authoritarian parenting in which the parenting strategy of many Asian parents is to train their children to achieve high levels of academic success. Amy Chua's 2011 book, *Battle Hymn of the Tiger Mom,* sparked considerable interest in the role of parenting in children's achievement. Chua uses the term "Tiger Mom" to mean a mother who engages in strict disciplinary practices. In another recent book, *Tiger Babies Strike Back*, Kim Wong Keltner (2013) argues that the Tiger Mom parenting style can be so demanding and confining that being an Asian American child is like being in an "emotional jail." She says that the Tiger Mom authoritarian style does provide some advantages for children, such as emphasizing the value of going for what you want and not taking no for an answer, but that too often the outcome is not worth the emotional costs that accompany it.

Recent research on Chinese-American immigrant families with first- and second-grade children has found that children with authoritarian (highly controlling) parents are more aggressive, are more depressed, have a higher anxiety level, and show poorer social skills than children whose parents engage in non-authoritarian styles (Zhou & others, 2013). Qing Zhou (2013), lead author on the study just described and the director of the University of California's Culture and Family Laboratory, is conducting workshops to teach Chinese mothers positive parenting strategies such as using listening skills, praising their children for good behavior, and spending more time with their children in fun activities.

In sum, while an authoritarian, psychologically controlling style of parenting may be associated with higher levels of achievement, especially in Asian children, there are concerns that an authoritarian, highly controlling style also may produce more emotional difficulties in children.

Related to the differences in the attitudes of Asian and U.S. parents involving explanations of effort and ability, Carol Dweck (2006, 2015, 2016) described the importance of children's **mindset,** which she defines as the cognitive view individuals develop for themselves. She concludes that individuals have one of two mindsets: (1) *fixed mindset,* in which they believe that their qualities are carved in stone and cannot change; or (2) *growth mindset,* in which they believe their qualities can change and improve through their effort. Dweck (2006, 2015, 2016) argued that individuals' mindsets influence whether they will be optimistic or pessimistic, what their goals will be and how hard they will strive to reach those goals, and their achievement. Dweck says that mindsets begin to be shaped in childhood as children interact with parents, teachers, and coaches, who themselves have either a fixed mindset or a growth mindset.

Dweck and her colleagues (Blackwell & Dweck, 2008; Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2015, 2016; Dweck & Master, 2009) have incorporated information about the brain's plasticity into their efforts to improve students' motivation to achieve and succeed. In one study, they assigned two groups of students to eight sessions of either (1) study skills instruction, or (2) study skills instruction plus information about the importance of developing a growth mindset (Blackwell, Trzesniewski, & Dweck, 2007). One of the exercises in the growth-mindset group, titled "You Can Grow Your Brain," emphasized that the brain is like a muscle that can get stronger as it is exercised and develops new connections. Students were informed that the more you challenge your brain to learn, the more your brain cells grow. Both groups had a pattern of declining math scores prior to the intervention. Following the intervention, scores for the group that received only the study skills

mindset The cognitive view that individuals develop for themselves.

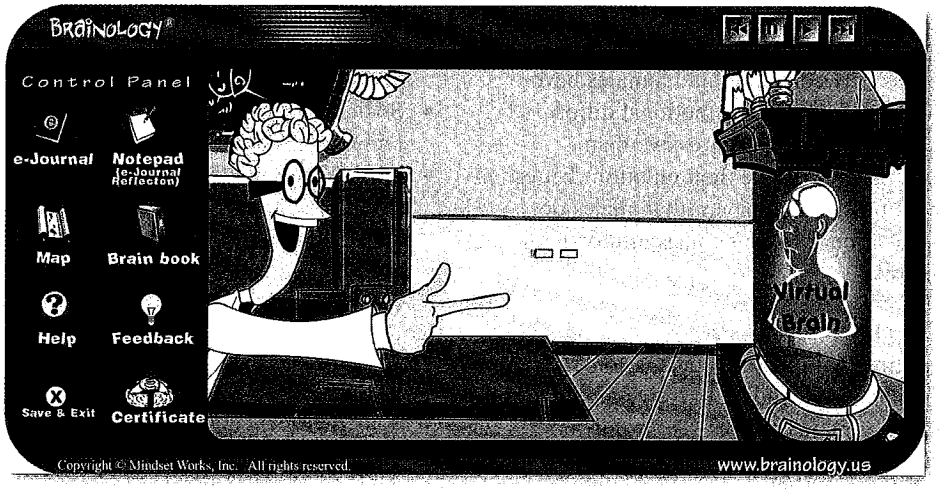


Figure 5 A Screen from Carol Dweck's Brainology Program, Which is Designed to Cultivate Children's Growth Mindset

© Dr. Carol S. Dweck

instruction continued to decline, but the group that received the combination of study skills instruction plus the growth-mindset emphasis improved their math achievement. In a recent study conducted by Dweck and her colleagues (Paunesku & others, 2015), underachieving high school students read online modules about how the brain changes when people learn and study hard. Following the online exposure about the brain and learning, the underachieving students improved their grade point averages.

Dweck has also created a computer-based workshop, "Brainology," to teach students that their intelligence can change (Blackwell & Dweck, 2008) (see Figure 5). The workshop includes six modules about how the brain works and discussion about how students can make their brain improve. After the workshop was tested in 20 New York City schools, students strongly endorsed the value of the computer-based brain modules. Said one student, "I will try harder because I know that the more you try, the more your brain knows" (Dweck & Master, 2009, p. 137).

Other research indicates that willpower is a virtually nonlimited mindset that predicts how long people will work and resist temptations during stressful circumstances (Dweck, 2012, 2015, 2016; Job, Dweck, & Walton, 2010; Job & others, 2015; Miller & others, 2012). In a longitudinal study of university students, a nonlimited theory of mind predicted better self-regulation (improvements in time management and less procrastination, unhealthy eating, and impulsive spending) (Job & others, 2015). Among students taking a heavy course load, those who had a nonlimited theory of mind got higher grades.

Summary

Emotional and Personality Development

- Self-descriptions increasingly involve psychological and social characteristics in middle and late childhood. Perspective taking increases in middle and late childhood. Self-concept refers to domain-specific evaluations of the self. Self-esteem refers to global evaluations of the self and is also referred to as self-worth or self-image. Self-efficacy and self-regulation are linked to children's competence and achievement. Erikson's fourth stage of development, industry versus inferiority, characterizes the middle and late childhood years.
- Emotional development occurs in middle and late childhood. As children get older, they use a greater variety of coping strategies and more cognitive strategies.
- Kohlberg argued that moral development consists of three levels—preconventional, conventional, and postconventional—and six stages (two at each level). Criticisms of Kohlberg's theory have been made, especially by Gilligan. The domain theory of moral development states that there are different domains of social knowledge and reasoning, including moral, social conventional, and personal. Prosocial behavior involves positive moral behaviors such as sharing.
- Gender stereotyping is present in children's lives, and research indicates it increases during middle and late

childhood. A number of physical differences exist between males and females. Some experts argue that cognitive differences between males and females have been exaggerated. In terms of socioemotional differences, males are more physically aggressive than females, whereas females regulate their emotions better and engage in more prosocial behavior than males do. Gender-role classification focuses on masculinity, femininity, and androgyny.

Families

- Parents spend less time with children during middle and late childhood than in early childhood. New parent-child issues emerge and discipline changes. Control is more coregulatory.
- Parents can play important roles as managers of children's opportunities.
- Secure attachment to parents is linked to lower levels of internalized symptoms, anxiety, and depression in children during middle and late childhood.
- Children living in stepparent families have more adjustment problems than their counterparts in never-divorced families.

Peers

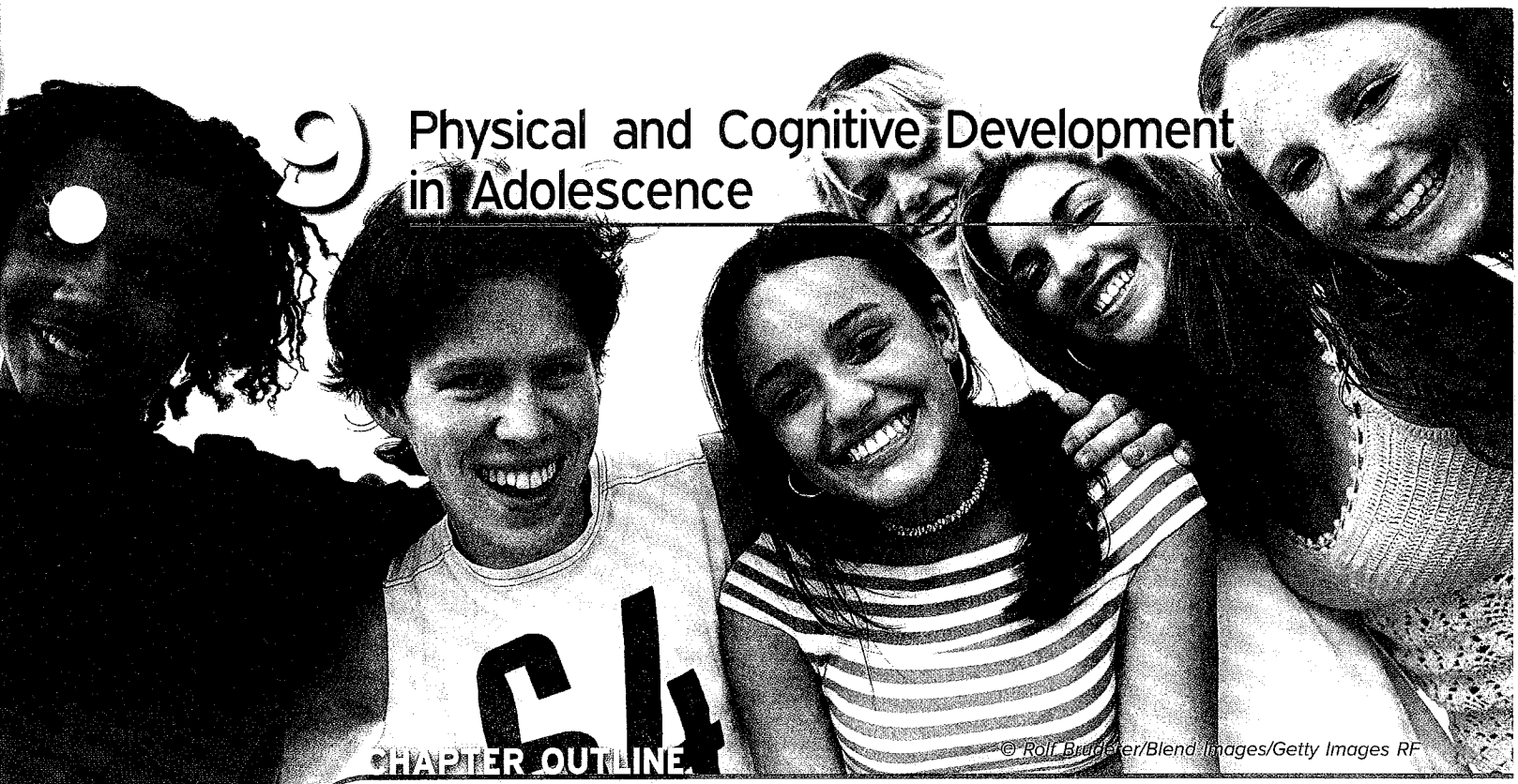
- A number of developmental changes in peer relations occur in middle and late childhood.
- Peer statuses—popular children, neglected children, rejected children, controversial children, and average children—are important in middle and late childhood.
- Social information processing and social knowledge are two important dimensions of social cognition.
- Significant numbers of children are bullied, and this can result in negative developmental outcomes for victims as well as bullies.
- Children who are friends tend to be similar to each other. Children's friendships serve a number of functions.

Schools

- Contemporary approaches to student learning include constructivism and direct instruction. In the United States, standardized testing of elementary school students has been mandated to improve accountability of schools.
- Children in poverty face many barriers to learning at school as well as at home. Low expectations for ethnic minority children represent one of the barriers to their learning.
- U.S. children are more achievement-oriented than children in many countries but perform more poorly in math and science than many children in Asian countries. Fixed or growth mindset is the cognitive view that individuals develop for themselves.

Key Terms

androgyny
average children
care perspective
constructivist approach
controversial children
conventional reasoning
direct instruction approach
domain theory of moral development
gender stereotypes
heteronomous morality
individualism, instrumental purpose, and exchange
justice perspective
mindset
mutual interpersonal expectations, relationships, and interpersonal conformity
neglected children
perspective taking
popular children
postconventional reasoning
preconventional reasoning
rejected children
self-concept
self-efficacy
self-esteem
social contract or utility and individual rights
social conventional reasoning
social systems morality
universal ethical principles



9 Physical and Cognitive Development in Adolescence

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CHAPTER OUTLINE

THE NATURE OF ADOLESCENCE

PHYSICAL CHANGES
- Puberty
- The Brain
- Adolescent Sexuality

ADOLESCENT HEALTH
- Nutrition and Exercise
- Sleep Patterns
- Leading Causes of Death in Adolescence
- Substance Use and Abuse
- Eating Disorders

ADOLESCENT COGNITION
- Piaget's Theory
- Adolescent Egocentrism
- Information Processing

SCHOOLS
- The Transition to Middle or Junior High School
- Effective Schools for Young Adolescents
- High School
- Service Learning

Stories of Life-Span Development: Annie, Arnie, and Katie

Fifteen-year-old Annie developed a drinking problem, and recently she was kicked off the cheerleading squad at her school for missing practice so often—but that didn't stop her drinking. She and her friends began skipping school regularly so they could drink.

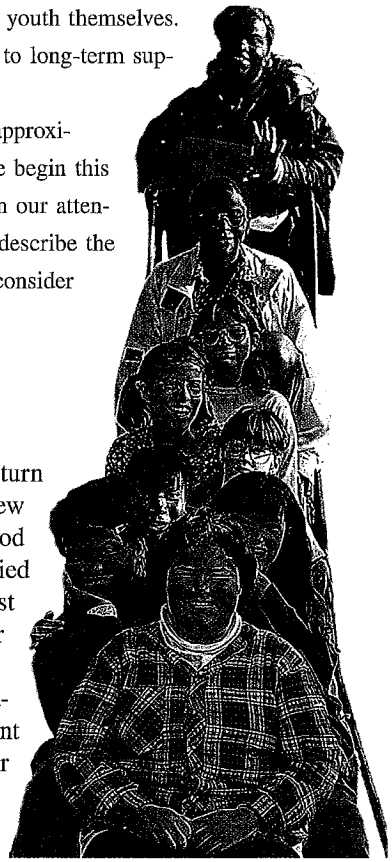
Fourteen-year-old Arnie is a juvenile delinquent. Last week he stole a TV set, struck his mother and bloodied her face, broke some streetlights in the neighborhood, and threatened a boy with a wrench and hammer.

Twelve-year-old Katie, more than just about anything else, wanted a playground in her town. She knew that other kids also wanted one, so she put together a group that generated funding ideas for the playground. They presented their ideas to the town council. Her group got more youth involved, and they raised money by selling candy and sandwiches door-to-door. The playground became a reality, a place where, as Katie says, "People can have picnics and make friends." Katie's advice: "You won't get anywhere if you don't try."

Adolescents like Annie and Arnie are the ones we hear about the most. But there are many adolescents like Katie who contribute in positive ways to their community, and competently make the transition through adolescence. Indeed, for most young people, adolescence is not a time of rebellion, crisis, pathology, and deviance. A far more accurate vision of adolescence is of a time of evaluation, of decision making, of commitment, of carving out a

place in the world. Most of the problems of today's youth are not with the youth themselves. What adolescents need is access to a range of legitimate opportunities and to long-term support from adults who care deeply about them (Spencer & Swanson, 2016).

Adolescence is a transitional period in the human life span, entered at approximately 10 to 12 years of age and exited at about 18 to 22 years of age. We begin this chapter by examining some general characteristics of adolescence, then turn our attention to major physical changes and health issues of adolescence. Next, we describe the significant cognitive changes that take place during adolescence. Last, we consider various aspects of schools for adolescents. ■



Katie (*front*) and some of her volunteers.
© Ronald Cortes

The Nature of Adolescence

There is a long history of worrying about how adolescents will "turn out." In 1904, G. Stanley Hall proposed the "storm-and-stress" view that adolescence is a turbulent time charged with conflict and mood swings. However, when Daniel Offer and his colleagues (1988) studied the self-images of adolescents in a number of countries, at least 73 percent of the adolescents displayed a healthy self-image rather than attitudes of storm-and-stress.

In matters of taste and manners, the young people of every generation have seemed unnervingly radical and different from adults—different in how they look, in how they behave, in the music they enjoy, in their hairstyles, and in the clothing they choose. It would be an enormous error, though, to confuse adolescents' enthusiasm for trying on new identities and enjoying moderate amounts of outrageous behavior with hostility toward parental and societal standards. Acting out and boundary testing are time-honored ways in which adolescents move toward accepting, rather than rejecting, parental values.

Most adolescents negotiate the lengthy path to adult maturity successfully, but too large a group does not. Ethnic, cultural, gender, socioeconomic, age, and lifestyle differences influence the actual life trajectory of each adolescent (Juster & others, 2016; Spencer & Swanson, 2016; Wadsworth & others, 2016). Different portrayals of adolescence emerge, depending on the particular group of adolescents being described. Today's adolescents are exposed to a complex menu of lifestyle options through the media, and many face the temptations of drug use and sexual activity at increasingly young ages. Too many adolescents are not provided with adequate opportunities and support to become competent adults (Crosnoe & Benner, 2015; Gonzales & others, 2016; Lerner & others, 2015; Masten & Cicchetti, 2016).



Growing up has never been easy. However, adolescence is not best viewed as a time of rebellion, crisis, pathology, and deviance. A far more accurate vision of adolescence describes it as a time of evaluation, decision making, commitment, and carving out a place in the world. Most of the problems of today's youth are not with the youth themselves. What adolescents need is access to a range of legitimate opportunities and long-term support from adults who care deeply about them. *What might be some examples of such support and caring?*
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Peter Benson and his colleagues (Benson, 2010; Benson, Roehlkepartain, & Scales, 2012; Benson & Scales, 2009, 2011) argue that the United States has a fragmented social policy for youth that too often has focused only on the negative developmental deficits of adolescents, especially health-compromising behaviors such as drug use and delinquency, and not enough on positive, strength-based approaches. According to Benson and his colleagues (2004, p. 783), a strength-based approach to social policy for youth

> adopts more of a wellness perspective, places particular emphasis on the existence of healthy conditions, and expands the concept of health to include the skills and competencies needed to succeed in employment, education, and life. It moves beyond the eradication of risk and deliberately argues for the promotion of well-being.

Physical Changes

One father remarked that the problem with his teenage son was not that he grew, but that he did not know when to stop growing. In addition to pubertal changes, other physical changes we will explore involve sexuality and the brain.

Puberty

Puberty is not the same as adolescence. For most of us, puberty ends long before adolescence does, although puberty is the most important marker of the beginning of adolescence.

Puberty is a brain-neuroendocrine process occurring primarily in early adolescence that provides stimulation for the rapid physical changes that take place during this period of development (Berenbaum, Beltz, & Corley, 2015; Susman & Dorn, 2013). Puberty is not a single, sudden event. We know whether a young boy or girl is going through puberty, but pinpointing puberty's beginning and end is difficult. Among the most noticeable changes are signs of sexual maturation and increases in height and weight.

Sexual Maturation, Height, and Weight

Think back to the onset of your puberty. Of the striking changes that were taking place in your body, what was the first to occur? Researchers have found that male pubertal characteristics typically develop in this order: increase in penis and testicle size, appearance of straight pubic hair, minor voice change, first ejaculation (which usually occurs through masturbation or a wet dream), appearance of kinky pubic hair, onset of maximum growth in height and weight, growth of hair in armpits, more detectable voice changes, and, finally, growth of facial hair.

What is the order of appearance of physical changes in females? First, either the breasts enlarge or pubic hair appears. Later, hair appears in the armpits. As these changes occur, the female grows in height and her hips become wider than her shoulders. **Menarche**—a girl's first menstruation—comes rather late in the pubertal cycle.

Marked weight gains coincide with the onset of puberty. During early adolescence, girls tend to outweigh boys, but by about age 14 boys begin to surpass girls. Similarly, at the beginning of the adolescent period, girls tend to be as tall as or taller than boys of their age, but by the end of the middle school years most boys have caught up, or, in many cases, surpassed girls in height.

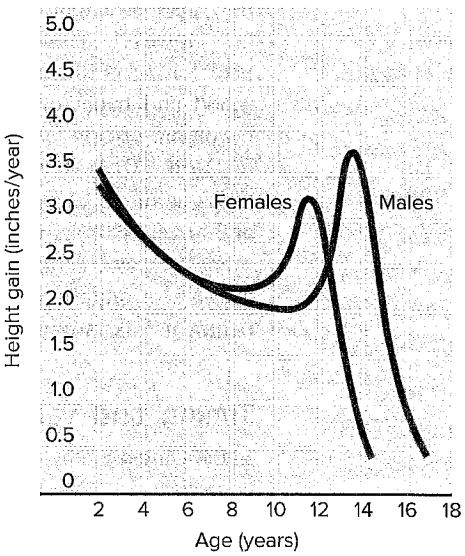


Figure 1 Pubertal Growth Spurt
On average, the peak of the growth spurt during puberty occurs two years earlier for girls (11½) than for boys (13½). *How are hormones related to the growth spurt and to the difference between the average height of adolescent boys and that of girls?*

As indicated in Figure 1, the growth spurt occurs approximately two years earlier for girls than for boys. The mean age at the beginning of the growth spurt in girls is 9; for boys, it is 11. The peak rate of pubertal change occurs at 11½ years for girls and 13½ years for boys. During their growth spurt, girls increase in height about 3½ inches per year, boys about 4 inches. Boys and girls who are shorter or taller than their peers before adolescence are likely to remain so during adolescence.

puberty A brain-neuroendocrine process occurring primarily in early adolescence that provides stimulation for the rapid physical changes that occur in this period of development.

menarche A girl's first menstruation.

hormones Powerful chemical substances secreted by the endocrine glands and carried through the body by the bloodstream.

hypothalamus A structure in the higher portion of the brain that monitors eating and sex.

pituitary gland An important endocrine gland that controls growth and regulates other glands, including the gonads.

Hormonal Changes

Behind the first whisker in boys and the widening of hips in girls is a flood of **hormones,** powerful chemical substances secreted by the endocrine glands and carried through the body by the bloodstream. The endocrine system's role in puberty involves the interaction of the hypothalamus, the pituitary gland, and the gonads. The **hypothalamus** is a structure in the brain that monitors eating and sex. The **pituitary gland** is an

gonads The sex glands—the testes in males and the ovaries in females.

important endocrine gland that controls growth and regulates other glands; among these, the **gonads**—the testes in males, the ovaries in females—are particularly important in giving rise to pubertal changes in the body.



What are some of the differences in the ways girls and boys experience pubertal growth?
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The concentrations of certain hormones increase dramatically during adolescence (Berenbaum, Beltz, & Corley, 2015; Koolschijn, Peper, & Crone, 2014). *Testosterone* is a hormone associated in boys with the development of genitals, an increase in height, and a change in voice. *Estradiol* is a type of estrogen; in girls it is associated with breast, uterine, and skeletal development. In one study, testosterone levels increased eighteenfold in boys but only twofold in girls during puberty; estradiol increased eightfold in girls but only twofold in boys (Nottelmann & others, 1987). Thus, both testosterone and estradiol are present in the hormonal makeup of both boys and girls, but testosterone dominates in male pubertal development, estradiol in female pubertal development. The same influx of hormones that grows hair on a male's chest and increases the fatty tissue in a female's breasts may also contribute to psychological development in adolescence.

However, a recent research review concluded that there is insufficient quality research to confirm that changing testosterone levels during puberty are linked to mood and behavior in adolescent males (Duke, Balzer, & Steinbeck, 2014). Thus, hormonal effects by themselves do not account for adolescent development (Susman & Dorn, 2013). For example, in one study, social factors accounted for two to four times as much variance as did hormonal factors in young adolescent girls' depression and anger (Brooks-Gunn & Warren, 1989). Behavior and moods also can affect hormones. Stress, eating patterns, exercise, sexual activity, tension, and depression can activate or suppress various aspects of the hormonal system. In sum, the hormone-behavior link is complex (Susman & Dorn, 2013).

Timing and Variations in Puberty

In the United States—where children mature up to a year earlier than children in European countries—the average age of menarche has declined significantly since the mid-nineteenth century. Fortunately, however, we are unlikely to see pubescent toddlers, since what has happened in the past century is likely the result of improved nutrition and health (Herman-Giddens, 2007).

Why do the changes of puberty occur when they do, and how can variations in their timing be explained? The basic genetic program for puberty is wired into the species (Dvornyk & Waqar-ul-Haq, 2012), but nutrition, health, family stress, and other environmental factors also affect puberty's timing and makeup (James & others, 2012; Villamor & Jansen, 2016). A recent cross-cultural study in 29 countries found that childhood obesity was linked to early puberty in girls (Currie & others, 2012). Also, a recent study of Chinese girls confirmed that childhood obesity contributed to an earlier onset of puberty (Zhai & others, 2015). Another study of more than 15,000 girls in China revealed that girls living in an urban environment started puberty earlier than their counterparts who lived in a rural environment (Sun & others, 2012). For most boys, the pubertal sequence may begin as early as age 10 or as late as 13½ and may end as early as age 13 or as late as 17. Thus, the normal range is wide enough that, given two boys of the same chronological age, one might complete the pubertal sequence before the other one has begun it. For girls, menarche is considered within the normal range if it appears between the ages of 9 and 15.



How Would You...?

As a **psychologist,** how would you explain the link between biological/physical changes and adolescent mood swings?



How Would You...?

As a **human development and family studies professional,** how would you counsel parents about communicating with their adolescent daughter regarding changes in her behavior that likely reflect a downward turn in her body image?

Body Image

One psychological aspect of physical change in puberty is certain: Adolescents are preoccupied with their bodies and develop images of what their bodies are like (Leone & others, 2014; Voelker, Reel, & Greenleaf, 2015). One study revealed that adolescents with the most positive body images engaged in health-enhancing behaviors, especially regular exercise (Frisen & Holmqvist, 2010).

Gender differences characterize adolescents' perceptions of their bodies. In general, girls are less happy with their bodies and have more negative body images than boys throughout puberty (Bearman & others, 2006). Girls' more negative body images may be due to media portrayals of the attractiveness of being thin and the increase in body fat in girls during puberty (Benowitz-Fredericks & others, 2012). A recent study found that both boys' and girls' body images became more positive as they moved from the beginning to the end of adolescence (Holsen, Carlson Jones, & Skogbrott Birkeland, 2012). Also, a recent study found that in the early high school years, late-maturing boys had a more negative body image than early-maturing boys did (de Guzman & Nishina, 2014).

Early and Late Maturation

You may have entered puberty earlier or later than average, or perhaps you were right on time. Adolescents who mature earlier or later than their peers perceive themselves differently (Susman & Dorn, 2013). In the Berkeley Longitudinal Study some years ago, early-maturing boys perceived themselves more positively and had more successful peer relations than did their late-maturing counterparts (Jones, 1965). When the late-maturing boys were in their thirties, however, they had developed a stronger sense of identity than the early-maturing boys had (Peskin, 1967). This may have occurred because the late-maturing boys had more time to explore life's options, or because the early-maturing boys continued to focus on their advantageous physical status instead of on career development and achievement. More recent research confirms, though, that at least during adolescence it is advantageous to be an early-maturing rather than a late-maturing boy (Graber, Brooks-Gunn, & Warren, 2006).

An increasing number of researchers have found that early maturation increases girls' vulnerability to a number of problems (Cheong & others, 2015; Graber, 2013; Hamilton & others, 2014). Early-maturing girls are more likely to smoke, drink, be depressed, have an eating disorder, struggle for earlier independence from their parents, and have older friends; and their bodies are likely to elicit responses from males that lead to earlier dating and earlier sexual experiences (Baker & others, 2012; Negriff, Susman, & Trickett, 2011; Rudolph & others, 2014; Wang & others, 2016). For example, in a recent Korean study, early menarche was associated with risky sexual behavior in females (Cheong & others, 2015). Researchers also have found that early-maturing girls tend to engage in sexual intercourse earlier and have more unstable sexual relationships (Moore, Harden, & Mendle, 2014). Further, a recent study revealed that early-maturing Chinese girls and boys engaged in delinquency more than their on-time or late-maturing counterparts (Chen & others, 2015). A recent study found that early maturation predicted a stable higher level of depression for adolescent girls (Rudolph & others, 2014). Also, early-maturing girls are less likely to graduate from high school, and they tend to cohabit and marry earlier (Cavanagh, 2009).

The Brain

Along with the rest of the body, the brain is changing during adolescence, but the study of adolescent brain development is in its infancy. As advances in technology take place, significant strides will also likely be made in charting developmental changes in the adolescent brain

How Would You...?

As a **health-care professional,** how would you use your knowledge of puberty to reassure adolescents who are concerned that they are maturing slower than their friends?



(Casey, 2015; Galvan & Tottenham, 2016; Monahan & others, 2016; Steinberg, 2015a, b). What do we know now?

The dogma of the unchanging brain has been discarded and researchers are mainly focused on context-induced plasticity of the brain over time (Zelazo, 2013). The development of the brain mainly changes in a bottom-up, top-down sequence, with sensory, appetitive (eating, drinking), sexual, sensation-seeking, and risk-taking brain linkages maturing first and higher-level brain linkages such as self-control, planning, and reasoning maturing later (Zelazo, 2013).

corpus callosum The location where nerve fibers connect the brain's left and right hemispheres.

limbic system A lower, subcortical system in the brain that is the seat of emotions and experience of rewards.

amygdala The region of the brain that is the seat of emotions.

Recall that researchers have discovered that nearly twice as many synaptic connections are made as we will ever use (Huttenlocher & Dabholkar, 1997). The connections that we do use are strengthened and survive, while the unused ones are replaced by other pathways or disappear. That is, in the language of neuroscience, these connections will be "pruned." As a result of this pruning, by the end of adolescence individuals have "fewer, more selective, more effective neuronal connections than they did as children" (Kuhn, 2009, p. 153). And this pruning indicates that the activities adolescents choose to engage in and not to engage in influence which neural connections will be strengthened and which will disappear.

Using fMRI brain scans, scientists have discovered that adolescents' brains undergo significant structural changes (Casey, 2015; Casey, Galvan, & Somerville, 2016; Cohen & others, 2016; de Haan & Johnson, 2016; Galvan & Tottenham, 2016; Monahan & others, 2016). The **corpus callosum,** where nerve fibers connect the brain's left and right hemispheres, thickens in adolescence, and this improves adolescents' ability to process information (Chavarria & others, 2014). Earlier we described advances in the development of the prefrontal cortex—the highest level of the frontal lobes involved in reasoning, decision making, and self-control. However, the prefrontal cortex doesn't finish maturing until the emerging adult years—approximately 18 to 25 years of age—or later (Shulman & others, 2016; Steinberg, 2015a, b).

At a lower, subcortical level, the **limbic system**, which is the seat of emotions and where rewards are experienced, matures much earlier than the prefrontal cortex and is almost completely developed by early adolescence (Casey, Galvan, & Somerville, 2016; Monahan & others, 2016; Shulman & others, 2016; Somerville, 2016; Steinberg, 2015a, b). The limbic system structure that is especially involved in emotion is the **amygdala.** Figure 2 shows the locations of the corpus callosum, prefrontal cortex, and the limbic system.

With the onset of puberty, the levels of neurotransmitters change (Monahan & others, 2016). For example, an increase in the neurotransmitter dopamine occurs in both the prefrontal cortex and the limbic system during adolescence (Casey, 2015). Increases in dopamine have been linked to increased risk taking and the use of addictive drugs (Steinberg, 2015a, b). Researchers have found that dopamine plays an important role in reward seeking during adolescence (Leyton & Vezina, 2014).

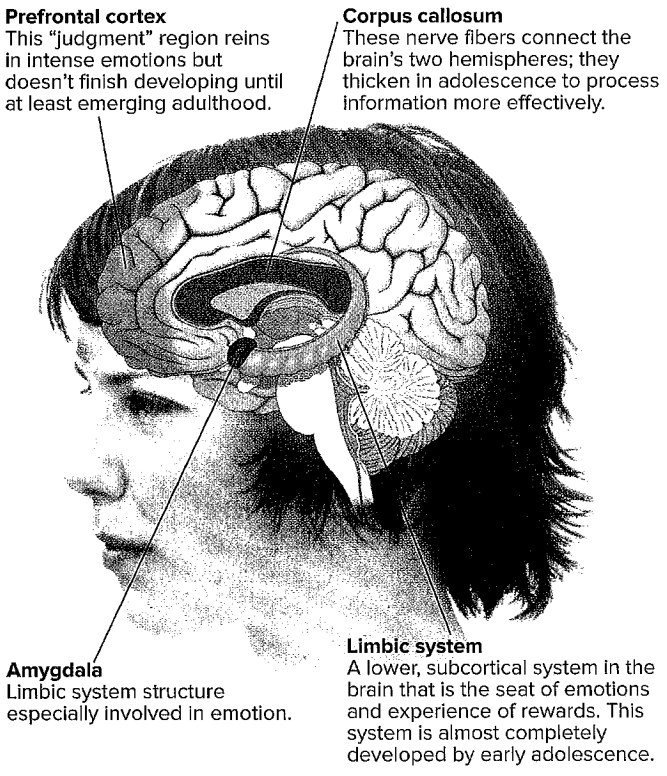


Figure 2 The Changing Adolescent Brain: Prefrontal Cortex, Limbic System, and Corpus Callosum

Earlier we described the increased focal activation that is linked to synaptic pruning in a specific region, such as the prefrontal cortex. In middle and late childhood, while there is increased focal activation within a specific brain

region, such as the prefrontal cortex, there also are only limited connections across distant brain regions. By the time individuals reach emerging adulthood, there is an increase in connections across brain areas (Casey, Galvan, & Somerville, 2016; Galvan & Tottenham, 2016). The increased connectedness (referred to as brain networks) is especially prevalent across more distant brain regions. Thus, as children and adolescents develop, greater efficiency and focal activation occurs in local areas of the brain, and simultaneously there is an increase in brain networks across different brain regions (de Haan & Johnson, 2016).

Many of the changes in the adolescent brain that have been described involve the rapidly emerging field of *developmental social neuroscience,* which involves connections between development, the brain, and socioemotional processes (Decety & Cowell, 2016; Johnson, 2015; Monahan & others, 2016). For example, consider leading researcher Charles Nelson's (2003) view that, although adolescents are capable of very strong emotions, their prefrontal cortex hasn't adequately developed to the point at which they can control these passions. It is as if their brain doesn't have the brakes to slow down their emotions. Or consider this interpretation of the development of emotion and cognition in adolescents: "early activation of strong 'turbo-charged' feelings with a relatively un-skilled set of 'driving skills' or cognitive abilities to modulate strong emotions and motivations" (Dahl, 2004, p. 18).

Of course, a major issue is which comes first, biological changes in the brain or experiences that stimulate these changes (Lerner, Boyd, & Du, 2008)? Consider a study in which the prefrontal cortex thickened and more brain connections formed when adolescents resisted peer pressure (Paus & others, 2007). Scientists have yet to determine whether the brain changes come first or whether the brain changes are the result of experiences with peers, parents, and others (Monahan & others, 2016). Once again, we encounter the nature/nurture issue that is so prominent in an examination of development through the life span.

In closing this section on the development of the brain in adolescence, a further caution is in order. Much of the research on neuroscience and the development of the brain in adolescence is correlational in nature, and thus causal statements need to be scrutinized (de Haan, 2015). This caution, of course, applies to any period in the human life span.

Adolescent Sexuality

Not only are adolescents characterized by substantial changes in physical growth and the development of the brain, but adolescence also is a bridge between the asexual child and the sexual adult. Adolescence is a time of sexual exploration and experimentation, of sexual fantasies and realities, of incorporating sexuality into one's identity.

Developing a Sexual Identity

Mastering emerging sexual feelings and forming a sense of sexual identity is a multifaceted and lengthy process (Diamond & Savin-Williams, 2015). It involves learning to manage sexual feelings (such as sexual arousal and attraction), developing new forms of intimacy, and learning the skills to regulate sexual behavior to avoid undesirable consequences.

An adolescent's sexual identity involves activities, interests, styles of behavior, and an indication of sexual orientation (whether an individual has same-sex or other-sex attractions) (Buzwell & Rosenthal, 1996). For example, some adolescents have a high anxiety level about sex, others a low level. Some adolescents are strongly aroused sexually, others less so. Some adolescents are very active sexually, others not at all (Haydon & others, 2012). Some adolescents are sexually inactive in response to their strong religious upbringing; others go to church regularly, yet their religious training does not inhibit their sexual activity (Thornton & Camburn, 1989).

It is commonly believed that most gay and lesbian individuals quietly struggle with same-sex attractions in childhood, do not engage in heterosexual dating, and gradually recognize that they are gay or lesbian in middle to late adolescence. Many youth do follow this developmental pathway, but others do not (Savin-Williams & Cohen, 2015). For example, many youth have no recollection of early same-sex attractions and experience a more abrupt sense of their same-sex attraction in late

adolescence. Researchers also have found that the majority of adolescents with same-sex attractions also experience some degree of other-sex attractions. Even though some adolescents who are attracted to individuals of their own sex fall in love with these individuals, others claim that their same-sex attractions are purely physical (Diamond & Savin-Williams, 2015; Savin-Williams, 2015).

In sum, gay and lesbian youth have diverse patterns of initial attraction, often have bisexual attractions, and may have physical or emotional attraction to same-sex individuals but do not always fall in love with them (Diamond & Savin-Williams, 2015). (Later we will further explore same-sex and heterosexual attraction.)

The Timing of Adolescent Sexual Behaviors

What is the current profile of sexual activity of adolescents? In a U.S. national survey conducted in 2013, 64 percent of twelfth-graders reported having experienced sexual intercourse, compared with 30 percent of ninth-graders (Kann & others, 2014). By age 20, 77 percent of U.S. youth report having engaged in sexual intercourse (Dworkin & Santelli, 2007). Nationally, in 2013, 49 percent of twelfth-graders, 40 percent of eleventh-graders, 29 percent of tenth-graders, and 20 percent of ninth-graders reported that they were currently sexually active (Kann & others, 2014).

What trends in adolescent sexual activity have occurred in recent decades? From 1991 to 2013, fewer adolescents reported any of the following: ever having had sexual intercourse, currently being sexually active, having had sexual intercourse before the age of 13, and having had sexual intercourse with four or more persons during their lifetime (Kann & others, 2014).

Sexual initiation varies by ethnic group in the United States (Kann & others, 2014). African Americans are likely to engage in sexual behaviors earlier than other ethnic groups, whereas Asian Americans are likely to engage in them later (Feldman, Turner, & Araujo, 1999). In a more recent national U.S. survey (2014) of ninth- to twelfth-graders, 61 percent of African Americans, 49 percent of Latinos, and 44 percent of non-Latino Whites said they had experienced sexual intercourse (Kann & others, 2014). In this study, 14 percent of African Americans (compared with 6 percent of Latinos and 3 percent of non-Latino Whites) said they had their first sexual experience before 13 years of age.

Recent research indicates that oral sex is now a common occurrence among U.S. adolescents (Fava & Bay-Cheng, 2012; Holway, 2015). In a national survey, 55 percent of U.S. 15- to 19-year-old boys and 54 percent of girls said they had engaged in oral sex (National Center for Health Statistics, 2002). A recent study also found that among female adolescents who reported having vaginal sex first, 31 percent reported having a teen pregnancy, whereas among those who initiated oral-genital sex first, only 8 percent reported having a teen pregnancy (Reese & others, 2013). Thus, how adolescents initiate their sex lives may have positive or negative consequences for their sexual health.

Many adolescents are not emotionally prepared to handle sexual experiences, especially in early adolescence (Chan & others, 2015; Skinner & others, 2015). A recent study of more than 3,000 Swedish adolescents revealed that sexual intercourse before age 14 was linked to risky behaviors such as an increased number of sexual partners, experience of oral and anal sex, negative health behaviors (smoking, drug and alcohol use), and antisocial behavior (being violent, stealing, running away from home) at 18 years of age (Kastbom & others, 2015).



What are some risk factors for adolescent sexual problems?
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A number of family factors are associated with sexual risk taking (de Looze & others, 2015; Simons & others, 2016). For example, a recent study found that difficulties and disagreements between Latino adolescents and their parents were linked to the adolescents' early sex initiation (Cordova & others, 2014). And a recent study revealed that of a number of parenting practices, the factor that best predicted a lower level of risky sexual behavior by adolescents was supportive parenting (Simons & others, 2016).

Socioeconomic, peer, school, and sport contexts provide further information about sexual risk taking in adolescents (Choukas-Bradley & Prinstein, 2016; Widman & others, 2016). The percentage of sexually active young adolescents is higher in low-income areas of inner cities (Morrison-Beedy & others, 2013). Also, one study found that adolescents who associated with more deviant peers in early adolescence were likely to have more sexual partners at age 16 (Lansford & others, 2010). And a recent research review found that school connectedness was linked to positive sexuality outcomes (Markham & others, 2010). Also, a study of middle school students revealed that better academic achievement was a protective factor in keeping boys and girls from engaging in early initiation of sexual intercourse (Laflin, Wang, & Barry, 2008). And a recent study found that adolescent males who play sports engage in a higher level of sexual risk taking, while adolescent females who play sports engage in a lower level of sexual risk taking (Lipowski & others, 2016).

Contraceptive Use

Sexual activity brings considerable risks if appropriate safeguards are not taken (Liddon & others, 2016). Youth encounter two kinds of risks: unintended, unwanted pregnancy and sexually transmitted infections. Both of these risks can be reduced significantly if condoms are used.

Many sexually active adolescents still do not use contraceptives, or they use them inconsistently (Amialchuk & Gerhardinger, 2015). In 2013, 34 percent of sexually active adolescents had not used a condom the last time they had sexual intercourse (Kann & others, 2014). In the recent national U.S. survey (2014), among sexually active adolescents, ninth-graders (63 percent), tenth-graders (62 percent), and eleventh-graders (62 percent) reported that they had used a condom during their last sexual intercourse more often than did twelfth-graders (53 percent) (Kann & others, 2014). Researchers have found that U.S. adolescents are less likely to use condoms than their European counterparts (Jorgensen & others, 2015).

Sexually Transmitted Infections

Some forms of contraception, such as birth control pills or implants, do not protect against sexually transmitted infections, or STIs. **Sexually transmitted infections (STIs)** are contracted primarily through sexual contact, including oral-genital and anal-genital contact. Every year more than 3 million American adolescents (about one-fourth of those who are sexually experienced) acquire an STI (Centers for Disease Control and Prevention, 2016). In a single act of unprotected sex with an infected partner, a teenage girl has a 1 percent risk of getting HIV, a 30 percent risk of acquiring genital herpes, and a 50 percent chance of contracting gonorrhea (Glei, 1999). Other very widespread STIs are chlamydia and human papillomavirus (HPV). Later we will consider these and other sexually transmitted infections.

Adolescent Pregnancy

In cross-cultural comparisons, the United States continues to have some of the highest rates of adolescent pregnancy and childbearing in the industrialized world, despite a considerable decline in the 1990s. The U.S. adolescent pregnancy rate is eight times as high as that in the Netherlands. Although U.S. adolescents are no more sexually active than their counterparts in the Netherlands, their adolescent pregnancy rate is dramatically higher. In the United States, 82 percent of pregnancies to mothers 15 to 19 years of age are unintended (Koh, 2014). A recent cross-cultural comparison found that among 21 countries, the United States had the highest adolescent pregnancy rate among 15- to 19-year-olds and Switzerland the lowest (Sedgh & others, 2015).

sexually transmitted infections (STIs) Infections contracted primarily through sexual contact, including oral-genital and anal-genital contact.

Despite the negative comparisons of the United States with many other developed countries, there have been some encouraging trends in U.S. adolescent pregnancy rates. In 2013, the U.S. birth rate for 15- to 19-year-olds was 26.5 births per 1,000 females, the lowest rate ever recorded, which represents a dramatic decrease from the 61.8 births for the same age range

in 1991 (Martin & others, 2015) (see Figure 3). There also has been a substantial decrease in adolescent pregnancies across ethnic groups in recent years. Reasons for the decline include school/community health classes, increased contraceptive use, and fear of sexually transmitted infections such as AIDS.

Ethnic variations characterize birth rates for U.S. adolescents. Latina adolescents are more likely than African American and non-Latina White adolescents to have a child (Martin & others, 2015). Latina and African American adolescent girls who have a child are also more likely to have a second child than are non-Latina White adolescent girls (Rosengard, 2009). And daughters of teenage mothers are at increased risk for teenage childbearing, thus perpetuating an intergenerational cycle (Meade, Kershaw, & Ickovics, 2008).

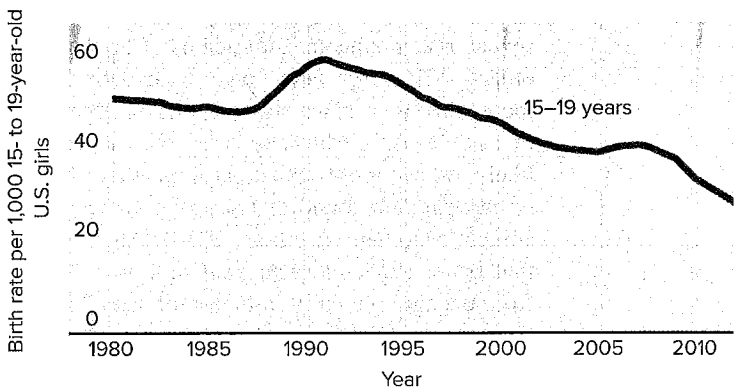


Figure 3 Birth Rates for U.S. 15- to 19-Year-Old Girls from 1980 to 2013

Source: Martin, J.A. & others, 2015.

Outcomes Adolescent pregnancy creates health risks for both the baby and the mother (Lau, Lin, & Flores, 2015). Infants born to adolescent mothers are more likely to have low birth weights—a prominent factor in infant mortality—as well as neurological problems and childhood illness (Khashan, Baker, & Kenny, 2010). Adolescent mothers are more likely to be depressed and to drop out of school than their peers (Siegel & Brandon, 2014). Although many adolescent mothers resume their education later in life, they generally never catch up economically with women who postpone childbearing until their twenties. Also, a recent study of African American urban youth found that at 32 years of age, women who had been teenage mothers were more likely to be unemployed, live in poverty, depend on welfare, and not have completed college than were women who had not been teenage mothers (Assini-Meytin & Green, 2015). In this study, at 32 years of age, men who had been teenage fathers were more likely to not have a job than were men who had not been teenage fathers.



What are some consequences of adolescent pregnancy?

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Though the consequences of America's high adolescent pregnancy rate are cause for great concern, it often is not pregnancy alone that leads to negative consequences for an adolescent mother and her offspring. Adolescent mothers are more likely to come from low-SES backgrounds (Molina & others, 2010). Many adolescent mothers also were not good students before they became pregnant (Malamitsi-Puchner & Boutsikou, 2006). However, not every adolescent female who bears a child lives a life of poverty and low achievement. Thus, although adolescent pregnancy is a high-risk circumstance and adolescents who do not become pregnant generally fare better than those who do, some adolescent mothers do well in school and have positive outcomes (Schaffer & others, 2012).

Serious, extensive efforts are needed to help pregnant adolescents and young mothers enhance their educational and occupational opportunities (Asheer & others, 2014; Tang & others, 2016). Adolescent mothers also need help in obtaining competent child care and in planning for the future.

Adolescents can benefit from age-appropriate family life education. Family and consumer science educators teach life skills, such as effective decision making, to adolescents. *Careers in Life-Span Development* describes the work of one family and consumer science educator.

Careers in life-span development

Lynn Blankinship, Family and Consumer Science Educator

Lynn Blankinship is a family and consumer science educator. She has an undergraduate degree in this area from the University of Arizona and has taught for more than 20 years, the last 14 at Tucson High Magnet School.

Lynn received the Tucson Federation of Teachers Educator of the Year Award for 1999–2000 and was honored as the Arizona Teacher of the Year in 1999.

Lynn especially enjoys teaching life skills to adolescents. One of her favorite activities is having students care for an automated baby that imitates the needs of real babies. She says that this program has a profound impact on students because the baby must be cared for around the clock for the duration of the assignment. Lynn also coordinates real-world work experiences and training for students in several child-care facilities in the Tucson area.

Family and consumer science educators like Lynn Blankinship may specialize in early childhood education or instruct middle and high school students about such matters as nutrition, interpersonal relationships, human sexuality, parenting, and human development.



Lynn Blankinship (*center*) teaching life skills to students.
© Lynn Blankinship

Hundreds of colleges and universities throughout the United States offer two- and four-year degree programs in family and consumer science. These programs usually require an internship. Additional education courses may be needed to obtain a teaching certificate. Some family and consumer science educators go on to graduate school for further training, which provides a background for possible jobs in college teaching or research.

Reducing Adolescent Pregnancy Girls Inc. offers four programs that are intended to increase adolescent girls' motivation to avoid pregnancy until they are mature enough to make responsible decisions about motherhood (Roth & others, 1998). Growing Together, a series of five two-hour workshops for adolescent girls and their mothers, and Will Power/Won't Power, a series of six two-hour sessions that focus on assertiveness training, are designed for 12- to 14-year-old girls. For older adolescent girls, Taking Care of Business provides nine sessions that emphasize career planning and provide information about sexuality, reproduction, and contraception. The program Health Bridge coordinates health and educational services—girls can participate in this program as one of their Girls Inc. club activities. Girls who participated in these programs were less likely to get pregnant than girls who did not participate (Girls Inc., 1991).

Currently, a major controversy in sex education is whether schools should have an abstinence-only program or a program that emphasizes contraceptive knowledge (Erkut & others, 2013; Manlove, Fish, & Moore, 2015). A number of leading experts on adolescent sexuality now conclude that sex education programs that emphasize contraceptive knowledge do not increase the incidence of sexual intercourse and are more likely to reduce the risk of adolescent pregnancy and sexually transmitted infections than abstinence-only programs (Crooks & Baur, 2016; Hyde & DeLamater, 2014; Yarber, Sayad, & Strong, 2016).

How Would You...?

As an **educator,** how would you incorporate sex education throughout the curriculum to encourage adolescents' healthy, responsible sexual development?

Some sex-education programs are starting to include abstinence-plus sexuality by promoting abstinence as well as providing instructions for contraceptive use (Barr & others, 2014; Nixon & others, 2011). Also, in 2010, the U.S. government launched the Teen Pregnancy Prevention (TPP) Program under the direction of the newly created Office of Adolescent Health (Koh, 2014). Currently, a number of studies are being funded by the program in an effort to find ways to reduce the rate of adolescent pregnancy.

Adolescent Health

Adolescence is a critical juncture in the adoption of behaviors that are relevant to health (Griesler, Hu, & Kandel, 2016; Latt & others, 2015). Many of the behaviors that are linked to poor health habits and early death in adults begin during adolescence (Blackstone & Herrmann, 2016). Conversely, the early formation of healthy behavior patterns, such as regular exercise and a preference for foods low in fat and cholesterol, not only has immediate health benefits but helps in adulthood to delay or prevent disability and mortality from heart disease, stroke, diabetes, and cancer (Blake, 2017; Donatelle, 2017; Schiff, 2015).

Nutrition and Exercise

Concerns are growing about adolescents' nutrition and exercise habits (Donatelle, 2016; Finistrella & others, 2015; Powers & Dodd, 2017; Stephenson & Schiff, 2016). National data indicate that the percentage of overweight U.S. 12- to 19-year-olds increased from 11 percent in the early 1990s to nearly 21 percent in 2011–2012 (Ogden & others, 2014). In another recent study, 12.4 percent of U.S. kindergarten children were obese and by 14 years of age, 20.8 percent were obese (Cunningham, Kramer, & Narayan, 2014).

Being obese in adolescence predicts obesity in emerging adulthood. For example, a longitudinal study of more than 8,000 adolescents found that obese adolescents were more likely to develop severe obesity in emerging adulthood than were overweight or normal-weight adolescents (The & others, 2010). In another longitudinal study, the percentage of overweight individuals increased from 20 percent at 14 years of age to 33 percent at 24 years of age (Patton & others, 2011).

Researchers have found that individuals become less active as they reach and progress through adolescence (Alberga & others, 2012). A national study revealed that only 48.7 percent of U.S. adolescents met the federal government's exercise recommendations (a minimum of 60 minutes of moderate to vigorous exercise per day) (Kann & others, 2014). This national study also found that adolescent boys were much more likely to engage in 60 minutes or more of vigorous exercise per day than were girls (57.3 percent versus 37.3 percent) (Kann & others, 2014). Ethnic differences in exercise participation rates of U.S. adolescents also occur, and these rates vary by gender. In the national study just mentioned, non-Latino White boys exercised the most, African American and Latino girls the least (Kann & others, 2014).



What are some characteristics of adolescents' exercise patterns?
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Exercise is linked to a number of positive physical outcomes in adolescence (Ten Hoor & others, 2016; Todd & others, 2015). Regular exercise has a positive effect on adolescents' weight status. Other positive outcomes of exercise in adolescence are reduced triglyceride levels, lower blood pressure, and a lower incidence of type II diabetes (Anyaegbu & Dharnidharka, 2014). Also, a recent study found that highly fit adolescents had better connectivity between brain regions than did adolescents with low physical fitness (Herting & others, 2014). And in a recent study, an exercise program of 180 minutes per week improved the sleep patterns of obese adolescents (Mendelson & others, 2016). In further research, a high-intensity exercise program reduced depressive symptoms and improved the moods of depressed adolescents (Carter & others, 2016).

Adolescents' exercise levels are increasingly being found to be associated with parenting, peer relationships, and screen-based activity. A recent study revealed that



How Would You...?

As a **health-care professional,** how would you explain the benefits of physical fitness in adolescence to adolescents, parents, and teachers?

family meals during adolescence protected against the development of being overweight or obese in adulthood (Berge & others, 2015). Also, a recent study revealed that female adolescents' physical activity was linked to their male and female friends' physical activity, while male adolescents' physical activity was associated with their female friends' physical activity (Sirard & others, 2013). A recent research review concluded that screen-based activity is linked to a number of adolescent health problems (Costigan & others, 2013). In this review, a higher level of screen-based sedentary behavior was associated with being overweight, having sleep problems, being depressed, and having lower levels of physical activity/fitness and psychological well-being (higher stress levels, for example).

Sleep Patterns

Like nutrition and exercise, sleep is an important influence on well-being. Might changing sleep patterns in adolescence contribute to adolescents' health-compromising behaviors? Recently there has been a surge of interest in adolescent sleep patterns (Doane & Thurston, 2014; Fuligni & others, 2015; Hysing & others, 2015, 2016). A longitudinal study in which adolescents completed daily diaries every 14 days in ninth, tenth, and twelfth grades found that regardless of how much students studied each day, when the students sacrificed sleep time to study more than usual, they had difficulty understanding what was taught in class and were more likely to struggle with class assignments the next day (Gillen-O'Neel, Huynh, & Fuligni, 2013). Further, a recent study found that adolescents who got less than 7.7 hours of sleep per night on average had more emotional and peer-related problems, higher anxiety, and a higher level of suicidal ideation (Sarchiapone & others, 2014).

In a national survey of youth, only 32 percent of U.S. adolescents got eight or more hours of sleep on an average school night (Kann & others, 2014). In this study, the percentage of adolescents getting this much sleep on an average school night decreased as they got older. Also, another study of more than 270,000 U.S. adolescents from 1991–2012 found that they have gotten decreasing amounts of sleep in recent years (Keyes & others, 2015).

The National Sleep Foundation (2006) conducted a U.S. survey of 1,602 caregivers and their 11- to 17-year-olds. Forty-five percent of the adolescents got inadequate sleep on school nights (less than eight hours). Older adolescents (ninth- to twelfth-graders) got markedly less sleep on school nights than younger adolescents (sixth- to eighth-graders)—62 percent of the older adolescents got inadequate sleep compared with 21 percent of the younger adolescents. Adolescents who got inadequate sleep (less than eight hours) on school nights were more likely to feel tired, cranky, and irritable; to fall asleep in school; to be in a depressed mood; and to drink caffeinated beverages than their counterparts who got optimal sleep (nine or more hours).



In Mary Carskadon's sleep laboratory at Brown University, an adolescent girl's brain activity is being monitored. Carskadon (2006) says that in the morning, sleep-deprived adolescents' "brains are telling them it's night time . . . and the rest of the world is saying it's time to go to school" (p. 19).

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Mary Carskadon and her colleagues (2006, 2011a, b; Jenni & Carskadon, 2007; Tarokh & Carskadon, 2010) have conducted a number of research studies on adolescent sleep patterns. They found that when given the opportunity, adolescents will sleep an average of 9 hours and 25 minutes a night. Most get considerably less than 9 hours of sleep, however, especially during the week. This shortfall creates a sleep deficit,

which adolescents often attempt to make up on the weekend. The researchers also found that older adolescents tend to be sleepier during the day than younger adolescents are. They theorized that this sleepiness was not due to academic work or social pressures. Rather, their research suggests that adolescents' biological clocks undergo a shift as they get older, delaying their period of wakefulness by about one hour. A delay in the nightly release of the sleep-inducing hormone melatonin, which is produced in the brain's pineal gland, seems to underlie this shift. Melatonin is secreted at about 9:30 p.m. in younger adolescents and approximately an hour later in older adolescents.



How Would You...?

As an **educator,** how would you use developmental research to convince your school board to change the starting time of high school?

Carskadon concludes that early school starting times may cause grogginess, inattention in class, and poor performance on tests. Based on her research, school officials in Edina, Minnesota, decided to start classes at 8:30 a.m. rather than the usual 7:25 a.m. Since then, there have been fewer referrals for discipline problems, and the number of students who report being ill or depressed has decreased. The school system reports that test scores have improved for high school students but not for middle school students. This finding supports Carskadon's suspicion that early start times are likely to be more stressful for older than for younger adolescents.

One study found that just a 30-minute delay in school start time was linked to improvements in adolescents' sleep, alertness, mood, and health (Owens, Belon, & Moss, 2010). In another study, early school start times were linked to a higher vehicle crash rate in adolescent drivers (Vorona & others, 2014). Recently, the American Academy of Pediatrics recommended that schools institute start times from 8:30 to 9:30 a.m. to improve adolescents' academic performance and quality of life (Adolescent Sleep Working Group, AAP, 2014).

Do sleep patterns change in emerging adulthood? Research indicates that they do (Galambos, Howard, & Maggs, 2011). A recent study revealed that more than 60 percent of college students were categorized as poor-quality sleepers (Lund & others, 2010). In this study, the weekday bedtimes and rise times of first-year college students were approximately 1 hour and 15 minutes later than those of seniors in high school (Lund & others, 2010). However, the first-year college students had later bedtimes and rise times than third- and fourth-year college students, indicating that at about 20 to 22 years of age, a reverse shift in the timing of bedtimes and rise times occurs.

Leading Causes of Death in Adolescence

The three leading causes of death in adolescence are unintentional injuries, homicide, and suicide (National Center for Health Statistics, 2016). Almost half of all deaths occurring from 15 to 24 years of age are due to unintentional injuries, the majority of them involving motor vehicle accidents.

Risky driving habits, such as speeding, tailgating, and driving under the influence of alcohol or other drugs, may be more important contributors to these accidents than lack of driving experience (Curry & others, 2015). In about 50 percent of motor vehicle fatalities involving adolescents, the driver has a blood alcohol level of 0.10 percent—twice the level needed to be designated as "under the influence" in some states. A high rate of intoxication is also found in adolescents who die as pedestrians or while using recreational vehicles.

Homicide is the second-leading cause of death in adolescence (National Center for Health Statistics, 2014), especially among African American male adolescents. The rate of the third-leading cause, adolescent suicide, has tripled since the 1950s. Suicide accounts for 6 percent of deaths in the 10-to-14 age group and 12 percent of deaths in the 15-to-19 age group.

Substance Use and Abuse

Each year since 1975, Lloyd Johnston and his colleagues at the Institute of Social Research at the University of Michigan have monitored the drug use of America's

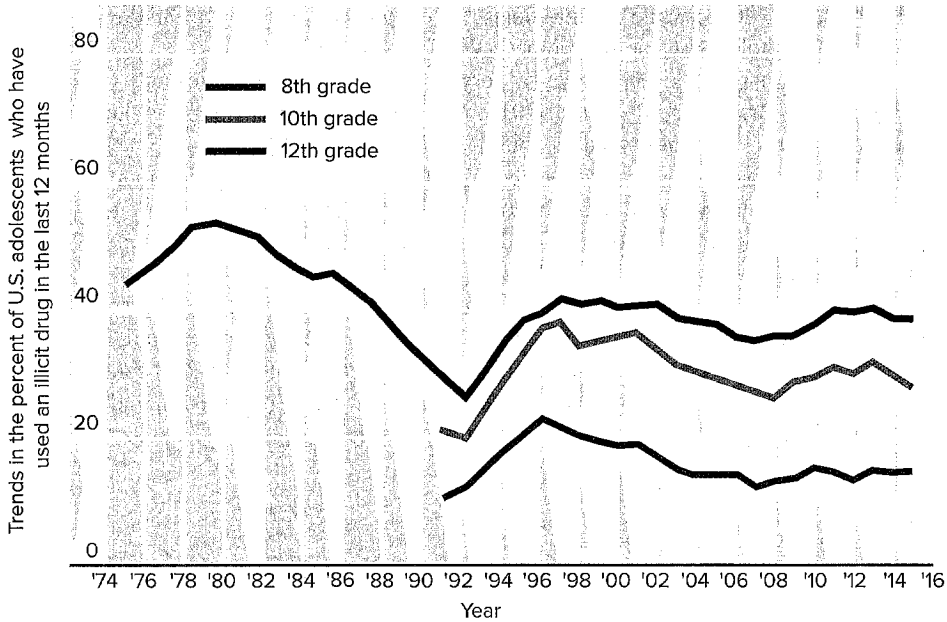


Figure 4 Trends in Drug Use by U.S. Eighth-, Tenth-, and Twelfth-Grade Students
This graph shows the percentage of U.S. eighth-, tenth-, and twelfth-grade students who reported having taken an illicit drug in the last 12 months in surveys conducted from 1991 to 2015 (for eighth- and tenth-graders), and from 1975 to 2015 (for twelfth-graders) (Johnston & others, 2016).

high school seniors in a wide range of public and private high schools. Since 1991, they also have surveyed drug use by eighth- and tenth-graders. In 2015, the study surveyed more than 44,900 secondary school students in 382 public and private schools (Johnston & others, 2016).

According to this study, the proportions of eighth-, tenth-, and twelfth-grade U.S. students who used any illicit drug declined in the late 1990s and the first decade and a half of the twenty-first century (Johnston & others, 2016) (see Figure 4). Marijuana is the illicit drug most widely used in the United States, and its use by adolescents increased from 2008 to 2015 (Johnston & others, 2016). As shown in Figure 4, in which marijuana is included, an increase in illicit drug use by U.S. adolescents occurred from 2008 to 2015. However, when marijuana use is subtracted from the illicit drug index, no increase in illicit drug use by adolescents occurred in this time frame (Johnston & others, 2016). The United States still has one of the highest rates of adolescent drug use of any industrialized nation.

A special concern involves adolescents who begin to use drugs early in adolescence or even in childhood. A longitudinal study of individuals from 8 to 42 years of age found that early onset of drinking was linked to increased risk of heavy drinking in middle age (Pitkänen, Lyrra, & Pulkkinen, 2005). A recent study revealed that the onset of alcohol use before age 11 was linked to a higher risk for alcohol dependence in early adulthood (Guttmannova & others, 2012). Further, a longitudinal study found that earlier age at first use of alcohol was linked to risk of heavy alcohol use in early adulthood (Liang & Chikritzhs, 2015). And another recent study indicated that early- and rapid-onset trajectories of alcohol, marijuana, and substance use were associated with substance abuse in early adulthood (Nelson, Van Ryzin, & Dishion, 2015).



How Would You...?
As a **human development and family studies professional,** how would you explain to parents the importance of parental monitoring in preventing adolescent substance abuse?

Parents play an important role in preventing adolescent drug abuse (Chassin & others, 2016; Zucker, Hicks, & Heitzeg, 2016). Researchers have found that parental monitoring is linked with a lower incidence of problem behavior by adolescents, including substance abuse (Wang & others, 2014). A research review found that when adolescents ate dinner more often with their families they were less likely to have problems such as substance abuse (Sen, 2010). And recent research revealed that authoritative parenting was linked to lower adolescent alcohol consumption

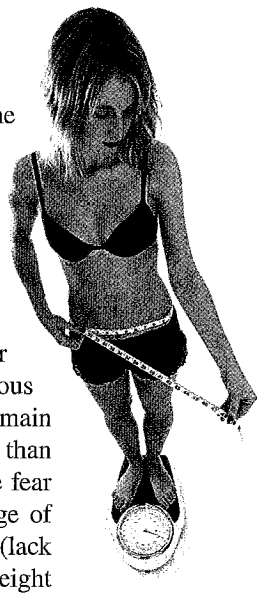
(Piko & Balazs, 2012) while parent-adolescent conflict was related to a higher level of adolescent alcohol use (Chaplin & others, 2012).

Along with parents, peers play a very important role in adolescent substance use (Choukas-Bradley & Prinstein, 2016; Prinstein & Giletta, 2016). A large-scale study of eighth- and tenth-graders found that of various risk factors the strongest predictors of substance use involved peer relations (Patrick & Schulenberg, 2010). In this study, spending more evenings out with peers, having friends who get drunk, feeling pressure to drink, and perceived availability of alcohol were linked to heavy episodic drinking.

Educational success is also a strong buffer for the emergence of drug problems in adolescence (Balsa, Giuliano, & French, 2011). An analysis by Jerald Bachman and his colleagues (2008) revealed that early educational achievement considerably reduced the likelihood that adolescents would develop drug problems, including alcohol abuse, smoking, and abuse of various illicit drugs.

Eating Disorders

Earlier in the chapter under the topic of nutrition and exercise, we described the increasing numbers of adolescents who are overweight. Let's now examine two different eating problems—anorexia nervosa and bulimia nervosa—that are far more common in adolescent girls than boys.



Anorexia nervosa has become an increasing problem for adolescent girls and young adult women. *What are some possible causes of anorexia nervosa?*
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Anorexia Nervosa

Although most U.S. girls have been on a diet at some point, slightly less than 1 percent ever develop anorexia nervosa. **Anorexia nervosa** is an eating disorder that involves the relentless pursuit of thinness through starvation. It is a serious disorder that can lead to death (Westmoreland, Krantz, & Mehler, 2016). Four main characteristics apply to people suffering from anorexia nervosa: (1) weight less than 85 percent of what is considered normal for their age and height; (2) an intense fear of gaining weight that does not decrease with weight loss; (3) a distorted image of their body shape (Reville, O'Connor, & Frampton, 2016), and (4) amenorrhea (lack of menstruation) in girls who have reached puberty. Obsessive thinking about weight and compulsive exercise also are linked to anorexia nervosa (Simpson & others, 2013). Even when they are extremely thin, they see themselves as too fat (Cornelissen & others, 2015). They never think they are thin enough, especially in the abdomen, buttocks, and thighs. They usually weigh themselves frequently, often take their body measurements, and gaze critically at themselves in mirrors.

Anorexia nervosa typically begins in the early to middle adolescent years, often following an episode of dieting and some type of life stress (Fitzpatrick, 2012). It is about 10 times more likely to occur in females than males. When anorexia nervosa does occur in males, the symptoms and other characteristics (such as a distorted body image and family conflict) are usually similar to those reported by females who have the disorder (Ariceli & others, 2005).

Most individuals with anorexia are non-Latina White adolescent or young adult females from well-educated, middle- and upper-income families and are competitive and high achieving (Darcy, 2012). They set high standards, become stressed about not being able to reach these standards, and are intensely concerned about how others perceive them (Woelders & others, 2011). Unable to meet these high expectations, they turn to something they can control—their weight. Offspring of mothers with anorexia nervosa are at risk for becoming anorexic themselves (Machado & others, 2014). Problems in family functioning are increasingly being found to be linked to the appearance of anorexia nervosa in adolescent girls (Espie & Eisler, 2015), and a research review indicated that family therapy is often the most effective treatment for adolescent girls with anorexia nervosa (Bulik & others, 2007).

anorexia nervosa An eating disorder that involves the relentless pursuit of thinness through starvation.

Biology and culture are involved in anorexia nervosa. Genes play an important role in anorexia nervosa (Boraska & others, 2014). Also, the physical effects of dieting may change neural networks and thus

sustain the disordered pattern (Fuglset & others, 2015). The fashion image in U.S. culture likely contributes to the incidence of anorexia nervosa (Carr & Peebles, 2012). The media portray thin as beautiful in their choice of fashion models, whom many adolescent girls strive to emulate (Carr & Peebles, 2012; Cazzato & others, 2016). And many adolescent girls who strive to be thin hang out together.

bulimia nervosa An eating disorder in which the individual consistently follows a binge-and-purge pattern.

Bulimia Nervosa

Whereas people with anorexia control their eating by restricting it, most individuals with bulimia cannot. **Bulimia nervosa** is an eating disorder in which the individual consistently follows a binge-and-purge pattern, self-inducing vomiting or using a laxative. Although many people binge and purge occasionally, a person is considered to have a serious bulimic disorder only if the episodes occur at least twice a week for three months (Cuzzolaro, 2014).



How Would You...?

As a **health-care professional,** how would you educate parents to identify the signs and symptoms that may signal an eating disorder?

Most people with bulimia are preoccupied with food, have a strong fear of becoming overweight, are depressed or anxious, and have a distorted body image. Bulimics may have difficulty controlling their emotions (Lavender & others, 2014). Unlike people who have anorexia, people who binge and purge typically fall within a normal weight range, which makes bulimia more difficult to detect.

One to 2 percent of U.S. women develop bulimia nervosa, and about 90 percent of people with bulimia are women. Bulimia nervosa typically begins in late adolescence or early adulthood. Many women who develop bulimia nervosa were somewhat overweight before the onset of the disorder, and the binge eating often began during an episode of dieting. About 70 percent of individuals who develop bulimia nervosa eventually recover from the disorder (Agras & others, 2004). Like anorexics, bulimics are highly perfectionistic (Lampard & others, 2012). Drug therapy and psychotherapy have been effective in treating bulimia nervosa (Harrington & others, 2015) and cognitive behavior therapy has especially been helpful (Dalle Grave & others, 2016; Hay, 2013).

Adolescent Cognition

Adolescents' developing power of thought opens up new cognitive and social horizons. Let's examine what their developing power of thought is like, beginning with the perspective provided by Piaget's theory (1952).

Piaget's Theory

Piaget proposed that around 7 years of age children enter the concrete operational stage of cognitive development. They can reason logically about concrete events and objects, and they make gains in their ability to classify objects and to reason about the relationships between classes of objects. Around age 11, according to Piaget, the fourth and final stage of cognitive development—the formal operational stage—begins.

The Formal Operational Stage

Formal operational thought is more abstract than concrete operational thought. Adolescents are no longer limited to actual, concrete experiences as anchors for thought. They can conjure up make-believe situations, abstract propositions, and events that are purely hypothetical, and can try to reason logically about them. The abstract quality of thinking during the formal operational stage is evident in the adolescent's verbal problem-solving ability. The concrete operational thinker needs to see the concrete elements A, B, and C to be able to make the logical inference that if A = B and B = C, then A = C, whereas the formal operational thinker can solve this problem merely through verbal presentation.

Another indication of the abstract quality of adolescents' thought is their increased tendency to think about thought itself. One adolescent commented, "I began thinking about why I was thinking what I was. Then I began thinking about why I was thinking about what I was thinking about what I was." If this sounds abstract, it is, and it characterizes the adolescent's enhanced focus on thought and its abstract qualities.



Might adolescents' ability to reason hypothetically and to evaluate what is ideal versus what is real lead them to engage in demonstrations such as this one promoting public education? What other causes might be attractive to adolescents' newfound cognitive abilities of hypothetical-deductive reasoning and idealistic thinking?

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Accompanying the abstract nature of formal operational thought is thought full of idealism and possibilities, especially during the beginning of the formal operational stage. Adolescents engage in extended speculation about ideal characteristics—qualities they desire in themselves and in others. Such thoughts often lead adolescents to compare themselves with others in regard to such ideal standards. And their thoughts are often fantasy flights into future possibilities.

Adolescents also think more logically. Children are likely to solve problems through trial and error; adolescents begin to think more as a scientist thinks, devising plans to solve problems and systematically testing solutions. This type of problem solving requires **hypothetical-deductive reasoning,** which involves creating a hypothesis and deducing its implications, which provides ways to test the hypothesis. Thus, formal operational thinkers develop hypotheses about ways to solve problems and then systematically deduce the best path to follow to solve the problem.

Evaluating Piaget's Theory

Researchers have challenged some of Piaget's ideas on the formal operational stage (Reyna & Zayas, 2014). Among their findings is that there is much more individual variation than Piaget envisioned: Only about one in three young adolescents is a formal operational thinker, and many American adults never become formal operational thinkers; neither do many adults in other cultures.

Furthermore, education in the logic of science and mathematics promotes the development of formal operational thinking. This point recalls a criticism of Piaget's theory: Culture and education exert stronger influences on cognitive development than Piaget argued (Gauvain & Perez, 2015).

Piaget's theory of cognitive development has been challenged on other points as well (Kuhn, 2013). Piaget conceived of stages as unitary structures of thought, with various aspects of a stage emerging at the same time. However, most contemporary developmentalists agree that cognitive development is not as stage-like as Piaget thought (Muller & Kerns, 2015; Ricco, 2015). Furthermore, children can be trained to reason at a higher cognitive stage, and some cognitive abilities emerge earlier than Piaget thought (Johnson & Hannon, 2015). Some understanding of the conservation of number has been demonstrated as early as age 3, although Piaget did not think it emerged until age 7. Other cognitive abilities can emerge later than Piaget thought (Kuhn, 2013).

hypothetical-deductive reasoning
Piaget's formal operational concept that adolescents have the cognitive ability to develop hypotheses, or best guesses, about ways to solve problems.

Despite these challenges to Piaget's ideas, we owe him a tremendous debt (Miller, 2011). Piaget was the founder of the present field of cognitive development, and he developed a long list of masterful concepts of enduring power and fascination: assimilation, accommodation, object permanence, egocentrism, conservation, and others. Psychologists also

owe him the current vision of children as active, constructive thinkers. And they are indebted to him for creating a theory that has generated a huge volume of research on children's cognitive development.

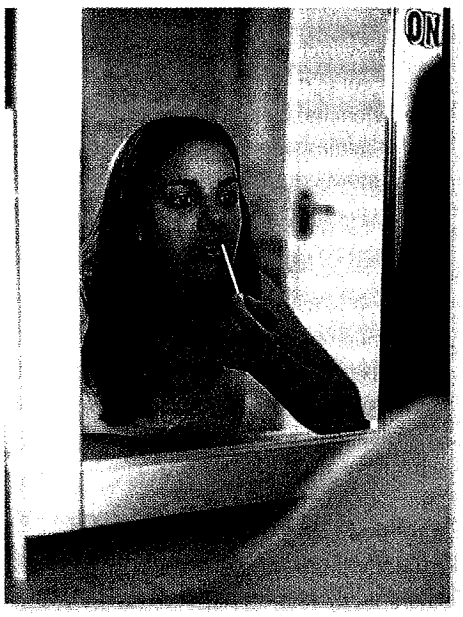
Piaget was a genius when it came to observing children. His careful observations demonstrated inventive ways to discover how children act on, and adapt to, their world. Children need to make their experiences fit their schemes yet simultaneously adapt their schemes to reflect their experience. Piaget revealed how cognitive change is likely to occur if the context is structured to allow gradual movement to the next higher level. Concepts do not emerge suddenly, full-blown, but instead develop through a series of partial accomplishments that lead to increasingly comprehensive understanding (Sloutsky, 2015).

Adolescent Egocentrism

Adolescent egocentrism is the heightened self-consciousness of adolescents. David Elkind (1976) maintains that adolescent egocentrism has two key components—the imaginary audience and personal fable. The **imaginary audience** is adolescents' belief that others are as interested in them as they themselves are, as well as attention-getting behavior—attempts to be noticed, visible, and "on stage." For example, an eighth-grade boy might walk into the classroom thinking that all eyes are riveted on his spotty complexion. Adolescents sense that they are "on stage" in early adolescence, believing they are the main actors and all others are the audience.

The **personal fable** is the part of adolescent egocentrism involving a sense of uniqueness and invincibility (or invulnerability). For example, a 13-year-old says about herself: "No one understands me, particularly my parents. They have no idea of what I am feeling." Adolescents' sense of personal uniqueness makes them believe that no one can understand how they really feel. As part of their effort to retain a sense of personal uniqueness, they might craft a story about the self that is filled with fantasy in a world that is far removed from reality. Personal fables frequently show up in adolescent diaries.

Adolescents also often show a sense of invincibility or invulnerability. For example, during a conversation with another girl, 14-year-old Margaret says, "Are you kidding? I won't get pregnant." This sense of invincibility may lead adolescents to believe that they are invulnerable to dangers and catastrophes (such as deadly car wrecks) that happen to other people. As a result, some adolescents engage in risky behaviors such as drag racing, drug use, and having sexual intercourse without using contraceptives or barriers against STIs (Alberts, Elkind, & Ginsberg, 2007). However, some research studies suggest that rather than perceiving themselves to be invulnerable, adolescents tend to portray themselves as vulnerable to experiencing a premature death (Fischhoff & others, 2010; Reyna & Rivers, 2008).



Many adolescent girls spend long hours in front of the mirror. *How might this behavior be related to changes in adolescent cognitive and physical development?*

© Image Source/Jupiter Images RF

Might social media such as Facebook serve as an amplification tool for adolescent egocentrism? A recent study found that Facebook usage does indeed increase self-interest (Chiou, Chen, & Liao, 2014).

Information Processing

Deanna Kuhn (2009) discussed some important characteristics of adolescents' information processing and thinking. In her view, in the later years of childhood and continuing in adolescence, individuals approach cognitive levels that may or may not be achieved, in contrast with the largely universal cognitive levels that young children attain. By adolescence, considerable variation in cognitive functioning is

adolescent egocentrism The heightened self-consciousness of adolescents.

imaginary audience Involves adolescents' belief that others are as interested in them as they themselves are; attention-getting behavior motivated by a desire to be noticed, visible, and "on stage."

personal fable The part of adolescent egocentrism that involves an adolescent's sense of uniqueness and invincibility (or invulnerability).

present across individuals. This variability supports the argument that adolescents are producers of their own development to a greater extent than are children. That is, adolescents are more likely than children to initiate changes in thinking rather than depend on others, such as parents and teachers, to direct their thinking.

Executive Function

Kuhn (2009) argues that the most important cognitive change in adolescence is improvement in *executive function,* an umbrella-like concept that consists of a number of higher-level cognitive processes linked to the development of the prefrontal cortex. Executive function involves managing one's thoughts to engage in goal-directed behavior and to exercise self-control (Muller & Kerns, 2015). Our further coverage of executive function in adolescence focuses on cognitive control and decision making.

Cognitive Control Cognitive control involves effective control in a number of areas, including controlling attention, reducing interfering thoughts, and being cognitively flexible. Cognitive control continues to increase in adolescence and emerging adulthood (Casey, 2015; Luna & others, 2015; Somerville, 2016). Think about all the times adolescents need to engage in cognitive control, such as the following situations (Galinsky, 2010):

- making a real effort to stick with a task, avoiding interfering thoughts or environmental events, and instead doing what is most effective;
- stopping and thinking before acting to avoid blurting out something that a minute or two later they will wish they hadn't said;
- continuing to work on something that is important but boring when there is something a lot more fun to do, inhibiting their behavior and doing the boring but important task, saying to themselves, "I have to show the self-discipline to finish this."

Controlling attention is a key aspect of learning and thinking in adolescence and emerging adulthood. Distractions that can interfere with attention come from the external environment (other students talking while the student is trying to listen to a lecture, or the student turning on a laptop or phone during a lecture to look at Facebook, for example) or intrusive distractions from competing thoughts in the individual's mind. Self-oriented thoughts, such as worrying, self-doubt, and intense emotionally laden thoughts may interfere with focusing attention on thinking tasks (Walsh, 2011).

Decision Making Adolescence is a time of increased decision making—which friends to choose; which person to date; whether to have sex, buy a car, go to college, and so on (Reyna & others, 2015; Reyna & Zayas, 2014; Steinberg, 2015a, b: Monahan & others, 2016). How competent are adolescents at making decisions? Older adolescents are described as more competent than younger adolescents, who in turn are more competent than children (Keating, 1990). Compared with children, young adolescents are more likely to generate different options, examine a situation from a variety of perspectives, anticipate the consequences of decisions, and consider the credibility of sources. In risky situations it is important for an adolescent to quickly get the *gist,* or meaning, of what is happening and glean that the situation is a dangerous context, which can cue personal values that will protect the adolescent from making a risky decision (Reyna & Zayas, 2014).



How Would You...?

As an **educator,** how would you incorporate decision-making exercises into the school curriculum for adolescents?

Most people make better decisions when they are calm than when they are emotionally aroused. That may especially be true for adolescents, who have a tendency to be emotionally intense. The same adolescent who makes a wise decision when calm may make an unwise decision when emotionally aroused (Steinberg, 2015a, b).

The social context plays a key role in adolescent decision making (Cauffman & others, 2015; Monahan & others, 2016; Steinberg, 2015a, b). Adolescents' willingness to make risky decisions is more likely to occur in contexts where substances and other temptations are readily available (Reyna & Zayas, 2014). And the presence of peers in risk-taking situations increases the likelihood that adolescents will make risky decisions (Albert & Steinberg, 2011a, b). In a recent study,

adolescents took greater risks and showed stronger preference for immediate rewards when they were with three same-aged peers than when alone (Silva, Chein, & Steinberg, 2016).

Adolescents need more opportunities to practice and discuss realistic decision making. Many real-world decisions on matters such as sex, drugs, and daredevil driving occur in an atmosphere of stress that includes time constraints and emotional involvement. One strategy for improving adolescent decision making is to provide more opportunities for them to engage in role playing and peer-group problem solving.

Schools

Our discussion of adolescents' schooling will focus on the transition from elementary to middle or junior high school, the characteristics of effective schools for adolescents, aspects of high school life that interfere with learning, and how adolescents can benefit from engaging in service learning.

The Transition to Middle or Junior High School

The first year of middle school or junior high school can be difficult for many students (Wigfield & others, 2015). In one study of the transition from sixth grade in an elementary school to seventh grade in a junior high school, adolescents' perceptions of the quality of their school life plunged in the seventh grade (Hirsch & Rapkin, 1987). Compared with their earlier feelings as sixth-graders, the seventh-graders were less satisfied with school, were less committed to school, and liked their teachers less. This occurred regardless of how academically successful the students were.



How Would You...?

As an **educator,** how would you design school programs to enhance students' smooth transition into middle school?

The transition to middle or junior high school takes place at a time when many changes—in the individual, the family, school—are occurring simultaneously (Simpkins, Fredricks, & Eccles, 2015; Wigfield, Tonks, & Klauda, 2016). These changes include puberty and concerns about body image; the emergence of at least some aspects of formal operational thought, including changes in social cognition; increased responsibility and decreased dependency on parents; change to a larger, more impersonal school structure; change from one teacher to many teachers and from a small, homogeneous set of peers to a larger, more heterogeneous set; and an increased focus on achievement and performance. Moreover, when students make the transition to middle or junior high school, they experience the **top-dog phenomenon,** moving from being the oldest, biggest, and most powerful students in the elementary school to being the youngest, smallest, and least powerful students.

There can also be positive aspects to this transition. Students are more likely to feel grown up, have more subjects from which to select and may be more challenged intellectually by academic work, have more opportunities to spend time with peers and locate compatible friends, and enjoy increased independence from direct parental monitoring.

Effective Schools for Young Adolescents

Educators and psychologists worry that junior high and middle schools have become watered-down versions of high schools, mimicking their curricular and extracurricular schedules. Critics argue that these schools should offer activities that reflect a wide range of individual differences in biological and psychological development among young adolescents. The Carnegie Foundation (1989) issued an extremely negative evaluation of U.S. middle schools. It concluded that most young adolescents attended massive, impersonal schools; were taught from irrelevant curricula; trusted few adults in school; and lacked access to health care and counseling. It recommended that the nation develop smaller "communities" or "houses" to lessen the impersonal nature of large middle schools, maintain lower

top-dog phenomenon The circumstance of moving from the top position in elementary school to the lowest position in middle or junior high school.

student-to-counselor ratios (10 to 1 instead of several hundred to 1), involve parents and community leaders in schools, develop new curricula, have teachers team teach in more flexibly designed curriculum blocks that integrate several disciplines, boost students' health and fitness with more in-school programs, and help students who need public health care to get it. Twenty-five years later, experts are still finding that middle schools throughout the nation need a major redesign if they are to be effective in educating adolescents (Roeser, 2016; Wigfield & others, 2015).

High School

Just as there are concerns about U.S. middle school education, so are there concerns about U.S. high school education (Eccles & Roeser, 2016; Kitsantas & Cleary, 2016). Critics stress that many high schools have low expectations for success and inadequate standards for learning. Critics also argue that too often high schools foster passivity instead of creating a variety of pathways for students to achieve an identity. Many students graduate from high school with inadequate reading, writing, and mathematical skills—including many who go on to college and have to enroll in remediation classes there. Other students drop out of high school and do not have skills that will allow them to obtain decent jobs, much less to be informed citizens.

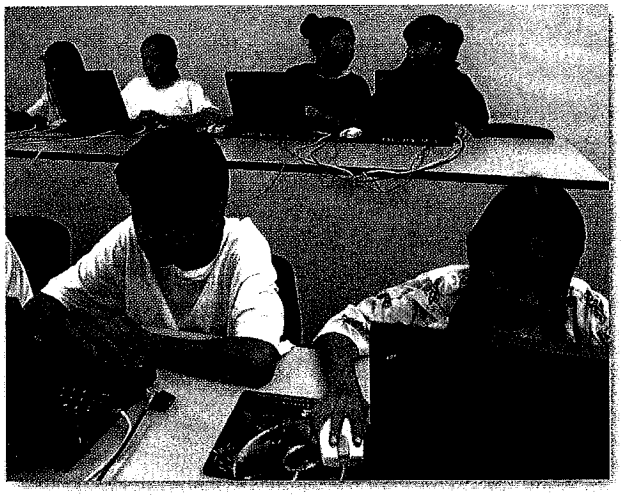
The transition to high school can have problems just as the transition to middle school has. These problems may include the following (Eccles & Roeser, 2016): High schools are often even larger, more bureaucratic, and more impersonal than middle schools are; there isn't much opportunity for students and teachers to get to know each other, which can lead to distrust; and teachers too infrequently make content relevant to students' interests. Such experiences likely undermine the motivation of students.

Robert Crosnoe's (2011) book, *Fitting In, Standing Out,* highlighted another major problem with U.S. high schools: How the negative social aspects of adolescents' lives undermine their academic achievement. Adolescents become immersed in complex peer group cultures that demand conformity. High school is supposed to be about getting an education, but in reality for many youth it is more about navigating the social worlds of peer relations that may or may not value education and academic achievement. The adolescents who fail to fit in, especially those who are obese or gay, become stigmatized. Crosnoe recommends increased school counseling services, expanded extracurricular activities, and improved parental monitoring to reduce such problems. A recent study revealed that immigrant adolescents who participated in extracurricular activities improved their academic achievement and increased their school engagement (Camacho & Fuligni, 2015).

In the last half of the twentieth century and the first decade of the twenty-first century, U.S. high school dropout rates declined (National Center for Education Statistics, 2014). In the 1940s, more than half of U.S. 16- to 24-year-olds had dropped out of school; by 2012, this figure had decreased to 6.6 percent. The dropout rate of Latino adolescents remains high, although it has been decreasing considerably in the twenty-first century (from 28 percent in 2000 to 15.1 percent in 2010 to 12.7 percent in 2012). The lowest dropout rate in 2013 occurred for Asian American adolescents (3.4 percent), followed by non-Latino White adolescents (5.1 percent), African American adolescents (7.9 percent), and Latino adolescents (11.7 percent) (Child Trends, 2014).

Gender differences characterize U.S. dropout rates, with males more likely to drop out than females in 2012 (7.3 versus 5.9 percent) (National Center for Education Statistics, 2014). The gender gap in dropout rates for Latino adolescents still favors females—11.3 for females, 12.7 for males, but that gender gap has come down considerably in recent years.

National data on Native American adolescents are inadequate because statistics have been collected sporadically and/or from small samples. However, there are some indications that they may have the highest dropout rate. Also, the average U.S. high school dropout rates mask some very high dropout rates in low-income areas of inner cities. For example, in Detroit, Cleveland, and Chicago, dropout rates are higher than 50 percent. Also, the percentages cited earlier are for 16- to 24-year-olds. When dropout rates are



Students use the technology training center at Wellpinit Elementary/High School located on the Spokane Indian Reservation in the state of Washington. An important educational goal is to increase the high school graduation rate of Native American adolescents.
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calculated in terms of students who do not graduate from high school within four years, the percentages are much higher. Thus, in considering high school dropout rates, it is important to examine age, the number of years it takes to complete high school, and various contexts including ethnicity, gender, and location.

Students drop out of school for many reasons (Dupere & others, 2015; Schoeneberger, 2012). In one study, almost 50 percent of the dropouts cited school-related reasons for leaving school, such as not liking school or being expelled or suspended (Rumberger, 1983). Twenty percent of the dropouts (but 40 percent of the Latino students) cited economic reasons for leaving school. One-third of the female students dropped out for personal reasons such as pregnancy or marriage.

According to a research review, the most effective programs to discourage dropping out of high school provide early reading support, tutoring, counseling, and mentoring (Lehr & others, 2003). Clearly, then, early detection of children's school-related difficulties and getting children engaged with school in positive ways are important strategies for reducing the dropout rate (Crosnoe, Bonazzo, & Wu, 2015; Fall & Roberts, 2012).

Service Learning

Service learning is a form of education that promotes social responsibility and service to the community. Adolescents engage in activities such as tutoring, helping older adults, working in a hospital, assisting at a child-care center, or cleaning up a vacant lot to make it into a play area. An important goal of service learning is to encourage adolescents to become less self-centered and more strongly motivated to help others (Kackar-Cam & Schmidt, 2014). Service learning is often more effective when two conditions are met (Nucci, 2006): (1) giving students some degree of choice in the service activities in which they participate, and (2) providing students with opportunities to reflect about their participation.



How Would You...?

As an **educator,** how would you devise a program to increase adolescents' motivation to participate in service learning?

A key feature of service learning is that it benefits not only adolescents but also the recipients of their help. One eleventh-grade student worked as a reading tutor for students from low-income backgrounds with reading skills well below their grade levels. Until she did the tutoring, she had not realized how many students had not experienced the same opportunities that she had when she was growing up. An especially rewarding moment was when one young girl told her, "I want to learn to read like you so I can go to college when I grow up."

Researchers have found that service learning also benefits adolescent development in other ways (Kielsmeier, 2011), including higher grades in school, increased goal setting, higher self-esteem, an improved sense of being able to make a difference for others, and an increased likelihood that the adolescents will serve as volunteers in the future (Hart, Matsuba, & Atkins, 2008). One study found that adolescent girls participated in service learning more than did adolescent boys (Webster & Worrell, 2008).



What are some of the positive effects of service learning?
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service learning A form of education that promotes social responsibility and service to the community.

Summary

The Nature of Adolescence

- Many stereotypes of adolescents are too negative. Most adolescents today successfully negotiate the path from childhood to adulthood. However, too many of today's adolescents are not provided with adequate opportunities and support to become competent adults. It is important to view adolescents as a heterogeneous group because different portraits of adolescents emerge, depending on the particular set of adolescents being described.

Physical Changes

- Puberty's determinants include nutrition, health, and heredity. Hormonal changes occurring in puberty are substantial. Puberty occurs approximately two years earlier for girls than for boys. Individual variation in pubertal changes is substantial. Adolescents show considerable interest in their body image, with girls having more negative body images than boys. Early-maturing girls are vulnerable to a number of risks.
- Changes in the brain during adolescence involve the thickening of the corpus callosum and a gap in maturation between the limbic system, which is the seat of emotions, and the prefrontal cortex, which functions in reasoning and self-regulation.
- Adolescence is a time of sexual exploration and sexual experimentation. About one in four sexually experienced adolescents acquires a sexually transmitted infection (STI). America's adolescent pregnancy rate has declined since the 1990s but is still higher than that of other industrialized nations.

Adolescent Health

- Adolescence is a critical juncture in health. Poor nutrition and lack of exercise are special concerns.
- Many adolescents stay up later than when they were children and are getting less sleep than they need.
- Accidents are the leading cause of death in adolescence.
- Although drug use in adolescence has declined in recent years, it still is a major concern.
- Eating disorders have increased in adolescence, with a substantial increase in the percentage of adolescents who are overweight. Two eating disorders that may emerge in adolescence are anorexia nervosa and bulimia nervosa.

Adolescent Cognition

- In Piaget's formal operational stage, thought is more abstract, idealistic, and logical than during the concrete operational stage. However, many adolescents are not formal operational thinkers.
- Adolescent egocentrism, which involves a heightened self-consciousness, reflects another cognitive change in adolescence in addition to Piaget's description of three cognitive stages.
- Changes in information processing in adolescence are mainly reflected in improved executive function, which includes advances in cognitive control and decision making.

Schools

- The transition to middle or junior high school is often stressful. One source of stress is the move from the top-dog to the lowest position in school.
- Some critics argue that a major redesign of U.S. middle schools is needed.
- The overall U.S. high school dropout rate declined considerably in the last half of the twentieth century, but the dropout rates for Native American and Latino adolescents remain very high.
- Service learning is linked to a number of positive benefits for adolescents.

Key Terms

adolescent egocentrism
amygdala
anorexia nervosa
bulimia nervosa
corpus callosum
gonads
hormones
hypothalamus
hypothetical-deductive reasoning
imaginary audience
limbic system
menarche
personal fable
pituitary gland
puberty
service learning
sexually transmitted infections (STIs)
top-dog phenomenon

10 Socioemotional Development in Adolescence



CHAPTER OUTLINE

IDENTITY
What Is Identity?
Erikson's View
Developmental Changes
Ethnic Identity

FAMILIES
Parental Management and Monitoring
Autonomy and Attachment
Parent-Adolescent Conflict

PEERS
Friendships
Peer Groups
Dating and Romantic Relationships

CULTURE AND ADOLESCENT DEVELOPMENT
Cross-Cultural Comparisons
Ethnicity
The Media

ADOLESCENT PROBLEMS
Juvenile Delinquency
Depression and Suicide
The Interrelation of Problems and Successful Prevention/Intervention Programs

Stories of Life-Span Development: Jewel Cash, Teen Dynamo

The mayor of the city says she is "everywhere." She persuaded the city's school committee to consider ending the practice of locking tardy students out of their classrooms. She also swayed a neighborhood group to support her proposal for a winter jobs program. According to one city councilman, "People are just impressed with the power of her arguments and the sophistication of the argument" (Silva, 2005, pp. B1, B4). She is Jewel E. Cash, and she did all these things while she was a teenager attending the prestigious Boston Latin Academy.

Jewel was raised in one of Boston's housing projects by her mother, a single parent. During high school she was a member of the Boston Student Advisory Council, mentored children, volunteered at a women's shelter, managed and danced in two troupes, and participated in a neighborhood watch group—among other



Jewel Cash, seated next to her mother, participates in a crime watch meeting at a community center.

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activities. Jewel is far from typical, but her activities illustrate that cognitive and socioemotional development allows adolescents—even those from disadvantaged backgrounds—to be capable, effective individuals.

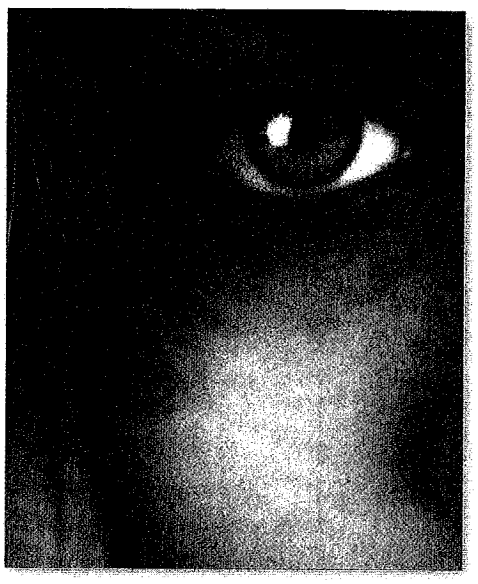
Significant changes characterize socioemotional development in adolescence. These changes include searching for identity. Changes also take place in the social contexts of adolescents' lives, with transformations occurring in relationships with families and peers in cultural contexts. Adolescents also may develop socioemotional problems such as delinquency and depression. ■

Identity

Jewel Cash told an interviewer from the *Boston Globe,* "I see a problem and I say, 'How can I make a difference?'. . . I can't take on the world, even though I can try. . . . I'm moving forward but I want to make sure I'm bringing people with me" (Silva, 2005, pp. B1, B4). Jewel's confidence and positive identity sound at least as impressive as her activities. This section examines how adolescents develop characteristics like these. How well did you understand yourself during adolescence, and how did you acquire the stamp of your identity? Is your identity still developing?

What Is Identity?

Questions about identity surface as common, virtually universal, concerns during adolescence. Some decisions made during adolescence might seem trivial: whom to date, whether or not to break up, which major to study, whether to study or play, whether or not to be politically active, and so on. Over the years of adolescence, however, such decisions begin to form the core of what the individual is all about as a human being—what is called his or her identity.



What are some important dimensions of identity?
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Identity is a self-portrait composed of many pieces, including these:

- The career and work path the person wants to follow (vocational/career identity)
- Whether the person is conservative, liberal, or middle-of-the-road (political identity)
- The person's spiritual beliefs (religious identity)
- Whether the person is single, married, divorced, and so on (relationship identity)
- The extent to which the person is motivated to achieve and is intellectually oriented (achievement, intellectual identity)
- Whether the person is heterosexual, homosexual, bisexual, or transgendered (sexual identity)
- Which part of the world or country a person is from and how intensely the person identifies with his or her cultural heritage (cultural/ethnic identity)
- The kind of things a person likes to do, which can include sports, music, hobbies, and so on (interests)
- The individual's personality characteristics, such as being introverted or extraverted, anxious or calm, friendly or hostile, and so on (personality)
- The individual's body image (physical identity)

Synthesizing the identity components can be a long-drawn-out process, with many negations and affirmations of various roles and faces (Kroger, 2015; McLean & Syed, 2015). Identity development takes place in bits and pieces. Decisions are not made once

and for all, but have to be made again and again. Identity development does not happen neatly, and it does not happen cataclysmically (Beyers & Luyckx, 2016; Cote, 2015; Schwartz & others, 2015a, b, c; Waterman, 2015).

crisis Marcia's term for a period of identity development during which the adolescent is exploring alternatives.

Erikson's View

It was Erik Erikson (1950, 1968) who first understood that questions about identity are central to understanding adolescent development. Today, as a result of Erikson's masterful thinking and analysis, identity is considered a key aspect of adolescent development.

Recall that in Erikson's theory, his fifth developmental stage, which individuals experience during adolescence, is *identity versus identity confusion.* During this time, said Erikson, adolescents are faced with deciding who they are, what they are all about, and where they are going in life.

The search for an identity during adolescence is aided by a *psychosocial moratorium,* which is Erikson's term for the gap between childhood security and adult autonomy. During this period, society leaves adolescents relatively free of responsibilities and able to try out different identities. Adolescents in effect search their culture's identity files, experimenting with different roles and personalities. They may want to pursue one career one month (lawyer, for example) and another career the next month (doctor, actor, teacher, social worker, or astronaut, for example). They may dress neatly one day, sloppily the next. This experimentation is a deliberate effort on the part of adolescents to find out where they fit into the world. Most adolescents eventually discard undesirable roles.

Developmental Changes

Although questions about identity may be especially important during adolescence, identity formation neither begins nor ends during these years (Kroger, 2015). It begins with the appearance of attachment, the development of the sense of self, and the emergence of independence in infancy; the process reaches its final phase with a life review and integration in old age. What is important about identity development in adolescence, especially late adolescence, is that for the first time, physical development, cognitive development, and socioemotional development advance to the point at which the individual can begin to sort through and synthesize childhood identities and identifications to construct a viable path toward adult maturity.

How do individual adolescents go about the process of forming an identity? Eriksonian researcher James Marcia (1980, 1994) believes that Erikson's theory of identity development encompasses four *statuses* of identity, or ways of resolving the identity crisis: identity diffusion, identity foreclosure, identity moratorium, and identity achievement. What determines an individual's identity status? Marcia classifies individuals based on the existence or extent of their crisis or commitment (see Figure 1). **Crisis** is defined as a period of identity development during which the individual is

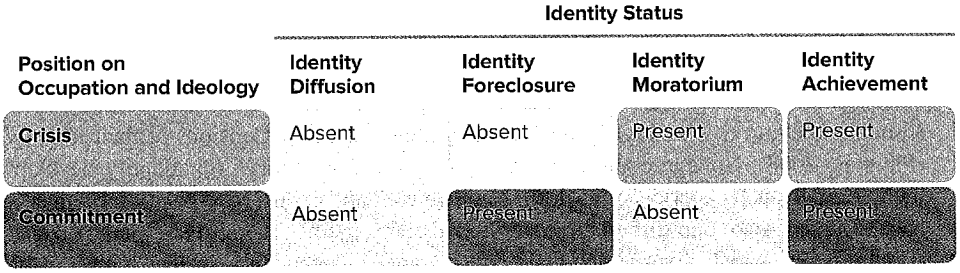


Figure 1 Marcia's Four Statuses of Identity

According to Marcia, an individual's status in developing an identity can be described as identity diffusion, identity foreclosure, identity moratorium, or identity achievement. The status depends on the presence or absence of (1) a crisis or exploration of alternatives and (2) a commitment to an identity. *What is the identity status of most young adolescents?*

exploring alternatives. Most researchers use the term *exploration* rather than crisis. **Commitment** is personal investment in identity.

The four statuses of identity are described as follows:

- **Identity diffusion** is the status of individuals who have not yet experienced a crisis or made any commitments. Not only are they undecided about occupational and ideological choices, they are also likely to show little interest in such matters.
- **Identity foreclosure** is the status of individuals who have made a commitment but have not experienced a crisis. This occurs most often when parents hand down commitments to their adolescents, usually in an authoritarian way, before adolescents have had a chance to explore different approaches, ideologies, and vocations on their own.
- **Identity moratorium** is the status of individuals who are in the midst of a crisis but whose commitments are either absent or are only vaguely defined.
- **Identity achievement** is the status of individuals who have undergone a crisis and have made a commitment.

commitment Marcia's term for the part of identity development in which adolescents show a personal investment in forming an identity.

identity diffusion Marcia's term for adolescents who have not yet experienced a crisis (explored meaningful alternatives) or made any commitments.

identity foreclosure Marcia's term for adolescents who have made a commitment but have not experienced a crisis.

identity moratorium Marcia's term for adolescents who are in the midst of a crisis, but their commitments are either absent or vaguely defined.

identity achievement Marcia's term for adolescents who have undergone a crisis and have made a commitment.



How Would You...?

As a **psychologist,** how would you apply Marcia's theory of identity formation to describe your current identity status or that of adolescents you know?

Some critics argue that the identity status approach does not produce enough depth in understanding identity development (Cote, 2015). One way that researchers are now examining identity changes in depth is to use a *narrative approach.* This involves asking individuals to tell their life stories and evaluate the extent to which their stories are meaningful and integrated (McAdams & Zapata-Gietl, 2015; Singer & Kasmark, 2015). The term *narrative identity* "refers to the stories people construct and tell about themselves to define who they are for themselves and others. Beginning in adolescence and young adulthood, our narrative identities are the stories we live by" (McAdams, Josselson, & Lieblich, 2006, p. 4).

A recent study used both identity status and narrative approaches to examine college students' identity domains. In both approaches, the interpersonal domain was most frequently described (McLean & others, 2016). In the interpersonal domain, dating and friendships were frequently mentioned, although there was no mention of gender roles. In the narrative domain, family stories were common.

Researchers are developing a consensus that the key changes in identity are more likely to take place in emerging adulthood, the period from about 18 to 25 years of age (Arnett, 2015; Kroger, 2015; Schwartz & others, 2015a, b). For example, Alan Waterman (1985, 1992) has found that from the years preceding high school through the last few years of college, the number of individuals who are identity achieved increases, whereas the number of individuals who are identity diffused decreases. Many young adolescents are identity diffused. College upperclassmen are more likely than high school students or college freshmen to be identity achieved.

Why might college produce some key changes in identity? Increased complexity in the reasoning skills of college students combined with a wide range of new experiences that highlight contrasts between home and college and between themselves and others stimulate them to reach a higher level of integrating various dimensions of their identity (Phinney, 2008). College contexts serve as a virtual "laboratory" for identity development through such experiences as diverse coursework and exposure to peers from diverse backgrounds. Also, one of emerging adulthood's key themes is not having many social commitments, which gives individuals considerable independence in developing a life path (Arnett, 2015).

Resolution of the identity issue during adolescence and emerging adulthood does not mean that identity will be stable through the remainder of life (McAdams & Zapata-Gietl, 2015). Many individuals who develop positive identities follow what are called "MAMA" cycles; that is, their identity status changes from *m*oratorium

to *a*chievement to *m*oratorium to *a*chievement (Marcia, 1994). These cycles may be repeated throughout life (Francis, Fraser, & Marcia, 1989). Marcia (2002) points out that the first identity is just that—it is not, and should not be regarded as, the final product.

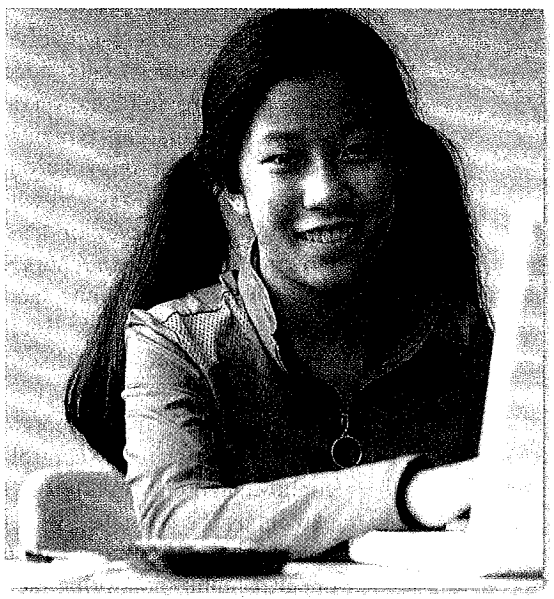
Ethnic Identity

Throughout the world, ethnic minority groups have struggled to maintain their ethnic identities while blending in with the dominant culture (Erikson, 1968). **Ethnic identity** is an enduring aspect of the self that includes a sense of membership in an ethnic group, along with the attitudes and feelings related to that membership (Syed & Juang, 2014; Tang, McLoyd, & Hallman, 2016). Most adolescents from ethnic minorities develop a *bicultural identity.* That is, they identify in some ways with their ethnic group and in other ways with the majority culture (Cooper, Gonzales, & Wilson, 2015; Fleischmann & Verkuyten, 2016).

For ethnic minority individuals, adolescence and emerging adulthood are often special junctures in their development (Azmitia, 2015; Gonzalez-Bracken, Bamaca-Colbert, & Allen, 2016). Although children are aware of some ethnic and cultural differences, individuals consciously confront their ethnicity for the first time in adolescence or emerging adulthood. Unlike children, adolescents and emerging adults have the ability to interpret ethnic and cultural information, to reflect on the past, and to speculate about the future. With their advancing cognitive skills of abstract thinking and self-reflection, adolescents (especially older adolescents) increasingly consider the meaning of their ethnicity and also have more ethnic-related experiences (O'Hara & others, 2012).

Researchers are also increasingly finding that a positive ethnic identity is related to positive outcomes for ethnic minority adolescents (Ikram & others, 2016; Williams & others, 2014). In a recent study, having pride in one's ethnic group and a strong ethnic identity were linked to lower substance use in adolescents (Grindal & Nieri, 2016). And in another recent study, strong ethnic group affiliation and connection were associated with reduced risk of psychiatric problems (Anglin & others, 2016).

The indicators of identity change often differ for each succeeding generation (Phinney & Vedder, 2013). First-generation immigrants are likely to be secure in their identities and unlikely to change much; they may or may not develop a new identity. The degree to which they begin to feel "American" appears to be related to whether or not they learn English, develop social networks beyond their ethnic group, and become culturally competent in their new country. Second-generation immigrants are more likely to think of themselves as "American," possibly because citizenship is granted at birth. Their ethnic identity is likely to be linked to retention of their ethnic language and social networks. In the third and later generations, the issues become more complex. Historical, contextual, and political factors that are unrelated to acculturation may affect the extent to which members of this generation retain their ethnic identities. For non-European ethnic groups, racism and discrimination influence whether ethnic identity is retained.



One adolescent girl, 16-year-old Michelle Chinn, made these comments about ethnic identity development: "My parents do not understand that teenagers need to find out who they are, which means a lot of experimenting, a lot of mood swings, a lot of emotions and awkwardness. Like any teenager, I am facing an identity crisis. I am still trying to figure out whether I am a Chinese American or an American with Asian eyes."

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How Would You...?

As a **human development and family studies professional,** how would you design a community program that assists ethnic minority adolescents to develop a healthy bicultural identity?

ethnic identity An enduring, basic aspect of the self that includes a sense of membership in an ethnic group and the attitudes and feelings related to that membership.

Families

Adolescence typically alters the relationship between parents and their children. Among the most important aspects of family relationships in adolescence are those that involve parental management and monitoring, autonomy and attachment, and parent-adolescent conflict.

Parental Management and Monitoring

A key aspect of the managerial role of parenting is effective monitoring, which is especially important as children move into the adolescent years (Chu & others, 2015; Clark & others, 2015; Donaldson, Handren, & Crano, 2016; Kuntsche & Kuntsche, 2016; Low & Shortt, 2016; Sajber & others, 2016). Monitoring includes supervising adolescents' choice of social settings, activities, and friends, as well as their academic efforts. One study found that a high level of parental monitoring within the context of parental warmth was linked to positive academic outcomes for ethnic minority youth (Lowe & Dotterer, 2013). In further research, low parental monitoring was a key factor in predicting a developmental trajectory of delinquency and substance use in adolescence (Wang & others, 2014). In another recent study, higher parental monitoring reduced negative peer influence on adolescent risk taking (Wang & others, 2016a). And a recent meta-analysis revealed that a higher level of parental monitoring and rule enforcement were linked to later initiation of sexual intercourse and a greater use of condoms by adolescents (Dittus & others, 2015).

A current interest involving parental monitoring focuses on adolescents' management of their parents' access to information, especially strategies for disclosing or concealing information about their activities (Smetana, Robinson, & Rote, 2015). When parents engage in positive parenting practices, adolescents are more likely to disclose information. For example, disclosure increases when parents ask adolescents questions and when adolescents' relationship with parents is characterized by a high level of trust, acceptance, and quality (McElvaney, Greene, & Hogan, 2014). Researchers have found that adolescents' disclosure to parents about their whereabouts, activities, and friends is linked to positive adolescent adjustment (Smetana & Rote, 2015). A recent study of 10- to 18-year-olds found that lower adolescent disclosure to parents was linked to antisocial behavior (Criss & others, 2015).

Three ways that parents can engage in parental monitoring are (1) solicitation (asking questions), (2) control (enforcing disclosure rules), and (3) when youth don't comply, snooping. In a recent study, snooping was perceived by both adolescents and parents as the most likely of these three strategies to violate youths' privacy rights (Hawk, Becht, & Branje, 2016). Also, in this study, snooping was a relatively infrequent parental monitoring tactic but was a better indicator of problems in adolescent and family functioning than were solicitation and control.

Autonomy and Attachment

With most adolescents, parents are likely to find themselves engaged in a delicate balancing act, weighing competing needs for autonomy and control, for independence and connection.

The Push for Autonomy

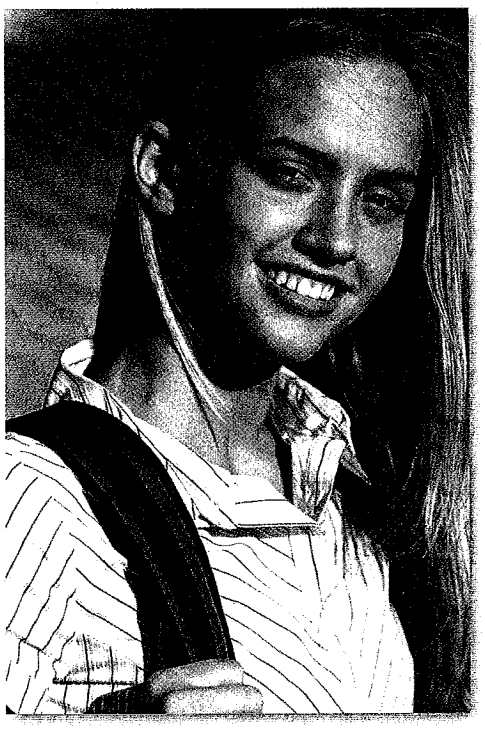
The typical adolescent's push for autonomy and responsibility puzzles and angers many parents. As parents see their teenager slipping from their grasp, they may have an urge to take stronger control. Heated emotional exchanges may ensue, with either side calling names, making threats, and doing whatever seems necessary to gain control. Parents may feel frustrated because they *expect* their teenager

to heed their advice, to want to spend time with the family, and to grow up to do what is right. Most parents anticipate that their teenager will have some difficulty adjusting to the changes that adolescence brings, but few parents imagine and predict just how strong an adolescent's desires will be to spend time with peers or how intensely adolescents will want to show that it is they—not their parents—who are responsible for their successes and failures.

Adolescents' ability to attain autonomy and gain control over their behavior is facilitated by appropriate adult reactions to their desire for control (McElhaney & Allen, 2012). At the onset of adolescence, the average individual does not have the knowledge to make appropriate or mature decisions in all areas of life. As the adolescent pushes for autonomy, the wise adult relinquishes control in those areas where the adolescent can make reasonable decisions, but continues to guide the adolescent to make reasonable decisions in areas in which the adolescent's knowledge is more limited. Gradually, adolescents acquire the ability to make mature decisions on their own.



What kinds of strategies can parents use to guide adolescents in effectively handling their increased motivation for autonomy?
© Myrleen Pearson/ PhotoEdit



According to one adolescent girl, Stacey Christensen, age 16: "I am lucky enough to have open communication with my parents. Whenever I am in need or just need to talk, my parents are there for me. My advice to parents is to let your teens grow at their own pace, be open with them so that you can be there for them. We need guidance; our parents need to help but not be too overwhelming."
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Gender differences characterize autonomy-granting in adolescence. Boys are given more independence than girls. In one study, this was especially true in U.S. families with a traditional gender-role orientation (Bumpus, Crouter, & McHale, 2001). Also, Latino parents protect and monitor their daughters more closely than is the case for non-Latino parents (Romo, Mireles-Rios, & Lopez-Tello, 2014). Although Latino cultures may place a stronger emphasis on parental authority and restrict adolescent autonomy, a recent study revealed that regardless of where they were born, Mexican-origin adolescent girls living in the United States expected autonomy at an earlier age than their mothers preferred (Bamaca-Colbert & others, 2012).

The Role of Attachment

Recall that one of the most widely discussed aspects of socioemotional development in infancy is secure attachment to caregivers (Pasco-Fearon & others, 2016; Thompson, 2015, 2016). In the past decade, researchers have explored whether secure attachment also might be an important concept in adolescents' relationships with their parents (Kobak & Kerig, 2015). Researchers have found that securely attached adolescents are less likely than those who are insecurely attached to have emotional difficulties and to engage in problem behaviors such as juvenile delinquency and drug abuse (Allen & Tan, 2016; de Vries & others, 2016; Hoeve & others, 2012). A recent study involving adolescents and emerging adults from 15 to 20 years of age found that insecure attachment to mothers was linked to becoming depressed and remaining depressed (Agerup & others, 2015). In a longitudinal study, Joseph Allen and colleagues (2009) found that secure attachment at 14 years of age was linked to a number of positive outcomes at 21 years of age, including relationship competence, financial/career competence, and fewer problematic behaviors. And

in a research review, the most consistent outcomes of secure attachment in adolescence involved positive peer relations and development of the adolescent's capacity to regulate emotions (Allen & Miga, 2010).

Parent-Adolescent Conflict

Although parent-adolescent conflict increases in early adolescence, it does not reach the tumultuous proportions G. Stanley Hall envisioned at the beginning of the twentieth century (Bornstein, Jager, & Steinberg, 2013). Rather, much of the conflict involves the everyday events of family life, such as keeping a bedroom clean, dressing neatly, getting home by a certain time, and not talking endlessly on the phone. The conflicts rarely involve major dilemmas such as drugs or delinquency.

Conflict with parents often escalates during early adolescence, remains somewhat stable during the high school years, and then lessens as the adolescent reaches 17 to 20 years of age. Parent-adolescent relationships become more positive if adolescents go away to college than if they attend college while living at home (Sullivan & Sullivan, 1980).



How Would You...?

As a **social worker,** how would you counsel a mother who is experiencing stress because of increased conflict with her young adolescent daughter?

The everyday conflicts that characterize parent-adolescent relationships may actually serve a positive developmental function. These minor disputes and negotiations facilitate the adolescent's transition from being dependent on parents to becoming an autonomous individual. Recognizing that conflict and negotiation can serve a positive developmental function can tone down parental hostility.

The old model of parent-adolescent relationships suggested that as adolescents mature they detach themselves from parents and move into a world of autonomy apart from parents. The old model also suggested that parent-adolescent conflict is intense and stressful throughout adolescence. The new model emphasizes that parents serve as important attachment figures and support systems while adolescents explore a wider, more complex social world. The new model also emphasizes that in most families, parent-adolescent conflict is moderate rather than severe and that the everyday negotiations and minor disputes not only are normal but also can serve the positive developmental function of helping the adolescent make the transition from childhood dependency to adult independence (see Figure 2).

Still, a high degree of conflict characterizes some parent-adolescent relationships (Moed & others, 2015; Skinner & McHale, 2016). And this prolonged, intense conflict is associated with various adolescent problems: movement out of the home, juvenile delinquency, school dropout, pregnancy and early marriage, membership in religious cults, and drug abuse (Brook & others, 1990). For example, a recent study found that a higher level of parent-adolescent conflict was associated with higher adolescent anxiety, depression, and aggression, and lower self-esteem (Smokowski & others, 2016). Also, a recent study found that high parent-adolescent conflict was associated with a lower level of empathy in adolescents throughout the six years of the study from 13 to 18 years of age (Van Lissa & others, 2015).

When families emigrate to another country, adolescents typically acculturate more quickly to the norms and values of their new country than do their parents (Fuligni, 2012).

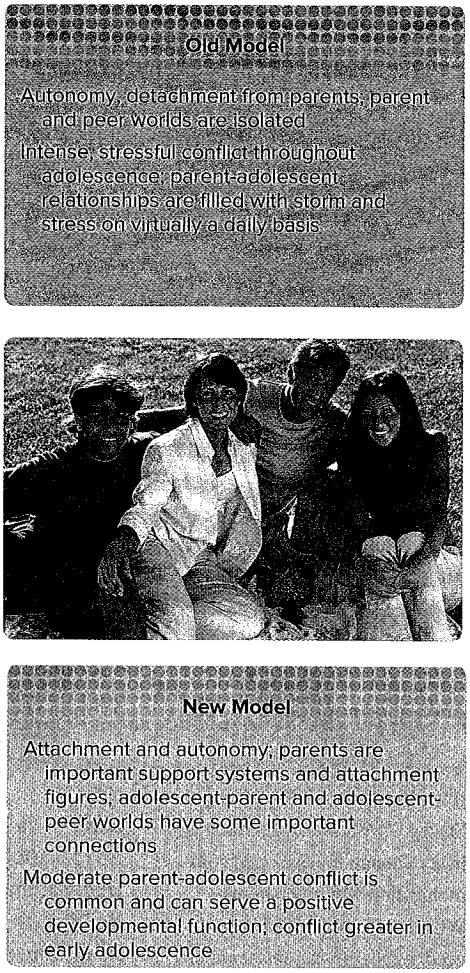


Figure 2 Old and New Models of Parent-Adolescent Relationships

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This likely occurs because of immigrant adolescents' exposure in school to the language and culture of the host country. The norms and values immigrant adolescents experience are especially likely to diverge from those of their parents in areas such as autonomy and romantic relationships. Such divergences are likely to increase parent-adolescent conflict in immigrant families. Andrew Fuligni (2012) argues that these conflicts aren't always expressed openly but are often present in underlying feelings. For example, immigrant adolescents may feel that their parents want them to give up their personal interests for the sake of the family, and the adolescents don't think this is fair. Such acculturation-based conflict focuses on issues related to core cultural values and is likely to occur in immigrant families, such as Latino and Asian American families, who come to the United States to live (Juang & Umana-Taylor, 2012). In a recent study of Chinese American families, parent-adolescent conflict was linked to a sense of alienation between parents and adolescents, which in turn was related to more depressive symptoms, delinquent behavior, and lower academic achievement (Hou, Kim, & Wang, 2016).

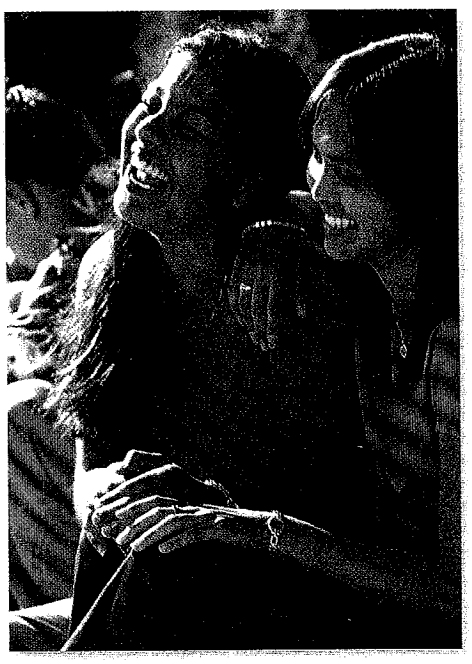
Peers

Peers play powerful roles in the lives of adolescents (Wentzel, 2015; Wentzel & Ramani, 2016). When you think back to your own adolescent years, you probably recall many of your most enjoyable moments as experiences shared with peers. Peer relations undergo important changes in adolescence, including changes in friendships, peer groups, and the beginning of romantic relationships.

Friendships

For most children, being popular with their peers is a strong motivator. Beginning in early adolescence, however, teenagers typically prefer to have a smaller number of friendships that are more intense and intimate than those of young children.

Harry Stack Sullivan (1953) was the most influential theorist to discuss the importance of adolescent friendships. In contrast with other psychoanalytic theorists who focused almost exclusively on parent-child relationships, Sullivan argued that friends are also important in shaping the development of children and adolescents. Everyone, said Sullivan, has basic social needs, such as the need for tenderness (secure attachment), playful companionship, social acceptance, intimacy, and sexual relations. Whether or not these needs are fulfilled largely determines our emotional well-being. For example, if the need for playful companionship goes unmet, then we become bored and depressed; if the need for social acceptance is not met, we suffer a diminished sense of self-worth.



What changes take place in friendship during the adolescent years?
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During adolescence, said Sullivan, friends become increasingly important in meeting social needs. In particular, Sullivan argued that the need for intimacy intensifies during early adolescence, motivating teenagers to seek out close friends. If adolescents fail to forge such close friendships, they experience loneliness and a reduced sense of self-worth. The nature of relationships with friends during adolescence can foreshadow the quality of romantic relationships in emerging adulthood. For example, a longitudinal study revealed that having more secure relationships with close friends at age 16 was linked with more positive romantic relationships at age 20 to 23 (Simpson & others, 2007).

Many of Sullivan's ideas have withstood the test of time. For example, adolescents report disclosing intimate and personal information to their friends more often than

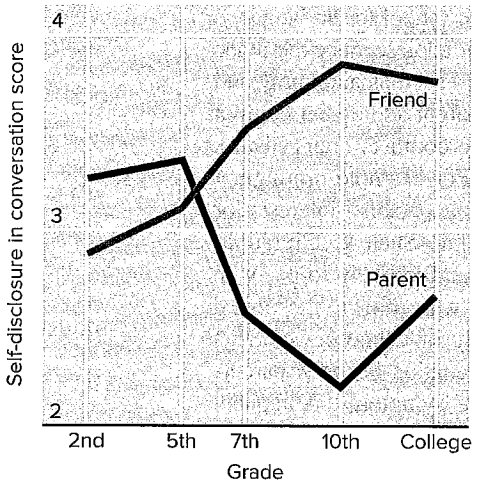


Figure 3 Developmental Changes in Self-Disclosing Conversations
Self-disclosing conversations with friends increased dramatically in adolescence while declining in an equally dramatic fashion with parents. However, self-disclosing conversations with parents began to pick up somewhat during the college years. The measure of self-disclosure involved a 5-point rating scale completed by the children and youth, with a higher score representing greater self-disclosure. The data shown represent the means for each age group.

do younger children (Buhrmester, 1998) (see Figure 3). Adolescents also say they depend more on friends than on parents to satisfy their needs for companionship, reassurance of worth, and intimacy. The ups and downs of experiences with friends shape adolescents' well-being (Prinstein & Giletta, 2016). Adolescent girls are more likely to disclose information about problems to a friend than are adolescent boys (Rose & others, 2012).

Although having friends can be a developmental advantage, not all friendships are alike and the quality of friendship matters (Choukas-Bradley & Prinstein, 2016; Rubin & others, 2016; Wentzel & Muenks, 2016). People differ in the company they keep—that is, who their friends are. It is a developmental disadvantage to have coercive, conflict-ridden, and poor-quality friendships (Chen, Drabick, & Burgers, 2015; Graber, Turner, & Madill, 2016; Rubin, Bukowski, & Bowker, 2015). A recent study revealed that having friends who engage in delinquent behavior is associated with early onset and more persistent delinquency (Evans, Simons, & Simons, 2015). Another recent study found that adolescents adapted their smoking and drinking behavior to that of their best friends (Wang & others, 2016b).

Although most adolescents develop friendships with individuals who are close to their own age, some adolescents become best friends with younger or older individuals. Adolescents who interact with older youth engage in deviant behavior more frequently, but it is not known whether the older youth guide younger adolescents toward deviant behavior or whether the younger adolescents were already prone to deviant behavior before they developed friendships with older youth.

Peer Groups

How extensive is peer pressure in adolescence? What roles do cliques and crowds play in adolescents' lives? As we see next, researchers have found that the standards of peer groups and the influence of crowds and cliques become increasingly important during adolescence.

Peer Pressure

Young adolescents conform more to peer standards than children do (Choukas-Bradley & Prinstein, 2016). Around the eighth and ninth grades, conformity to peers—especially to their antisocial standards—peaks (Brown & Larson, 2009). At this point, adolescents are most likely to go along with a peer to steal hubcaps off a car, paint graffiti on a wall, or steal cosmetics from a store counter. One study found that U.S. adolescents are more likely than Japanese adolescents to put pressure on their peers to resist parental influence (Rothbaum & others, 2000). Adolescents are more likely to conform to their peers when they are uncertain about their social identity and when they are in the presence of someone they perceive to have higher status than they do (Prinstein & Giletta, 2016). Also, a recent study found that boys were more likely to be influenced by peer pressure involving sexual behavior than were girls (Widman & others, 2016).



What characterizes peer pressure in adolescence?
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Cliques and Crowds

clique A small group that ranges from 2 to about 12 individuals, averaging about 5 or 6 individuals, and often consists of adolescents who engage in similar activities.

crowd A larger group structure than a clique, a crowd is usually formed based on reputation, and members may or may not spend much time together.

Cliques and crowds assume more important roles during adolescence than during childhood (Brown, 2011). **Cliques** are small groups that range from 2 to about 12 individuals and average about 5 or 6 individuals. The clique members are usually of the same sex and about the same age.

Cliques can form because adolescents engage in similar activities, such as being in a club or on a sports team. Some cliques also form because of friendship. Several adolescents may form a clique because they have spent time with each other, share mutual interests, and enjoy each other's company. Not necessarily friends to start with, they often develop a friendship if they stay in the clique. What do adolescents do in cliques? They share ideas and hang out together. Often they develop an in-group identity in which they believe that their clique is better than other cliques.

Crowds are larger than cliques and less personal. Adolescents are usually members of a crowd based on reputation, and they may or may not spend much time together. Many crowds are defined by the activities adolescents engage in (such as "jocks" who are good at sports or "druggies" who take drugs).

Dating and Romantic Relationships

Adolescents spend considerable time either dating or thinking about dating (Davila, Capaldi, & La Greca, 2016; Furman & Rose, 2015). Dating can be a form of recreation, a source of status, a setting for learning about close relationships, and a way to find a mate.

Developmental Changes in Dating and Romantic Relationships

Three stages characterize the development of romantic relationships in adolescence (Connolly & McIsaac, 2009):

1. *Entering into romantic attractions and affiliations at about age 11 to 13.* This initial stage is triggered by puberty. From age 11 to 13, adolescents become intensely interested in romance and it dominates many conversations with same-sex friends. Developing a crush on someone is common, and the crush often is shared with a same-sex friend. Young adolescents may or may not interact with the individual who is the object of their infatuation. When dating occurs, it usually takes place in a group setting.
2. *Exploring romantic relationships at approximately age 14 to 16.* At this point in adolescence, two types of romantic involvement occur: (a) *Casual dating* emerges between individuals who are mutually attracted. These dating experiences are often short-lived, last a few months at best, and usually endure no longer than a few weeks. (b) *Dating in groups* is common and reflects the importance of peers in adolescents' lives. A friend often acts as a third-party facilitator of a potential dating relationship by communicating their friend's romantic interest and determining whether the other person feels a similar attraction.
3. *Consolidating dyadic romantic bonds at about age 17 to 19.* At the end of the high school years, more serious romantic relationships develop. This stage is characterized by the formation of strong emotional bonds more closely resembling those in adult romantic relationships. These bonds often are more stable and enduring than earlier bonds, typically lasting one year or more.



What are some developmental changes in dating and romantic relationships in adolescence?

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Two variations on these stages in the development of romantic relationships in adolescence involve early and late bloomers (Connolly & McIsaac, 2009). *Early bloomers* include 15 to 20 percent of 11- to 13-year-olds who say that they currently are in a romantic relationship and 35 percent who indicate that they have had some prior experience in romantic relationships. *Late bloomers* comprise approximately 10 percent of 17- to 19-year-olds who say that they have had no experience with romantic relationships and another 15 percent who report that they have not engaged in any romantic relationships that lasted more than four months. A recent study found that early bloomers externalized problem behaviors through adolescence more than their on-time and late-bloomer counterparts (Connolly & others, 2013).

Dating in Gay and Lesbian Youth

Recently, researchers have begun to study romantic relationships among gay and lesbian youth (Savin-Williams, 2015). Many sexual minority youth date other-sex peers, which can help them to clarify their sexual orientation or disguise it from others (Savin-Williams & Cohen, 2015). Most gay and lesbian youth have had some same-sex sexual experience, often with peers who are "experimenting," and then go on to a primarily heterosexual orientation (Diamond & Savin-Williams, 2015).

Sociocultural Contexts and Dating

The sociocultural context exerts a powerful influence on adolescents' dating patterns (Moosmann & Roosa, 2015). This influence may be seen in differences in dating patterns among ethnic groups within the United States. Values, religious beliefs, and traditions often dictate the age at which dating begins, how much freedom in dating is allowed, whether dates must be chaperoned by adults or parents, and the roles of males and females in dating. For example, Latino and Asian American cultures have more conservative standards regarding adolescent dating than does the Anglo-American culture. Dating may become a source of conflict within a family if the parents have immigrated from cultures in which dating begins at a late age, little freedom in dating is allowed, dates are chaperoned, and dating is especially restricted for adolescent girls. A recent study found that mother-daughter conflict in Mexican American families was linked to an increase in daughters' romantic involvement (Tyrell & others, 2016). When immigrant adolescents choose to adopt the ways of the dominant U.S. culture (such as unchaperoned dating), they often clash with parents and extended-family members who have more traditional values.

Dating and Adjustment

Researchers have linked dating and romantic relationships with various measures of how well adjusted adolescents are (Davila, Capaldi, & La Greca, 2016). For example, one study of 200 tenth-graders revealed that the more romantic experiences they had had, the more likely they were to report high levels of social acceptance, friendship competence, and romantic competence; however, having more romantic experience also was linked to a higher level of substance use, delinquency, and sexual behavior (Furman, Low, & Ho, 2009).

Dating and romantic relationships at an early age can be especially problematic (Furman & Rose, 2015). One study found that romantic activity was linked to depression in early adolescent girls (Starr & others, 2012). Researchers also have found that early dating and "going with" someone are linked with adolescent pregnancy and problems at home and school (Florsheim, Moore, & Edgington, 2003).

How Would You...?

As a **psychologist,** how would you explain the risks of dating and romantic relationships during early adolescence?



Culture and Adolescent Development

We live in an increasingly diverse world, one that includes more extensive contact between adolescents from different cultures and ethnic groups. In this section, we explore these differences as they relate to adolescents. We explore how adolescents in various

cultures spend their time, and some of the rites of passage they undergo. We also examine how ethnicity and the media affect U.S. adolescents and influence their development.



Asian Indian adolescents in a marriage ceremony.

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Cross-Cultural Comparisons

What traditions remain for adolescents around the globe? What circumstances are changing adolescents' lives?

Traditions and Changes in Adolescence Around the Globe

Depending on the culture being observed, adolescence may involve many different experiences (Arnett, 2015).

Health Adolescent health and well-being have improved in some respects but not in others. Overall, fewer adolescents around the world die from infectious diseases and malnutrition now than in the past (UNICEF, 2016). However, a number of adolescent health-compromising behaviors (especially illicit drug use and unprotected sex) are increasing in frequency. Extensive increases in the rates of HIV in adolescents have occurred in many sub-Saharan countries (UNICEF, 2016).



How Would You...?

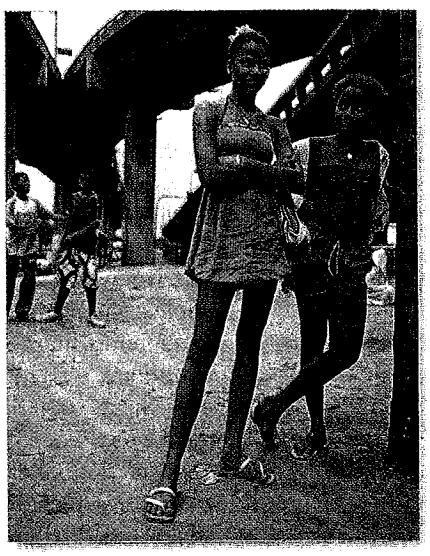
As a **health-care professional,** how would you explain to policy makers and insurance providers the importance of cultural context when creating guidelines for adolescent health coverage?



Muslim school in Middle East with boys only.

© AFP/Getty Images

Gender Around the world, the experiences of male and female adolescents continue to be quite different (Larson, Wilson, & Rickman, 2009). Except in a few regions such as Japan, the Philippines, and Western countries, males have far greater access to educational opportunities than females do (UNICEF, 2016). In many countries, adolescent females have less freedom than males to pursue a variety of careers and engage in various leisure activities. Gender differences in sexual expression are widespread, especially in India, Southeast Asia, Latin America, and Arab countries where there are far more restrictions on the sexual activity of adolescent females than on that of males. These gender differences do appear to be narrowing over time, however. In some countries, educational and career opportunities for women are expanding, and control over adolescent girls' romantic and sexual relationships is weakening.

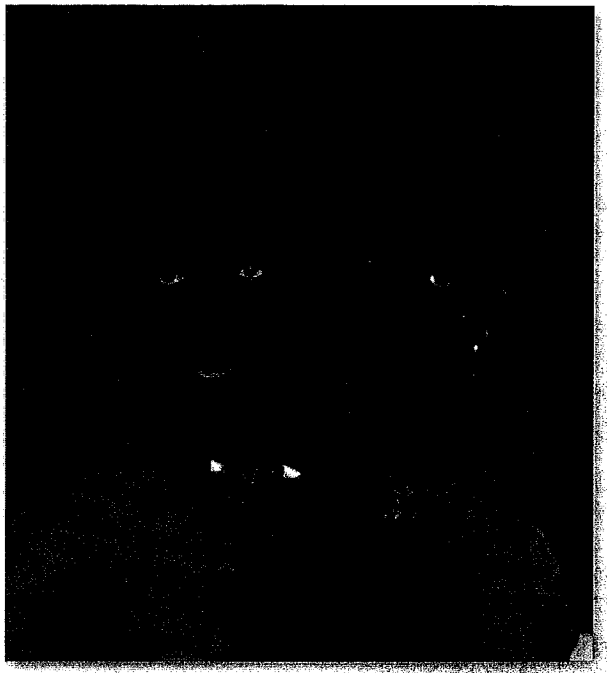


Street youth in Rio de Janeiro.

© Tom Stoddart/Getty Images

Family In some countries, adolescents grow up in closely knit families with extensive extended-kin networks that retain a traditional way of life. For example, in Arab countries, "adolescents are taught strict codes of conduct and loyalty" (Brown & Larson, 2002, p. 6). However, in Western countries such as the United States, parenting is less authoritarian than in the past, and much larger numbers of adolescents are growing up in divorced families and stepfamilies.

In many countries around the world, current trends "include greater family mobility, migration to urban areas, family members working in distant cities or countries, smaller families, fewer extended-family households, and increases in mothers' employment" (Brown & Larson, 2002, p. 7). Unfortunately, many of these changes may reduce the ability of families to spend time with their adolescents.



These Congolese Kota boys painted their faces as part of a rite of passage to adulthood. *What rites of passage do American adolescents have?*

© Daniel Laine/Gamma Rapho

Peers Some cultures give peers a stronger role in adolescence than other cultures do (Brown & Larson, 2002). In most Western nations, peers figure prominently in adolescents' lives, in some cases taking on roles that would otherwise be assumed by parents. Among street youth in South America, the peer network serves as a surrogate family that supports survival in dangerous and stressful settings. In other regions of the world, such as in Arab countries, peer relations are restricted, especially for girls (Booth, 2002).

Adolescents' lives, then, are shaped by a combination of change and tradition. Researchers have found both similarities and differences in the experiences of adolescents in different countries (Larson & Dawes, 2015).

Rites of Passage

Another variation in the experiences of adolescents in different cultures is whether the adolescents go through a rite of passage. Some societies have elaborate ceremonies that signal the adolescent's move to maturity and achievement of adult status (Ember, Ember, & Peregrine, 2015). A **rite of passage** is a ceremony or ritual that marks an individual's transition from one status to another. Most rites of passage focus on the transition to adult status. In many primitive cultures, rites of passage are the avenue through which adolescents gain access to sacred adult practices, to knowledge, and to sexuality. These rites often involve dramatic practices intended to facilitate the adolescent's separation from the immediate family, especially the mother. The transformation is usually characterized by some form of ritual death and rebirth, or by means of contact with the spiritual world. Bonds are forged between the adolescent and the adult instructors through shared rituals, hazards, and secrets to allow the adolescent to enter the adult world. This kind of ritual provides a forceful and discontinuous entry into the adult world at a time when the adolescent is perceived to be ready for the change.

An especially rich tradition of rites of passage for adolescents has prevailed in African cultures, especially sub-Saharan Africa. Under the influence of Western industrialized culture, many of these rites are disappearing today, although they are still prevalent in locations where formal education is not readily available.

How Would You...?

As an **educator,** how would you modify high school graduation to make it a more meaningful rite of passage for adolescents in the United States?

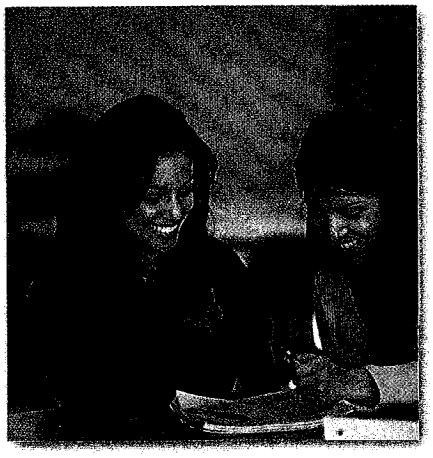
Do we have such rites of passage for American adolescents? We certainly do not have universal formal ceremonies that mark the passage from adolescence to adulthood. Certain religious and social groups do, however, have initiation ceremonies that indicate that an advance in maturity has been reached: the Jewish bar and bat mitzvah, the Catholic confirmation, and social debuts, for example. School graduation ceremonies come the closest to being culture-wide rites of passage in the United States. The high school graduation ceremony has become nearly universal for middle-class adolescents and increasing numbers of adolescents from low-income backgrounds.

Ethnicity

Earlier in this chapter we explored the identity development of ethnic minority adolescents. Here, we further examine immigration and the relationship between ethnicity and socioeconomic status.

rite of passage A ceremony or ritual that marks an individual's transition from one status to another. Most rites of passage focus on the transition to adult status.

Immigration



What are some cultural adaptations these Mexican American girls likely have made as immigrants to the United States?

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Relatively high rates of immigration are contributing to the growing proportion of ethnic minority adolescents and emerging adults in the United States (Fuligni & Tsai, 2015; Kane & others, 2016). Immigrant families are those in which at least one of the parents is born outside of the country of residence. Variations in immigrant families involve whether one or both parents are foreign born, whether the child was born in the host country, and the ages at which immigration took place for both the parents and the children (Kim & others, 2015).

Different models have been proposed as to whether children and adolescents in immigrant families are more vulnerable or more successful in relation to the general population of children and adolescents (Crosnoe & Fuligni, 2012). Historically, *an immigrant risk model* was emphasized, concluding that youth of immigrants had a lower level of well-being and were at risk for more problems. More recently, an *immigrant paradox model* has been proposed, emphasizing that despite the many cultural, socioeconomic, language, and other obstacles that immigrant families face, their youth show a high level of well-being and fewer problems than native-born youth (Garcia Coll & others, 2012). Based on current research, some support exists for each model. Robert Crosnoe and Andrew Fuligni (2012, p. 1473) reached the following conclusion:

> Some children from immigrant families are doing quite well, some less so, depending on the characteristics of migration itself (including the nation of origin) and their families' circumstances in their new country (including their position in socioeconomic and race-ethnic stratification systems).

What are some of the circumstances immigrants face that challenge their adjustment? Immigrants often experience stressors uncommon to or less prominent among longtime residents, such as language barriers, dislocations and separations from support networks, the dual struggle to preserve identity and to acculturate, and changes in SES status (Kao & Huang, 2015; Schwartz & others, 2015c). Many individuals in immigrant families are dealing with the problem of being undocumented. Living in an undocumented family can affect children's and adolescents' developmental outcomes through parents being unwilling to sign up for services for which they are eligible, through conditions linked to low-wage work and lack of benefits, through stress, and through a lack of cognitive stimulation in the home. Consequently, when working with adolescents and their immigrant families, counselors need to adapt intervention programs to optimize cultural sensitivity (Gonzales & others, 2016; Sue & others, 2015).

The ways in which ethnic minority families deal with stress depend on many factors (Slopen & others, 2015; Spencer & Swanson, 2016). Whether the parents are native-born or immigrants, how long the family has been in the United States, its socioeconomic status, and its national origin all make a difference. A recent study revealed that parents' education before migrating was strongly linked to their children's academic achievement (Pong & Landale, 2012). Another recent study found that first-generation immigrant adolescents had more internalizing problems (anxiety and depression, for example) than second-generation immigrants (Katsiaficas & others, 2013).

Ethnicity and Socioeconomic Status

Much of the research on ethnic minority adolescents has failed to tease apart the influences of ethnicity and socioeconomic status (SES). These factors can interact

in ways that exaggerate the influence of ethnicity because ethnic minority individuals are overrepresented in the lower socioeconomic levels of American society (Cushner, McClelland, & Safford, 2015). Consequently, researchers too often have given ethnic explanations for aspects of adolescent development that were largely attributable to SES.

Not all ethnic minority families are poor. However, poverty contributes to the stressful life experiences of many ethnic minority adolescents (Duncan, Magnuson, & Votruba-Drzal, 2015; Wadsworth & others, 2016). Thus, many ethnic minority adolescents experience a double disadvantage: (1) prejudice, discrimination, and bias because of their ethnic minority status; and (2) the stressful effects of poverty (McCartney & Yoshikawa, 2015).

Although some ethnic minority youth come from middle-income backgrounds, economic advantage does not entirely enable them to escape the prejudice, discrimination, and bias associated with being a member of an ethnic minority group (Golnick & Chinn, 2017; Marks & others, 2015). Even Japanese Americans, who are often characterized as a "model minority" because of their strong achievement orientation and family cohesiveness, still experience stress associated with ethnic minority status.

The Media

The culture adolescents experience involves not only cultural values, SES, and ethnicity, but also media influences (Calvert, 2015; Maloy & others, 2017; Roblyer, 2016). To better understand various aspects of U.S. adolescents' media use, the Kaiser Family Foundation funded national surveys in 1999, 2004, and 2009. The 2009 survey documented that adolescent media use had increased dramatically in the past decade (Rideout, Foehr, & Roberts, 2010). Today's youth live in a world in which they are encapsulated by media. In this 2009 survey, 8- to 11-year-olds used media 5 hours and 29 minutes a day, but 11- to 14-year-olds used media an average of 8 hours and 40 minutes a day, and 15- to 18-year-olds an average of 7 hours and 58 minutes a day. Thus, media use jumps more than 3 hours in early adolescence! Adding up the daily media use figures to obtain weekly media use leads to the staggering levels of more than 60 hours a week of media use by 11- to 14-year-olds and almost 56 hours a week by 15- to 18-year-olds!

A major trend in the use of technology is the dramatic increase in media multitasking (Courage & others, 2015). In the 2009 survey, when the amount of time spent multitasking was included in computing media use, 11- to 14-year-olds spent nearly 12 hours a day (compared with almost 9 hours a day when multitasking was not included) exposed to media (Rideout, Foehr, & Roberts, 2010)! A recent study of 8- to 12-year-old girls also found that a higher level of media multitasking was linked to negative social well-being while a higher level of face-to-face communication was associated with positive social well-being indicators, such as greater social success, feeling more normal, and having fewer friends whom parents thought were a bad influence (Pea & others, 2012). In another study, heavy media multitaskers were more likely to be depressed and have social anxiety than their counterparts who engaged in a lower incidence of media multitasking (Becker, Alzahabi, & Hopwood, 2013). And in a recent research review, a higher level of media multitasking was linked to lower levels of school achievement, executive function, and growth mindset in adolescents (Cain & others, 2016).

In some cases, media multitasking—such as text messaging, listening to an iPod, and updating a YouTube site simultaneously—is engaged in while doing homework. It is hard to imagine that this allows a student to do homework efficiently, although there is little research on media multitasking. A recent research review concluded that at a general level, using digital technologies (surfing the Internet, texting someone) while engaging in a learning task (reading, listening to a lecture) distracts learners and impairs performance on many tasks (Courage & others, 2015). Also in this research, it was concluded that when driving subtasks such as various perceptual-motor

activities (steering control, changing lanes, maneuvering through traffic, braking, and acceleration) and ongoing cognitive tasks (planning, decision making, or maintaining a conversation with a passenger) are combined with interactive in-vehicle devices (phones, navigation aids, portable music devices), the task of driving becomes more complex and the potential for distraction high.

Mobile media, such as cell phones and iPods, are mainly driving the increased media use by adolescents. For example, in the 2004 survey, only 18 percent of youth owned an iPod or MP3 player but in 2009, 76 percent owned them; in 2004, 39 percent owned a cell phone, a figure that jumped to 66 percent in 2009 (Rideout, Foehr, & Roberts, 2010),

The digitally mediated social environment of adolescents and emerging adults includes e-mail, instant messaging, social networking sites such as Facebook, chat rooms, videosharing and photosharing, multiplayer online computer games, and virtual worlds (Lever-Duffy & McDonald, 2015; Smaldino & others, 2015). Most of these digitally mediated social interactions began on computers but more recently have also shifted to cell phones, especially smartphones.

A national survey revealed dramatic increases in adolescents' use of social media and text messaging (Lenhart, 2015a). In 2015, 92 percent of U.S. 13- to 17-year-olds reported using social networking sites daily. Twenty-four percent of the adolescents said they go online almost constantly. Much of this increase in going online has been fueled by smartphones and mobile devices. Facebook is the most popular and frequently used social networking site—71 percent reported using Facebook and half reported using Instagram.

Text messaging has become the main way that adolescents connect with their friends, surpassing face-to-face contact, e-mail, instant messaging, and voice calling (Lenhart, 2015b). In the national survey and a further update (Lenhart, 2012, 2015b), daily text messaging increased from 38 percent who texted friends daily in 2008 to 55 percent in 2015. However, voice mail is the primary way that most adolescents prefer to connect with parents.

Adolescent Problems

Earlier we described several adolescent problems: substance abuse, sexually transmitted infections, and eating disorders. In this chapter, we examine the problems of juvenile delinquency, depression, and suicide. We also explore interrelationships among adolescent problems and how such problems can be prevented or remedied.

Juvenile Delinquency

The label **juvenile delinquent** is applied to an adolescent who breaks the law or engages in behavior that is considered illegal. Like other categories of disorders, juvenile delinquency is a broad concept; legal infractions range from littering to murder. Because the adolescent technically becomes a juvenile delinquent only after being judged guilty of a crime by a court of law, official records do not accurately reflect the number of illegal acts juvenile delinquents commit (Puzzanchera & Robson, 2014).

Males are more likely to engage in delinquency than females are. However, delinquency caseloads involving females increased from 19 percent in 1985 to 27 percent in 2005 (Puzzanchera & Sickmund, 2008).

Delinquency rates among minority groups and lower-socioeconomic-status youth are especially high in proportion to the overall population of these groups. However, such groups have less influence over the judicial decision-making process in the United States and therefore may be judged delinquent more readily than their non-Latino White, middle-socioeconomic-status counterparts.

juvenile delinquent An adolescent who breaks the law or engages in behavior that is considered illegal.



What are some factors that are linked to whether adolescents will engage in delinquent acts?

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One issue in juvenile justice is whether an adolescent who commits a crime should be tried as an adult (Cauffman & others, 2015). Some psychologists have proposed that individuals 12 and under should not be evaluated under adult criminal laws and that those 17 and older should be (Cauffman & others, 2015). They also recommend that individuals 13 to 16 years of age be given some type of individualized assessment to determine whether they will be tried in a juvenile court or an adult criminal court.

Causes of Delinquency

What causes delinquency? Many causes have been proposed, including heredity, identity problems, community influences, and family experiences. Erik Erikson (1968), for example, argues that adolescents whose development has restricted them from acceptable social roles, or made them feel that they cannot measure up to the demands placed on them, may choose a negative identity. Adolescents with a negative identity may find support for their delinquent image among peers, reinforcing the negative identity. For Erikson, delinquency is an attempt to establish an identity, even if it is a negative one.

Although delinquency is less exclusively a phenomenon of lower socioeconomic status (SES) than it was in the past, some characteristics of lower-SES culture might promote delinquency (Dawson-McClure & others, 2015). The norms of many lower-SES peer groups and gangs are antisocial, or counterproductive to the goals and norms of society at large. Getting into or staying out of trouble are prominent features of life for some adolescents in low-income neighborhoods. One study found that youth whose families had experienced repeated poverty were more than twice as likely to be delinquent at 14 and 21 years of age (Najman & others, 2010).

Certain characteristics of family support systems are also associated with delinquency (Burke & Loeber, 2015; Dishion & Patternson, 2016). Parental monitoring of adolescents is especially important in determining whether an adolescent becomes a delinquent (Fosco & others, 2012). And one study found that low rates of delinquency from 14 to 23 years of age were associated with an authoritative parenting style (Mann & others, 2015). Further, recent research indicates that family therapy is often effective in reducing delinquency (Darnell & Schuler, 2015). A recent meta-analysis found that of five program types (case management, individual treatment, youth court, restorative justice, and family treatment), family treatment was the only one that was linked to a reduction in recidivism for juvenile offenders (Schwalbe & others, 2012). Also, in a recent study, family therapy improved juvenile court outcomes beyond what was achieved in non-family-based treatment, especially in reducing criminal behavior and rearrests (Dakof & others, 2015).

How Would You...?

As a **social worker,** how would you apply your knowledge of juvenile delinquency and adolescent development to improve the juvenile justice system?



An increasing number of studies have found that siblings can influence whether an adolescent becomes a delinquent (Bank, Burraston, & Snyder, 2004). Peer relations also can influence delinquency (Dong & Krohn, 2016; Trucco & others, 2014). A recent study revealed that having friends who engage in delinquency was associated with early onset and more persistent delinquency (Evans, Simons, & Simons, 2016).

Lack of academic success is associated with delinquency (Mercer & others, 2016). And a number of cognitive factors such as low self-control, low intelligence, and lack of sustained attention are linked to delinquency (Fine & others, 2016).

Rodney Hammond is an individual whose goal is to help at-risk adolescents, such as juvenile delinquents, cope more effectively with their lives. Read about his work in *Careers in Life-Span Development.*

Careers in life-span development

Rodney Hammond, Health Psychologist

In describing his college experiences, Rodney Hammond said:

> When I started as an undergraduate at the University of Illinois, Champaign-Urbana, I hadn't decided on my major. But to help finance my education, I took a part-time job in a child development research program sponsored by the psychology department. There, I observed inner-city children in settings designed to enhance their learning. I saw firsthand the contribution psychology can make, and I knew I wanted to be a psychologist. (American Psychological Association, 2003, p. 26)

Rodney Hammond went on to obtain a doctorate in school and community psychology with a focus on children's development. For a number of years, he trained clinical psychologists at Wright State University in Ohio and directed a program to reduce violence in ethnic minority youth. There, he and his associates taught at-risk youth how to use social skills to effectively manage conflict and to recognize situations that could lead to violence. Today, Rodney is Director of Violence Prevention at the Centers for Disease Control and Prevention in Atlanta, Georgia. Rodney says that if you are interested in people and problem solving, psychology is a wonderful way to put these subjects together.

School psychology was one of Rodney Hammond's doctoral concentrations. School psychologists focus on improving the psychological and intellectual well-being of elementary, middle/junior, and high school students. They give psychological tests, interview students and their parents, consult with teachers, and may provide counseling to students and their families. They may work in a centralized office in a school district or in one or more schools. School psychologists usually have a master's or doctoral degree in school psychology. In graduate school, they take courses in counseling, assessment, learning, and other areas of education and psychology.



Rodney Hammond counsels an adolescent girl about the risks of adolescence and how to effectively cope with them.

© Dr. Rodney Hammond

Depression and Suicide

What is the nature of depression in adolescence? What causes an adolescent to commit suicide?

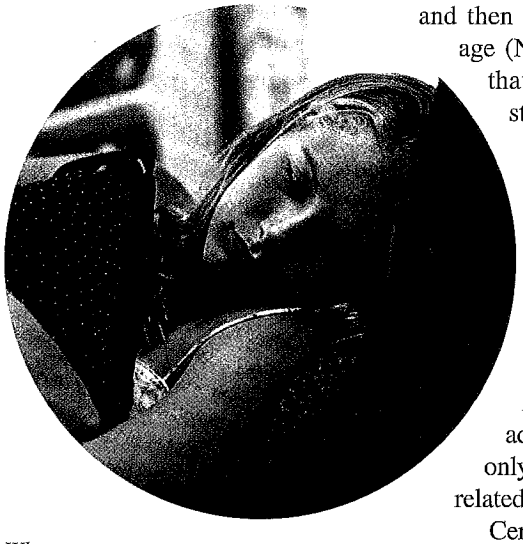
Depression

Rates of ever experiencing major depressive disorder range from 15 to 20 percent for adolescents (Graber & Sontag, 2009). Adolescents who are experiencing a high level of stress and/or a loss of some type are at risk for developing depression (Hamilton & others, 2015). Also, a recent study found that adolescents who became depressed were characterized by a sense of hopelessness (Weersing & others, 2016).

By about age 15, adolescent females have a rate of depression that is twice that of adolescent males. Reasons for this include that females tend to ruminate in their depressed mood and amplify it; females' self-images, especially their body images, are more negative than males'; females face more discrimination; and puberty occurs earlier for girls (Chen & others, 2015; Kouros, Morris, & Garber, 2016).

Although these gender differences in adolescent depression hold true for many cultures, a recent study of more than 17,000 Chinese 11- to 22-year-olds revealed that the male adolescents and emerging adults experienced more depression than their female counterparts did (Sun & others, 2010). Explanation of the higher rate of depression among males in China focused on stressful life events and a less positive coping style.

Is adolescent depression linked to problems in emerging and early adulthood? A recent study initially assessed U.S. adolescents when they were 16 to 17 years of age



What are some characteristics of adolescents who become depressed? What are some factors that are linked with suicide attempts by adolescents?

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and then again every two years until they were 26 to 27 years of age (Naicker & others, 2013). In this study, significant effects that persisted after 10 years were depression recurrence, stronger depressive symptoms, migraine headaches, poor self-rated health, and low levels of social support. Adolescent depression was not associated with employment status, personal income, marital status, and educational attainment a decade later.

Genes are linked to adolescent depression (Hansell & others, 2012). A recent study found that certain dopamine-related genes were associated with depressive symptoms in adolescents (Adkins & others, 2012). And another recent study revealed that the link between adolescent girls' perceived stress and depression occurred only when the girls had the short version of the serotonin-related gene—5HTTLPR (Beaver & others, 2012).

Certain family factors place adolescents at risk for developing depression (Kelly & others, 2016; Olino & others, 2016). These include having a depressed parent, emotionally unavailable parents, parents who have high marital conflict, and parents with financial problems. A recent study also revealed that mother-adolescent co-rumination, especially when focused on the mother's problems, were linked to adolescents' depression (Waller & Rose, 2010). Also, another recent study found that positive parenting characteristics such as emotional and educational support were associated with less depression in adolescents (Smokowski & others, 2015).

Poor peer relationships also are associated with adolescent depression (Vanhalst & others, 2012). Not having a close relationship with a best friend, having less contact with friends, having friends who are depressed, and experiencing peer rejection all increase depressive tendencies in adolescents (Platt & others, 2013). One study found that relational aggression was linked to depression for girls (Spieker & others, 2012). And as indicated earlier in this chapter, problems in adolescent romantic relationships can also trigger depression (Davila, Capaldi, & La Greca, 2016).

A recent research review concluded that drug therapy using serotonin reuptake inhibitors, cognitive behavior therapy, and interpersonal therapy are effective in treating adolescent depression (Maalouf & Brent, 2012). However, the most effective treatment was a combination of drug therapy and cognitive behavior therapy. Another research review concluded that Prozac and other SSRIs (selective serotonin reuptake inhibitors) show clinical benefits for adolescents at risk for moderate and severe depression (Cousins & Goodyear, 2015).

Suicide

Suicide behavior is rare in childhood but escalates in adolescence and then increases further in emerging adulthood (Park & others, 2006). Suicide is the third-leading cause of death in 10- to 19-year-olds today in the United States. Approximately 4,600 adolescents commit suicide each year (Centers for Disease Control and Prevention, 2015).

Although a suicide threat should always be taken seriously, far more adolescents contemplate or attempt it unsuccessfully than actually commit it. A recent national study found that in the last two decades there has been a considerable decline in the percentage of adolescents who think seriously about committing suicide, although from 2009 to 2013 this percentage increased from 14 to 17 percent (Kann & others, 2014). In this study, in 2013, 8 percent attempted suicide and 3 percent engaged in suicide attempts that required medical attention.

Females are more likely to attempt suicide than males, but males are more likely to succeed in committing suicide (Hamilton & Klimes-Dougan, 2015). Males use more lethal means, such as guns, in their suicide attempts, whereas adolescent females are more likely to cut their wrists or take an overdose of sleeping pills—methods less likely to result in death.

Suicidal adolescents often have depressive symptoms. Although not all depressed adolescents are suicidal, depression is the most frequently cited factor associated with

adolescent suicide (du Roscoat & others, 2016; Mirkovic & others, 2015). A recent study also found that both depression and hopelessness were predictors of whether adolescents repeated a suicide attempt over a six-month period (Consoli & others, 2015). Further, a study indicated that adolescents who used alcohol while they were sad or depressed were at risk for attempting suicide (Schilling & others, 2009).

Family and peer relationships also are linked to suicide attempts. One study found that family discord and negative relationships with parents were associated with increased suicide attempts by depressed adolescents (Consoli & others, 2013). In a recent study, child maltreatment was linked to adolescent suicide attempts (Hadland & others, 2015). Further, being victimized by bullying is associated with suicide-related thoughts and behavior (McMahon & others, 2012). Peer victimization has been linked to suicidal ideation and suicide attempts, with cyberbullying more strongly associated with suicidal ideation than traditional bullying (van Geel, Vedder, & Tanilon, 2014).



How Would You...?

As a **psychologist,** how would you talk with an adolescent who has just threatened suicide?

Recent and current stressful circumstances, such as getting poor grades in school or experiencing the breakup of a romantic relationship, may trigger suicide attempts (Soller, 2014). In a recent study, a lower level of school connectedness was associated with decreased suicidal ideation in female and male adolescents, and with suicide attempts in female adolescents (Langille & others, 2015).

The Interrelation of Problems and Successful Prevention/Intervention Programs

The four problems that affect the most adolescents are (1) drug abuse, (2) juvenile delinquency, (3) sexual problems, and (4) school-related problems (Dryfoos, 1990; Dryfoos & Barkin, 2006). The adolescents most at risk have more than one of these problems.

Researchers are increasingly finding that problem behaviors in adolescence are interrelated (Feldstein Ewing & others, 2016; Nakawaki & Crano, 2015). For example, heavy substance abuse is related to early sexual activity, lower grades, dropping out of school, and delinquency (Swartzendruber & others, 2015). Early initiation of sexual activity is associated with the use of cigarettes and alcohol, the use of marijuana and other illicit drugs, lower grades, dropping out of school, and delinquency (Chan & others, 2015). Delinquency is related to early sexual activity, early pregnancy, substance abuse, and dropping out of school (Dudovitz, McCoy, & Chung, 2015; Liddon & others, 2016). As many as 10 percent of adolescents in the United States have been estimated to engage in all four of these problem behaviors (for example, adolescents who have dropped out of school are behind in their grade level, are users of heavy drugs, regularly use cigarettes and marijuana, and are sexually active but do not use contraception). In 1990, it was estimated that another 15 percent of high-risk youth engaged in two or three of the four main problem behaviors (Dryfoos, 1990). More recently, this estimate was increased from the 15 percent figure in 1990 to 20 percent of all adolescents in 2006 (Dryfoos & Barkin, 2006).

A review of the programs that have been successful in preventing or reducing adolescent problems found these common components (Dryfoos, 1990; Dryfoos & Barkin, 2006):

1. *Intensive individualized attention.* In successful programs, high-risk adolescents are attached to a responsible adult who gives the adolescent attention and deals with the adolescent's specific needs. This theme occurs in a number of programs. In a successful substance-abuse program, for example, a student assistance counselor is available full-time for individual counseling and referral for treatment.
2. *Community-wide multiagency collaborative approaches.* The basic philosophy of community-wide programs is that a number of different programs and services have to be in place. In one successful substance-abuse program, a community-wide health promotion campaign has been implemented that uses local media and community education in concert with a substance-abuse curriculum in the schools.

3. *Early identification and intervention.* Reaching younger children and their families before children develop problems, or at the onset of their problems, is a successful strategy (Cichetti & Toth, 2015, 2016; Masten, 2015; O'Connor, 2016). One preschool program serves as an excellent model for the prevention of delinquency, pregnancy, substance abuse, and dropping out of school. Operated by the High/Scope Foundation in Ypsilanti, Michigan from 1962 to 1967, the Perry Preschool has had a long-term positive impact on its students. This enrichment program, directed by David Weikart, served disadvantaged African American children. They attended a high-quality, two-year preschool program and received weekly home visits from program personnel. Based on official police records, by age 19, individuals who had attended the Perry Preschool program were less likely to have been arrested and reported fewer adult offenses than a control group did. The Perry Preschool students also were less likely to drop out of school, and teachers rated their social behavior as more competent than that of a control group who had not received the enriched preschool experience (High/Scope Resource, 2005).

Summary

Identity

- Identity is a self-portrait composed of many pieces.
- Identity versus identity confusion is Erikson's fifth stage of the human life span, which individuals experience during adolescence.
- James Marcia proposed four identity statuses—identity diffusion, foreclosure, moratorium, and achievement—that are based on crisis (exploration) and commitment. Increasingly, experts argue that the main changes in identity occur in emerging adulthood rather than adolescence.
- Ethnicity is an important influence on identity.

Families

- A key aspect of the managerial role of parenting in adolescence is effectively monitoring the adolescent's development. Adolescents' disclosure to parents about their whereabouts is linked to positive adolescent adjustment.
- The adolescent's push for autonomy is one of the hallmarks of adolescence. Attachment to parents increases the probability that an adolescent will be socially competent.
- Parent-adolescent conflict increases in adolescence. The conflict is usually moderate rather than severe.

Peers

- Harry Stack Sullivan argued that there is a dramatic increase in the psychological importance and intimacy of close friends in early adolescence. Peer conformity and cliques and crowds assume more importance in adolescence.
- Three stages characterize adolescent dating and romantic relationships. Many gay and lesbian youth date other-sex peers. Culture can exert a powerful influence on adolescent dating. Some aspects of dating and romantic relationships are linked to adjustment difficulties.

Culture and Adolescent Development

- Adolescent development varies across cultures, and rites of passage still characterize adolescents in some cultures.
- Immigration is an important aspect of many ethnic adolescents' lives. Although not all ethnic minority families are poor, poverty contributes to the stress experienced by many ethnic minority adolescents.
- There has been a dramatic increase in adolescents' media multitasking and use of the Internet for social connections.

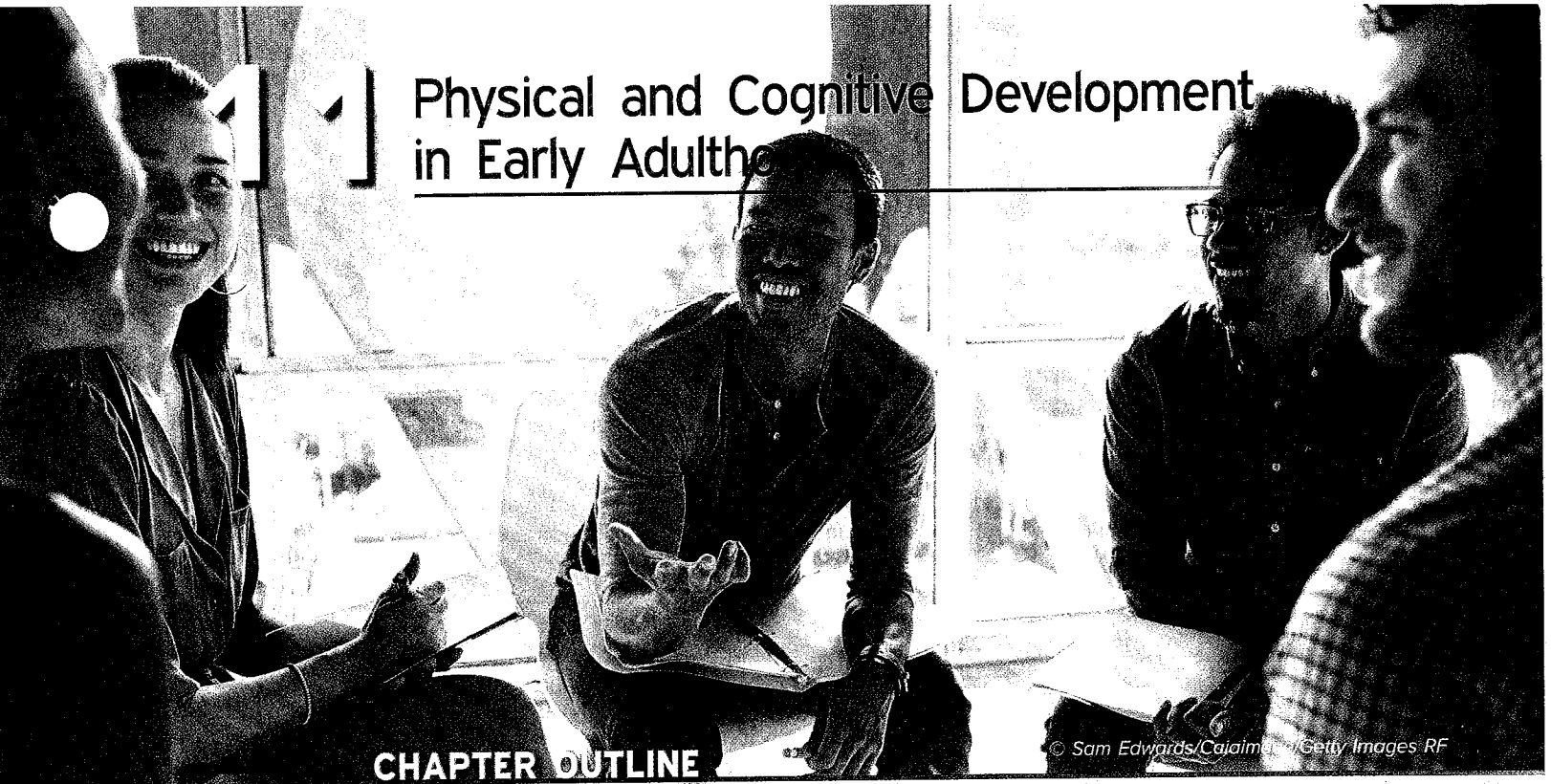
Adolescent Problems

- Juvenile delinquency is a major problem in adolescence. Numerous causes have been proposed to explain delinquency.
- Adolescents have a higher rate of depression than children, and females have a much higher rate of depression than males do. Adolescent suicide is the third leading cause of death in U.S. adolescents, and numerous factors are linked to suicide.
- Researchers are increasingly finding that problem behaviors in adolescence are interrelated, and common components characterize successful programs designed to prevent or reduce adolescent problems.

Key Terms

clique
commitment
crisis
crowd
ethnic identity
identity achievement
identity diffusion
identity foreclosure
identity moratorium
juvenile delinquent
rite of passage

14 Physical and Cognitive Development in Early Adulthood



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CHAPTER OUTLINE

THE TRANSITION FROM ADOLESCENCE TO ADULTHOOD
Becoming an Adult
The Transition from High School to College

PHYSICAL DEVELOPMENT
Physical Performance and Development
Health

SEXUALITY
Sexual Activity in Emerging Adulthood
Sexual Orientation and Behavior
Sexually Transmitted Infections

COGNITIVE DEVELOPMENT
Cognitive Stages
Creativity

CAREERS AND WORK
Careers
Work

Stories of Life-Span Development: Dave Eggers, Pursuing a Career in the Face of Stress

He was a senior in college when both of his parents died of cancer within five weeks of each other. What would he do? He and his 8-year-old brother left Chicago to live in California, where his older sister was entering law school. Dave would take care of his younger brother, but he needed a job. That first summer, he took a class in furniture painting; then he worked for a geological surveying company, re-creating maps on a computer. Soon, though, he did something very different: With friends from high school, Dave Eggers started *Might,* a satirical magazine for twenty-somethings. It was an edgy, highly acclaimed publication, but not a moneymaker. After a few years, Eggers had to shut down the magazine, and he abandoned California for New York.



Dave Eggers, talented and insightful author.
© Cosima Scavolini/LaPresse/Zumapress.com/Newscom

This does not sound like a promising start for a career. But within a decade after his parents' death, Eggers had not only raised his young brother but had also founded a quarterly

journal and Web site, *McSweeney's,* and had written a best-seller, *A Heartbreaking Work of Staggering Genius,* which received the National Book Critics Circle Award and was nominated for a Pulitzer Prize. It is a slightly fictionalized account of Eggers' life as he helped care for his dying mother, raised his brother, and searched for his own place in the world. Despite the pain of his loss and the responsibility for his brother, Eggers quickly built a record of achievement as a young adult. ■

The Transition from Adolescence to Adulthood

When does an adolescent become an adult? It is not easy to tell when a girl or a boy enters adolescence. The task of determining when an individual becomes an adult is even more difficult.

Becoming an Adult

For most individuals, becoming an adult involves a lengthy transition period. The transition from adolescence to adulthood has been referred to as **emerging adulthood,** which occurs from approximately 18 to 25 years of age (Arnett, 2006, 2010, 2012, 2015). Experimentation and exploration characterize the emerging adult. At this point in their development, many individuals are still exploring which career path they want to follow, what they want their identity to be, and which lifestyle they want to adopt (for example, being single, cohabiting, or getting married).

Key Features of Emerging Adulthood

Jeffrey Arnett (2006) has concluded that five key features characterize emerging adulthood:

- *Identity exploration, especially in love and work.* Emerging adulthood is the time during which key changes in identity take place for many individuals (Kroger, 2015; Schwartz & others, 2013, 2015a, b, c).
- *Instability.* Residential changes peak during early adulthood, a time during which there also is often instability in love, work, and education.
- *Self-focused.* According to Arnett (2006, p. 10), emerging adults "are self-focused in the sense that they have little in the way of social obligations, little in the way of duties and commitments to others, which leaves them with a great deal of autonomy in running their own lives."
- *Feeling in-between.* Many emerging adults don't consider themselves adolescents or full-fledged adults.
- *The age of possibilities, a time when individuals have an opportunity to transform their lives.* Arnett (2006) describes two ways in which emerging adulthood is the age of possibilities: (1) many emerging adults are optimistic about their future; and (2) for emerging adults who have experienced difficult times while growing up, emerging adulthood presents an opportunity to reorient their lives in a more positive direction.

Recent research indicates that these five aspects characterize not only individuals in the United States as they make the transition from adolescence to early adulthood, but also their counterparts in European countries and Australia (Arnett, 2012, 2015; Buhl & Lanz, 2007; Sirsch & others, 2009). Although emerging adulthood does not characterize development in all cultures, it does appear to occur in those where assuming adult roles and responsibilities is postponed (Kins & Beyers, 2010). Critics of the concept of emerging adulthood argue that it applies mainly to privileged adolescents and is not always a self-determined choice for many young people, especially those in limiting

emerging adulthood The transition from adolescence to adulthood (approximately 18 to 25 years of age), which involves experimentation and exploration.

socioeconomic conditions (Cote & Bynner, 2008). A recent study revealed that U.S. at-risk youth entered emerging adulthood slightly earlier than the general population of youth (Lisha & others, 2012).

How Would You...?



As a **social worker,** how would you apply your knowledge of contemporary society to counsel a client making the transition into adulthood?

How Would You...?

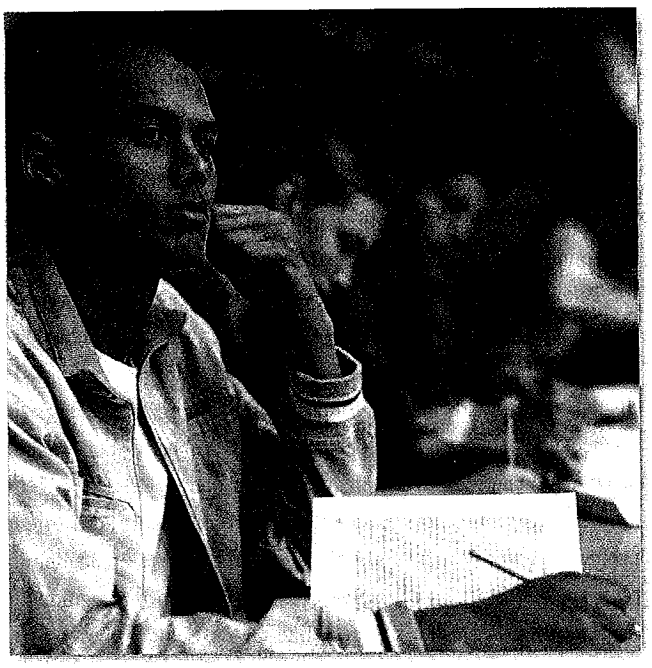


As a **psychologist,** how would you offer guidance to emerging adults who are concerned because they have not yet settled into a career and a long-term relationship?

Markers of Becoming an Adult

In the United States, the most widely recognized marker of entry into adulthood is holding a more or less permanent, full-time job, which usually happens when an individual finishes school—high school for some, college for others, graduate or professional school for still others. However, other criteria are far from clear. Economic independence is one marker of adult status, but achieving it is often a long process. College graduates are increasingly returning to live with their parents as they attempt to establish themselves economically. A longitudinal study found that at age 25 only slightly more than half of the participants were fully financially independent of their family of origin (Cohen & others, 2003). The most dramatic findings in this study, though, involved the extensive variability in the individual trajectories of adult roles across ten years from 17 to 27 years of age; many of the participants moved back and forth between increasing and decreasing economic dependency. A recent study revealed that continued co-residence with parents during emerging adulthood slowed down the process of becoming a self-sufficient and independent adult (Kins & Beyers, 2010).

Other studies show that taking responsibility for oneself is likely an important marker of adult status for many individuals. In one study, both parents and college students agreed that taking responsibility for one's actions and developing emotional control are important aspects of becoming an adult (Nelson & others, 2007). And in a recent study of Danish emerging adults, the most widely described markers of emerging adulthood were accepting self-responsibility, making independent decisions, and becoming financially independent (Arnett & Padilla-Walker, 2015). In this study the least-described markers were the traditional transition events of becoming married and avoiding getting drunk.



The transition from high school to college often involves positive as well as negative features. In college, students are likely to feel grown up, to be able to spend more time with peers, to have more opportunities to explore different lifestyles and values, and to enjoy greater freedom from parental monitoring. However, college involves a larger, more impersonal school structure and an increased focus on achievement and its assessment. *What was your transition to college like?*

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What we have discussed about the markers of adult status mainly characterizes individuals in industrialized societies, especially Americans. In developing countries, marriage is more often a significant marker for entry into adulthood, and this usually occurs much earlier than the adulthood markers in the United States (Arnett, 2015). In one study, the majority of 18- to 26-year-olds in India felt that they had achieved adulthood (Seiter & Nelson, 2010).

The Transition from High School to College

For many individuals in developed countries, going from high school to college is an important aspect of the transition to adulthood (Bowman, 2010). Just as the transition from elementary school to middle or junior high school involves change and possible stress, so does the transition

How Would You...?
As an **educator,** how would you prepare high school students to ease the transition to college?

from high school to college. The two transitions have many parallels. Going from being a senior in high school to being a freshman in college replays the top-dog phenomenon of transferring from the oldest and most powerful group of students to the youngest and least powerful group of students that occurred earlier as adolescence began. For many students, the transition from high school to college involves movement to a larger, more impersonal school structure; interaction with peers from more diverse geographical and sometimes more diverse ethnic backgrounds; and increased focus on achievement and its assessment. And like the transition from elementary to middle or junior high school, the transition from high school to college can involve positive features. Students are more likely to feel grown up, have more subjects from which to select, have more time to spend with peers, have more opportunities to explore different lifestyles and values, enjoy greater independence from parental monitoring, and be challenged intellectually by academic work (Halonen & Santrock, 2013).

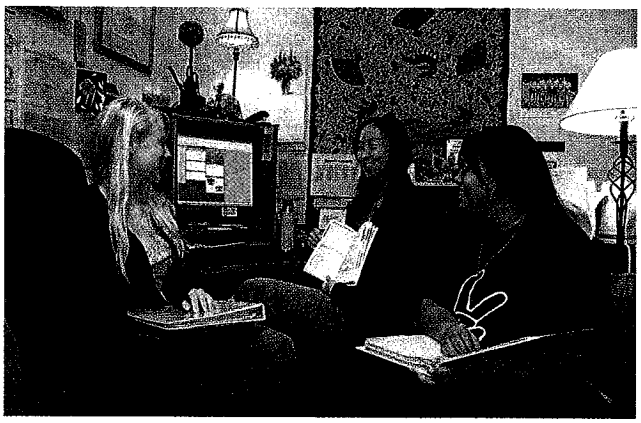
College counselors can provide good information about coping with stress and academic matters. To read about the work of college counselor Grace Leaf, see *Careers in Life-Span Development.*

Careers in life-span development

Grace Leaf, College/Career Counselor and College Administrator

For many years, Grace Leaf was a counselor at Spokane Community College in Washington. In 2014, she became Vice President of Instruction at Lower Columbia College in Spokane. She has a master's degree in educational leadership and is working toward a doctoral degree in educational leadership at Gonzaga University in Washington. In her job as a college counselor, she provided orientation sessions for international students, individual and group advising, and individual and group career planning. Grace tries to connect students with their goals and values and helps them design an educational program that fits their needs and visions.

College counselors help students to cope with adjustment problems, identify their abilities and interests, develop academic plans, and explore career options. Some have an undergraduate degree, others a master's degree like Grace Leaf. Some college counselors have a graduate degree in counseling; others may have an undergraduate degree in psychology or another discipline.



Grace Leaf counsels college students at Spokane Community College about careers.
© Grace Leaf

Physical Development

As emerging and young adults learn more about healthy lifestyles and how they contribute to a longer life span, they are increasingly interested in monitoring their physical performance, health, nutrition, exercise, and substance use.

Physical Performance and Development

Most of us reach our peak physical performance before the age of 30, often between the ages of 19 and 26. This peak of physical performance occurs not only for the average young adult, but for outstanding athletes as well. Even though athletes as a group keep getting better than their predecessors—running faster, jumping higher, and lifting more weight—the age at which they reach their peak performance has remained virtually unchanged.

Different types of athletes, however, reach their peak performances at different ages. Most swimmers and gymnasts peak in their late teens. Golfers and marathon runners tend to peak in their late twenties. In other areas of athletics, peak performance often occurs in the early to mid-twenties.

Not only do we reach our peak in physical performance during early adulthood, it is also during this age period that we begin to decline in physical performance. Muscle tone and strength usually begin to show signs of decline around the age of 30. Sagging chins and protruding abdomens also may begin to appear for the first time. The lessening of physical abilities is a common complaint among the just-turned thirties. Sensory systems show little change in early adulthood, but the lens of the eye loses some of its elasticity and becomes less able to change shape and focus on near objects. Hearing peaks in adolescence, remains constant in the first part of early adulthood, and then begins to decline in the last part of early adulthood. And in the middle to late twenties, the body's fatty tissue increases.

Health

Emerging adults have more than twice the mortality rate of adolescents (Park & others, 2006). As indicated in Figure 1, males are mainly responsible for the higher mortality rate of emerging adults.

Although emerging adults have a higher death rate than adolescents, emerging adults have few chronic health problems, and they have fewer colds and respiratory problems than they did when they were children (Rimsza & Kirk, 2005). Although most college students know how to prevent illness and promote health, they don't fare very well when it comes to applying this information to themselves (Murphy-Hoefer, Alder, & Higbee, 2004; Lau & others, 2013). In many cases, emerging adults are not as healthy as they seem (Fatusi & Hindin, 2010).

A longitudinal study revealed that most bad health habits that were engaged in during adolescence increased in emerging adulthood (Harris & others, 2006). Inactivity, diet, obesity, substance use, reproductive health care, and health-care access worsened in emerging adulthood. For example, when they were 12 to 18 years of age, only 5 percent reported no weekly exercise, but when they became 19 to 26 years of age, 46 percent said they did not exercise during a week. And a recent study found that rates of being overweight or obese increased from 25.6 percent for college freshmen to 32 percent for college seniors (Nicoteri & Miskovsky, 2014).

In emerging and early adulthood, few individuals stop to think about how their personal lifestyles will affect their health later in their adult lives. As emerging adults, many of us develop a pattern of not eating breakfast, not eating regular meals, relying on snacks as our main food source during the day, eating excessively to the point where we exceed the normal weight for our age, smoking moderately or excessively, drinking moderately or excessively, failing to exercise, and getting only a few hours of sleep at night (Cousineau, Goldstein, & Franco, 2005; Waldron & Dieser, 2010).

Recent research indicates that 70 percent of college students do not get adequate sleep and that 50 percent report daytime sleepiness (Herhsner & Chervin, 2015). Emerging adults are not the only ones who are getting inadequate sleep. Many adults in their late twenties and thirties don't get enough either (Brimah & others, 2013). A recent statement by the

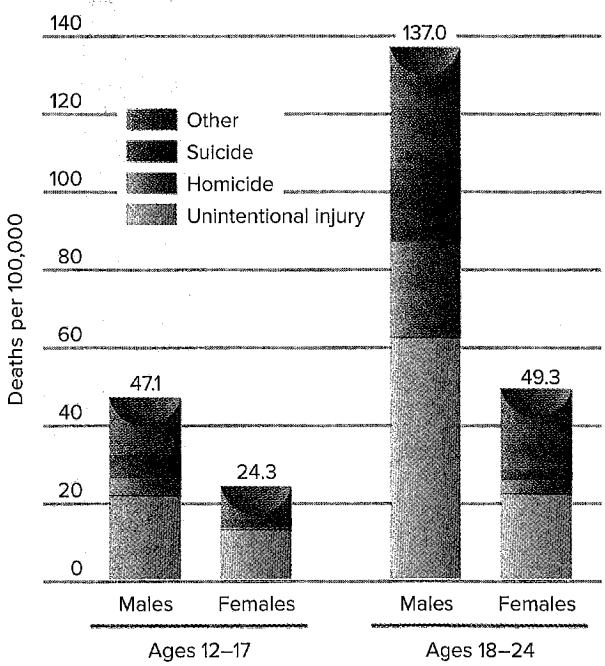


Figure 1 Mortality Rates of U.S. Adolescents and Emerging Adults

American Academy of Sleep Medicine and Sleep Research Society (Luyster & others, 2012) emphasized that chronic sleep deprivation may contribute to cardiovascular disease and a shortened life span, and also result in cognitive and motor impairment that increase the risk of motor vehicle crashes and work-related accidents.

The lifestyles just described are associated with poor health, which in turn reduces life satisfaction (Donatelle & Ketcham, 2016; Fahey, Insel, & Roth, 2017; Insel & Roth, 2016). In the Berkeley Longitudinal Study—in which individuals were evaluated over a period of 40 years—physical health at age 30 predicted life satisfaction at age 70, more so for men than for women (Mussen, Honzik, & Eichorn, 1982). Another study explored links between health behavior and life satisfaction of more than 17,000 individuals who were 17 to 30 years old in 21 countries (Grant, Wardle, & Steptoe, 2009). The young adults' life satisfaction was positively related to not smoking, exercising regularly, using sun protection, eating fruit, and limiting fat intake, but it was not related to alcohol consumption and fiber intake.



Why might it be easy to develop bad health habits in emerging and early adulthood?

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Eating and Weight

We have discussed aspects of overweight children's lives and have examined the eating disorders of anorexia nervosa and bulimia nervosa in adolescence. Now, we turn our attention to obesity and the extensive preoccupation that many young adults have with dieting.

Obesity Obesity is a serious and pervasive health problem for many individuals (Blake, 2017; Thompson, Manore, & Vaughan, 2017). A national survey found that 29.5 percent of U.S. 20- to 39-year-olds were overweight and 31.5 percent were obese (Dietary Guidelines Advisory Committee, 2015). Also, a recent analysis predicted that by 2030, 42 percent of U.S. adults will be obese (Finkelstein & others, 2012).

An international comparison of 33 developed countries revealed that the United States had the highest percentage of obese adults (OECD, 2010). Figure 2 shows the developed countries with the highest and lowest percentages of obese adults.

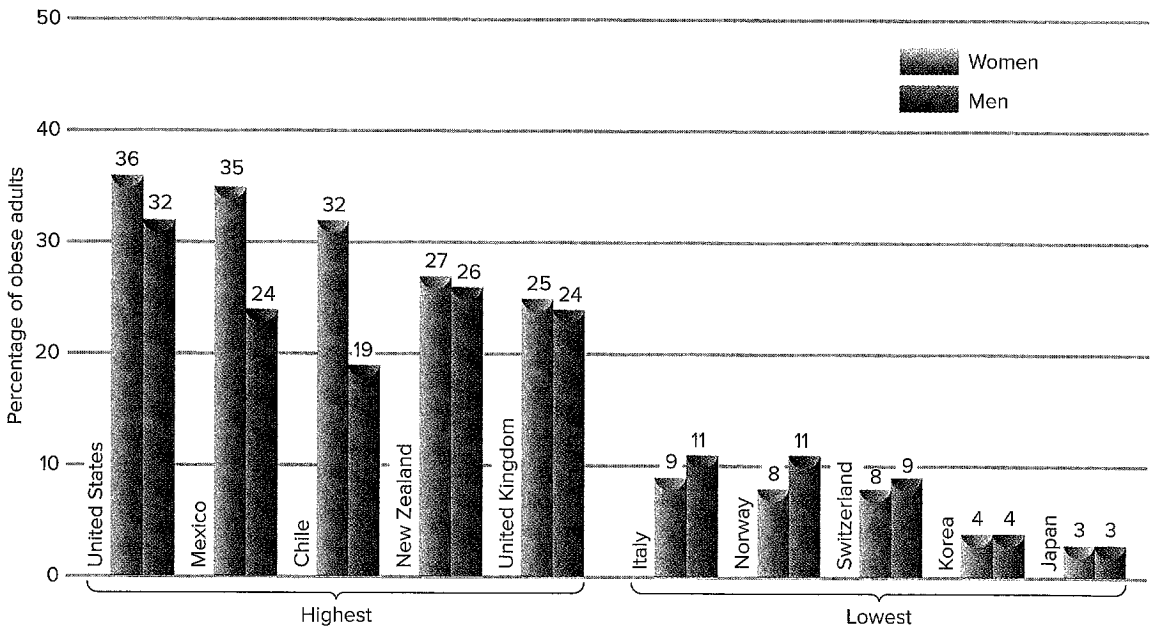


Figure 2 Countries with the Highest and Lowest Percentages of Obese Adults Among 33 Developed Countries

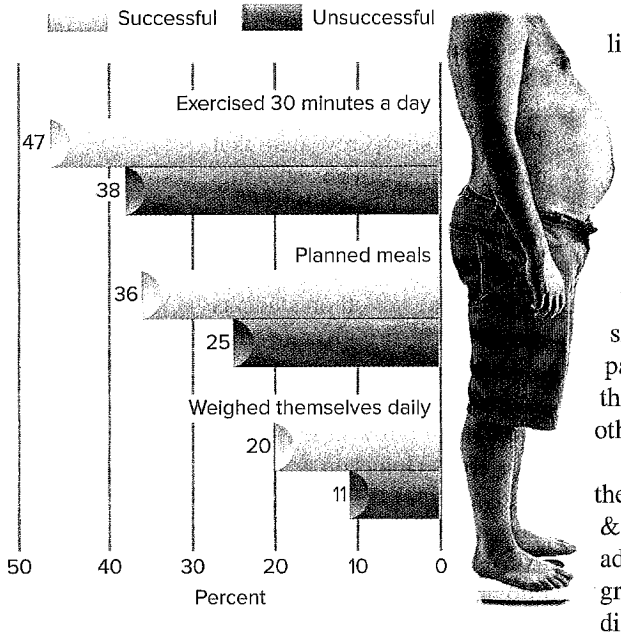


Figure 3 Comparison of Strategies Used by Successful and Unsuccessful Dieters

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aerobic exercise Sustained exercise (such as jogging, swimming, or cycling) that stimulates heart and lung activity.

Being overweight or obese is linked to increased risk of hypertension, diabetes, and cardiovascular disease (Donatelle & Ketcham, 2016; Goh & others, 2016). Overweight and obesity also are associated with mental health problems (Garcia-Toro & others, 2016). For example, in a recent study overweight/obese adults who were depressed were more likely to be characterized by atypical features of depression such as rejection sensitivity and leaden paralysis (a sense of heaviness in arms and legs) than normal-weight depressed adults (Lojko & others, 2015).

One thing we know about losing weight is that the most effective programs include exercise (Ryan & others, 2014). A research review concluded that adults who engaged in diet-plus-exercise programs lost more weight than those who followed diet-only programs (Wu & others, 2009). A study of approximately 2,000 U.S. adults found that exercising 30 minutes a day, planning meals, and weighing themselves daily were the strategies used more often by successful dieters than by unsuccessful dieters (Kruger, Blanck, & Gillespie, 2006) (see Figure 3).

Regular Exercise

One of the main reasons that health experts want people to exercise is that it helps to prevent diseases, such as heart disease and diabetes (Fahey, Insel, & Roth, 2017; Thompson & Manore, 2016). Many health experts recommend that young adults engage in 30 minutes or more of aerobic exercise daily. **Aerobic exercise** is sustained exercise—jogging, swimming, or cycling, for example—that stimulates heart and lung activity. Most health experts recommend exercising vigorously enough to raise your heart rate to at least 60 percent of your maximum heart rate. Only about one-fifth of adults, however, meet these recommended levels of physical activity.

A national poll in the United States found that 51.6 percent of individuals 18 years and older exercised for 30 or more minutes 3 or more days a week (Gallup, 2013). In this survey, young adults 18 to 29 years of age (56.8 percent) were the most likely to exercise of all adult age groups. Also in this survey, men were more likely to exercise than women.

Researchers have found that exercise benefits not only physical health, but mental health as well (Donatelle, 2015; Schuch & others, 2016a). For example, in a recent meta-analysis, moderate and vigorous aerobic exercise was effective in reducing major depressive disorder (Schuch & others, 2016b). Also, in recent research, adults who exercised regularly had lower levels of anxiety and depression (Khanzada, Soomro, & Kahn, 2015). Also, in a recent daily diary study on days when emerging adult (18 to 25 years of age) college students engaged in more physical activity they reported greater satisfaction with life (Maher & others, 2013). Also, a one-year exercise intervention decreased stress symptoms in working adults (Kettunen, Vuorimaa, & Vasankari, 2015).

How Would You...?

As a **health-care professional,** how would you design a community education program to emphasize the importance of regular exercise for young adults?



Substance Abuse

Earlier we explored substance abuse in adolescence. Fortunately, by the time individuals reach their mid-twenties, many have reduced their use of alcohol and drugs



What kinds of problems are associated with binge drinking in college?

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(Bachman & others, 2002). As in adolescence, male college students and young adults are more likely to take drugs than their female counterparts (Johnston & others, 2015). One study revealed that only 20 percent of college students reported abstaining from drinking alcohol (Huang & others, 2009).

Heavy binge drinking often occurs in college, and it can take its toll on students (Fairlie, Maggs, & Lanza, 2016; Marino & Fromme, 2016). In 2014, 35 percent of U.S. college students reported having had five or more drinks in a row at least once in the last two weeks (Johnston & others, 2015). The term *extreme binge drinking* describes individuals who had 10 or more drinks in a row. In 2010 approximately 13 percent of college students reported drinking this heavily (Johnston & others, 2011). While drinking rates among college students have remained high, drinking, including binge drinking, has declined in recent years. For example, binge drinking declined by 6 percent from 2007 to 2014 (Johnston & others, 2015).

In a national survey of drinking patterns on 140 campuses (Wechsler & others, 1994), almost half of the binge drinkers reported problems that included missing classes, sustaining physical injuries, experiencing troubles with police, and having unprotected sex. For example, binge-drinking college students were 11 times more likely to fall behind in school, 10 times more likely to drive after drinking, and twice as likely to have unprotected sex in comparison with college students who did not binge drink.

When does binge drinking peak during development? A longitudinal study revealed that binge drinking peaks at about 21 to 22 years of age and then declines through the remainder of the twenties (Bachman & others, 2002) (see Figure 4). Recent data from the Monitoring the Future study at the University of Michigan also indicate that binge drinking peaks at 21 to 22 years of age, with 39 percent reporting that they had engaged in binge drinking at least once in the last 2 weeks (Johnston & others, 2015).

How Would You...?



As a **social worker,** how would you apply your understanding of binge drinking to develop a program to encourage responsible alcohol use on college campuses?

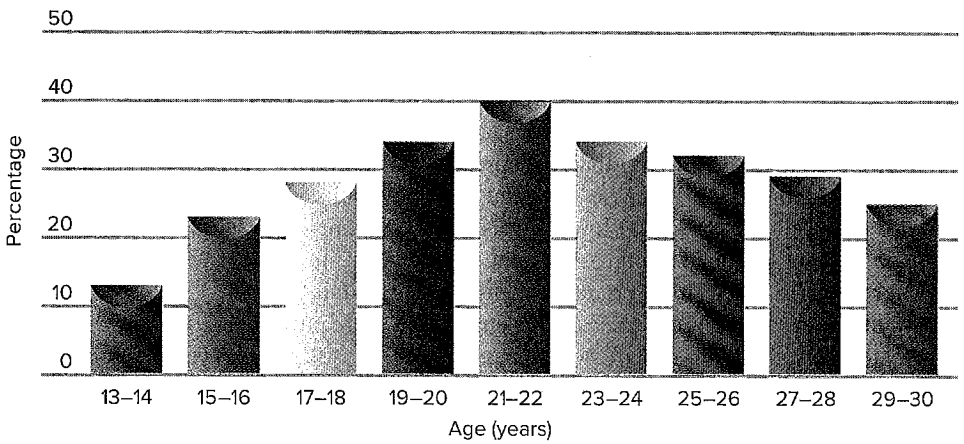


Figure 4 Binge Drinking in the Adolescence–Early Adulthood Transition

Note that the percentage of individuals engaging in binge drinking peaked at 21 or 22 years of age and then gradually declined through the remainder of the twenties. Binge drinking was defined as having five or more alcoholic drinks in a row in the previous two weeks.

Sexuality

We have explored how adolescents develop a sexual identity and become sexually active. What happens to their sexuality in adulthood?

Sexual Activity in Emerging Adulthood

At the beginning of emerging adulthood (age 18), surveys indicate that slightly more than 60 percent of individuals have experienced sexual intercourse, but by the end of emerging adulthood (age 25), most individuals have had sexual intercourse (Lefkowitz & Gillen, 2006). Also, the average age of marriage in the United States is currently 29 for males and 27 for females (U.S. Census Bureau, 2015). Thus, emerging adulthood is a time during which most individuals are "both sexually active and unmarried" (Lefkowitz & Gillen, 2006, p. 235).

Casual sex is more common in emerging adulthood than it is during the late twenties (Roberson, Olmstead, & Fincham, 2016). A recent trend has involved "hooking up" to have non-relationship sex (from kissing to intercourse) (Kettrey, 2016; Napper & others, 2016; Vrangalova, 2015a, b). One study revealed that 20 percent of first-year college women on one large university campus had engaged in at least one hook-up over the course of the school year (Fielder & others, 2013). In this study, impulsivity, sensation seeking, and alcohol use were among the predictors of a higher likelihood of hooking up. Further, another recent study indicated that 40 percent of 22-year-olds reporting having had a recent casual sexual partner (Lyons & others, 2015). And a recent study of more than 3,900 18- to 25-year-olds indicated that having casual sex was negatively linked to well-being and positively related to psychological distress (Bersamin & others, 2014). Also, recent research indicated that when emerging adults drank alcohol, they were more likely to have casual sex and less likely to discuss possible risks (Johnson & Chen, 2015). In addition to hooking up, another type of casual sex that has recently increased among emerging adults is "friends with benefits," which involves a relationship formed by the integration of friendship and sexual intimacy without an explicit commitment characteristic of an exclusive romantic relationship (Owen, Fincham, & Manthos, 2013).

Sexual Orientation and Behavior

A national study of sexual behavior in the United States among adults 25 to 44 years of age found that 98 percent of the women and 97 percent of the men said that they had ever engaged in vaginal intercourse (Chandra & others, 2011). Also in this study, 89 percent of the women and 90 percent of the men reported that they had ever had oral sex with an opposite-sex partner, and 36 percent of the women and 44 percent of the men stated that they had ever had anal sex with an opposite-sex partner.

Detailed information about various aspects of sexual activity in adults of different ages comes from the 1994 Sex in America survey. In this study Robert Michael and his colleagues (1994) interviewed more than 3,000 people from 18 to 59 years of age who were randomly selected, in sharp contrast with earlier samples that were based on unrepresentative groups of volunteers.

Heterosexual Attitudes and Behavior

Here are some of the key findings from the 1994 Sex in America survey:

- Americans tend to fall into three categories: One-third have sex twice a week or more, one-third a few times a month, and one-third a few times a year or not at all.
- Married (and cohabiting) couples have sex more often than noncohabiting couples (see Figure 5).
- Most Americans do not engage in kinky sexual acts. When asked about their favorite sexual acts, the vast majority (96 percent) said that vaginal sex was "very"

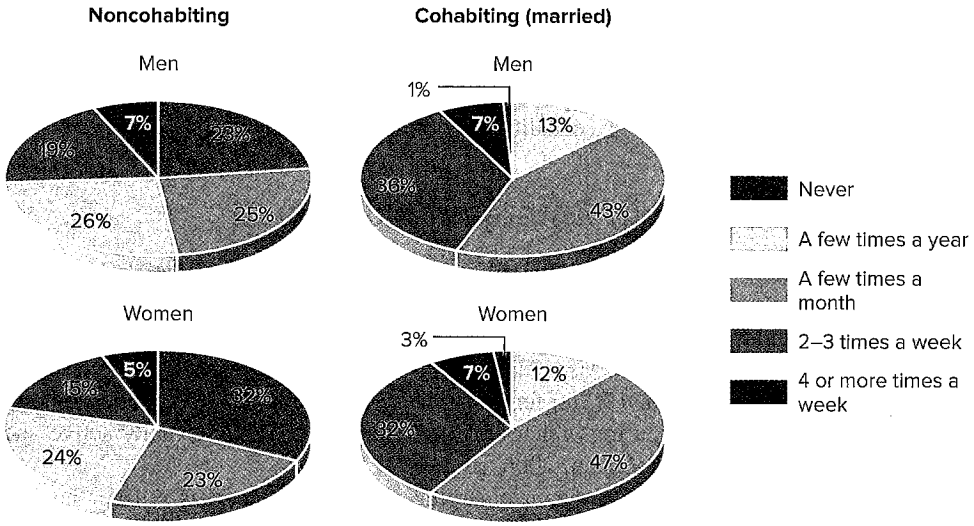


Figure 5 The Sex in America Survey

The percentages show noncohabiting and cohabiting (married) males' and females' responses to the question "How often have you had sex in the past year?" in a 1994 survey (Michael & others, 1994). *What was one feature of the Sex in America survey that made it superior to most surveys of sexual behavior?*

or "somewhat" appealing. Oral sex was in third place, after an activity that many have not labeled a sexual act—watching a partner undress.

- Adultery is clearly the exception rather than the rule. Nearly 75 percent of the married men and 85 percent of the married women in the survey indicated that they had never been unfaithful.
- Men think about sex far more often than women do—54 percent of the men said they thought about it every day or several times a day, whereas 67 percent of the women said they thought about it only a few times a week or a few times a month.

In sum, one of the most powerful messages in the 1994 survey was that Americans' sexual lives are more conservative than was previously believed. Although 17 percent of the men and 3 percent of the women said they had had sex with at least 21 partners, the overall impression from the survey was that sexual behavior is ruled by marriage and monogamy for most Americans.

How extensive are gender differences in sexuality? A recent analysis of almost 8,000 emerging adults found that males had stronger permissive attitudes, especially about sex in casual relationships, than did females (Sprecher, Treger, & Sakaluk, 2013). A meta-analysis revealed that men reported having slightly more sexual experiences and more permissive attitudes than women for most aspects of sexuality (Petersen & Hyde, 2010). For the following factors, stronger differences were found: Men said that they engaged more often in masturbation, pornography use, and casual sex, and had more permissive attitudes about casual sex than their female counterparts did.

Given all the media and public attention focusing on the negative aspects of sexuality—such as adolescent pregnancy, sexually transmitted infections, rape, and so on—it is important to underscore that research strongly supports the role of sexuality in well-being (King, 2014, 2016). For example, in a Swedish study frequency of sexual intercourse was strongly linked to life satisfaction for both women and men (Brody & Costa, 2009).

How Would You...?

As a **human development and family studies professional,** what information would you include in a program designed to educate young adults about healthy sexuality and sexual relationships?



Sources of Sexual Orientation

Until the end of the nineteenth century, it was generally believed that people were either heterosexual or homosexual. Today, the more accepted view of sexual

orientation depicts it not as an either/or proposition but as a continuum from exclusive male-female relations to exclusive same-sex relations (King, 2016, 2017). Some individuals are bisexual, being sexually attracted to people of both sexes.

People sometimes think that bisexuality is simply a stepping stone to homosexuality, while others view it as a sexual orientation itself or as an indicator of sexual fluidity (King, 2014, 2016, 2017). Evidence supports the notion that bisexuality is a stable orientation that involves attraction to both sexes (Lippa, 2013).

Compared with men, women are more likely to change their sexual patterns and desires (Knight & Hope, 2012). Women are more likely than men to have sexual experiences with same- and opposite-sex partners, even if they identify themselves strongly as being heterosexual or lesbian (King, 2017). Also, women are more likely than men to identify themselves as bisexual (Gates, 2011).

In the Sex in America survey, 2.7 percent of the men and 1.3 percent of the women reported having had same-sex relations in the past year (Michael & others, 1994). Why are some individuals lesbian, gay, or bisexual (LGB) and others heterosexual? Speculation surrounding this question has been extensive (Diamond & Savin-Williams, 2015).

All people, regardless of their sexual orientation, have similar physiological responses during sexual arousal and seem to be aroused by the same types of tactile stimulation. Investigators typically find no differences between LGBs and heterosexuals in a wide range of attitudes, behaviors, and adjustments (Fingerhut & Peplau, 2013).

Recently, researchers have explored the possible biological basis of same-sex relations. The results of hormone studies have been inconsistent. If gay males are given male sex hormones (androgens), their sexual orientation doesn't change. Their sexual desire merely increases. A very early prenatal critical period might influence sexual orientation (Berenbaum & Beltz, 2011). If this critical-period hypothesis turns out to be correct, it would explain why clinicians have found that sexual orientation is difficult, if not impossible, to modify.

Researchers have also examined genetic influences on sexual orientation by studying twins. A recent Swedish study of almost 4,000 twins found that only about 35 percent of the variation in homosexual behavior in men and 19 percent in women were explained by genetic differences (Langstrom & others, 2010). This result suggests that although genes likely play a role in sexual orientation, they are not the only factor involved (King, 2016. 2017).

An individual's sexual orientation—same-sex, heterosexual, or bisexual—is most likely determined by a combination of genetic, hormonal, cognitive, and environmental factors (King, 2016, 2017; Yarber, Sayad, & Strong, 2015). Most experts on same-sex relations believe that no one factor alone causes sexual orientation and that the relative weight of each factor can vary from one individual to the next.







What likely determines an individual's sexual orientation?

(Top) © PhotoAlto/PunchStock RF; (middle & bottom) © 2009 JupiterImages Corporation RF

Attitudes and Behavior of Lesbians and Gay Males

Many gender differences that appear in heterosexual relationships occur in same-sex relationships (Diamond & Savin-Williams, 2015; Savin-Williams, 2015; Savin-Williams & Cohen, 2015). For example, like heterosexual women, lesbians have fewer sexual partners than gays, and lesbians have less permissive attitudes about casual sex outside a primary relationship than gays do (Fingerhut & Peplau, 2013).

Sexually Transmitted Infections

sexually transmitted infections (STIs) Diseases that are contracted primarily through sex.

Sexually transmitted infections (STIs) are diseases that are primarily contracted through sex—intercourse as well as oral-genital and anal-genital sex. STIs affect about one of every six U.S. adults (National Center for Health Statistics, 2016). Among the most prevalent STIs are bacterial infections—such as gonorrhea, syphilis, and chlamydia—and STIs caused by viruses—such as AIDS (acquired immune deficiency syndrome), genital herpes, and genital warts. Figure 6 describes these sexually transmitted infections.

No single disease has had a greater impact on sexual behavior, or created more public fear in the last several decades, than infection with the human immunodeficiency virus (HIV) (Crooks & Baur, 2016). HIV is a virus that destroys the body's immune system. Once a person is infected with HIV, the virus breaks down and overpowers the immune system, which leads to AIDS. An individual sick with AIDS has such a weakened immune system that a common cold can be life-threatening.

In 2012, more than 1 million people in the United States were living with an HIV infection (National Center for Health Statistics, 2014). In 2012, male-male sexual contact continued to be the most frequent AIDS transmission category. Because of education and the development of more effective drug treatments, deaths due to HIV/AIDS have begun to decline in the United States (National Center for Health Statistics, 2014). Globally, the total number of individuals living with

How Would You...?



As a **health-care professional,** what advice would you give to a patient who is sexually active, does not use condoms, and does not want to be tested for any sexually transmitted infections?

STI	Description/cause	Incidence	Treatment
Gonorrhea	Commonly called the "drip" or "clap." Caused by the bacterium *Neisseria gonorrhoeae*. Spread by contact between infected moist membranes (genital, oral-genital, or anal-genital) of two individuals. Characterized by discharge from penis or vagina and painful urination. Can lead to infertility.	500,000 cases annually in U.S.	Penicillin, other antibiotics
Syphilis	Caused by the bacterium *Treponema pallidum*. Characterized by the appearance of a sore where syphilis entered the body. The sore can be on the external genitals, vagina, or anus. Later, a skin rash breaks out on palms of hands and bottom of feet. If not treated, can eventually lead to paralysis or even death.	100,000 cases annually in U.S.	Penicillin
Chlamydia	A common STI named for the bacterium *Chlamydia trachomatis*, an organism that spreads by sexual contact and infects the genital organs of both sexes. A special concern is that females with chlamydia may become infertile. It is recommended that adolescent and young adult females have an annual screening for this STI.	About 3 million people in U.S. annually	Antibiotics
Genital herpes	Caused by a family of viruses with different strains. Involves an eruption of sores and blisters. Spread by sexual contact.	One of five U.S. adults	No known cure but antiviral medications can shorten outbreaks
AIDS	Caused by a virus, the human immunodeficiency virus (HIV), which destroys the body's immune system. Semen and blood are the main vehicles of transmission. Common symptoms include fevers, night sweats, weight loss, chronic fatigue, and swollen lymph nodes.	More than 300,000 cumulative cases of HIV virus in U.S.; 25–34-year-olds; epidemic incidence in sub-Saharan countries	New treatments have slowed the progression from HIV to AIDS; no cure
Genital warts	Caused by the human papillomavirus, which does not always produce symptoms. Usually appear as small, hard painless bumps in the vaginal area, or around the anus. Very contagious. Certain high-risk types of this virus cause cervical cancer and other genital cancers. May recur despite treatment. A new HPV preventive vaccine, Gardasil, has been approved for girls and women 9–26 years of age.	About 5.5 million new cases annually; considered the most common STI in the U.S.	A topical drug, freezing, or surgery

Figure 6 Sexually Transmitted Infections

HIV was 37 million in 2014, with 26 million of these individuals with HIV living in sub-Saharan Africa. Approximately half of all new HIV infections around the world occur in the 15- to 24-year-old age category. In one study, only 49 percent of 15- to 24-year-old females in low- and middle-income countries knew that using a condom helps to prevent HIV infection, compared with 74 percent of young males (UNAIDS, 2011). The good news is that global rates of HIV infection fell by 35 percent from 2000 to 2014 (UNAIDS, 2015).

What are some good strategies for protecting against HIV and other sexually transmitted infections? They include the following:

- *Knowing your own and your partner's risk status.* Anyone who has had previous sexual activity with another person might have contracted an STI without being aware of it. Spend time getting to know a prospective partner before you have sex. Use this time to inform the other person of your STI status and inquire about your partner's. Remember that many people lie about their STI status.
- *Obtaining medical examinations.* Many experts recommend that couples who want to begin a sexual relationship have a medical checkup to rule out STIs before engaging in sex. If cost is an issue, contact your campus health service or a public health clinic.
- *Having protected, not unprotected, sex.* When correctly used, latex condoms help to prevent many STIs from being transmitted. Condoms are most effective in preventing gonorrhea, syphilis, chlamydia, and HIV. They are less effective against the spread of herpes.
- *Not having sex with multiple partners.* One of the best predictors of getting an STI is having sex with multiple partners. Having more than one sex partner elevates the likelihood of encountering an infected partner.

Cognitive Development

Are there changes in cognitive performance during these years? To explore the nature of cognition in early adulthood, we focus on issues related to cognitive stages and creative thinking.

Cognitive Stages

Are young adults more advanced in their thinking than adolescents are? Let's examine how Piaget and others have answered this intriguing question.

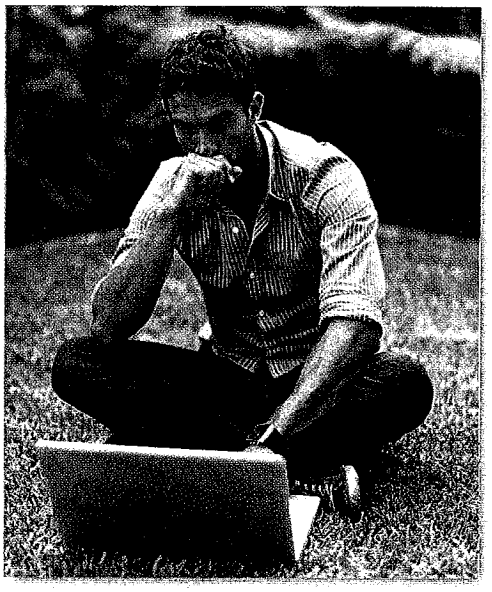
Piaget's View

Piaget concluded that an adolescent and an adult think qualitatively in the same way. That is, Piaget argued that at approximately 11 to 15 years of age, adolescents enter the formal operational stage, which is characterized by more logical, abstract, and idealistic thinking than the concrete operational thinking of 7- to 11-year-olds. Piaget did believe that young adults are more quantitatively advanced in their thinking in the sense that they have more knowledge than adolescents possess. He also believed, as do information-processing psychologists, that adults especially increase their knowledge in a specific area, such as a physicist's understanding of physics or a financial analyst's knowledge about finance. According to Piaget, however, formal operational thought is the final stage in cognitive development, and it characterizes adults as well as adolescents.

Some developmentalists theorize it is not until adulthood that many individuals consolidate their formal operational thinking. That is, they may begin to plan and hypothesize about intellectual problems in adolescence, but they become more systematic and sophisticated at this as young adults. Nonetheless, even many adults do not think in formal operational ways at all (Kuhn, 2009).

Postformal Thought

It has been proposed that the idealism of Piaget's formal operational stage declines in young adults and is replaced by more realistic, pragmatic thinking. It also has been proposed that young adults move into a new qualitative stage of cognitive development called postformal thought (Sinnott, 2003). **Postformal thought** is:



What are some ways that young adults might think differently from adolescents?

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- *Reflective, relativistic, and contextual.* As young adults engage in solving problems, they might think deeply about many aspects of work, politics, relationships, and other areas of life (Labouvie-Vief, 1986). They find that what might be the best solution to a problem at work (with a boss or co-worker) might not be the best solution at home (with a romantic partner). Thus, postformal thought holds that the correct answer to a problem requires reflective thinking and may vary from one situation to another. Some psychologists argue that reflective thinking continues to increase and becomes more internal and less contextual in middle age (Mascalo & Fischer, 2010; Labouvie-Vief, Gruhn, & Studer, 2010).
- *Provisional.* Many young adults also become more skeptical about the truth and seem unwilling to accept an answer as final. Thus, they come to see the search for truth as an ongoing and perhaps never-ending process.
- *Realistic.* Young adults understand that thinking can't always be abstract. In many instances, it must be realistic and pragmatic.
- *Recognized as being influenced by emotion.* Emerging and young adults are more likely than adolescents to understand that their thinking is influenced by emotions (Labouvie-Vief, 2009; Labouvie-Vief, Gruhn, & Studer, 2010). However, too often negative emotions produce thinking that is distorted and self-serving at this point in development.

How Would You...?

As an **educator,** how would you characterize the differences in the cognitive development of adolescents and adults? How would this distinction influence your approach to teaching these different populations?

Creativity

Early adulthood is a time of great creativity for some people. At the age of 30, Thomas Edison invented the phonograph, Hans Christian Andersen wrote his first volume of fairy tales, and Mozart composed *The Marriage of Figaro.* One early study of creativity found that individuals' most creative products were generated in their thirties, and that 80 percent of the most important creative contributions were completed by age 50 (Lehman, 1960). Even though a decline in creative contributions is often found in the fifties and later, the decline is not as great as was commonly thought.

Any consideration of decline in creativity with age must take into account the field of creativity involved (Jones, Reedy, & Weinberg, 2014; Kandler & others, 2016; McKay & Kaufman, 2014). In fields such as philosophy and history, older adults often show as much creativity as they did when they were in their thirties and forties. By contrast, in fields such as lyric poetry, abstract math, and theoretical physics, the peak of creativity is often reached in the twenties or thirties.

postformal thought Thinking that is reflective, relativistic, and contextual; provisional; realistic; and influenced by emotions.

How Would You...?

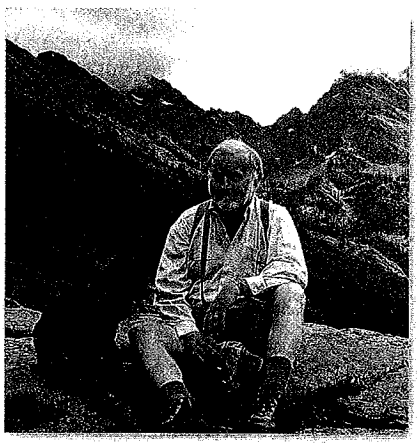
As an **educator,** how would you use your understanding of creativity to become a more effective teacher?

Researchers have found that personality traits are linked to creativity (Kandler & others, 2016). In one recent study, the personality trait of

openness to experience predicted creativity in the arts, while intellectual capacity predicted creativity in the sciences (Kaufman & others, 2016).

Can you make yourself more creative? Mihaly Csikszentmihalyi (1995) interviewed 90 leading figures in art, business, government, education, and science to learn how creativity works. He discovered that creative people regularly experience a state he calls *flow,* a heightened state of pleasure experienced when we are engaged in mental and physical challenges that absorb us. Csikszentmihalyi (2000) believes everyone is capable of achieving flow. Based on his interviews with some of the most creative people in the world, the first step toward a more creative life is cultivating your curiosity and interest. How can you do this?

- *Try to be surprised by something every day.* Maybe it is something you see, hear, or read about. Become absorbed in a lecture or a book. Be open to what the world is telling you. Life is a stream of experiences. Swim widely and deeply in it, and your life will be richer.
- *Try to surprise at least one person every day.* In a lot of things you do, you have to be predictable and patterned. Do something different for a change. Ask a question you normally would not ask. Invite someone to go to a show you haven't seen or a museum you never have visited.
- Write down each day what surprised you and how you surprised others. Most creative people keep a diary, notes, or lab records to ensure that their experience is not fleeting or forgotten. Start with a specific task. Each evening, record the most surprising event that occurred that day and your most surprising action. After a few days, reread your notes and reflect on your past experiences. After a few weeks, you might see a pattern of interest emerging in your notes, one that might suggest an area you can explore in greater depth.



Mihaly Csikszentmihalyi, in the setting where he gets his most creative ideas. *When and where do you get your most creative thoughts?*
© Dr. Mihaly Csiksentmihalyi

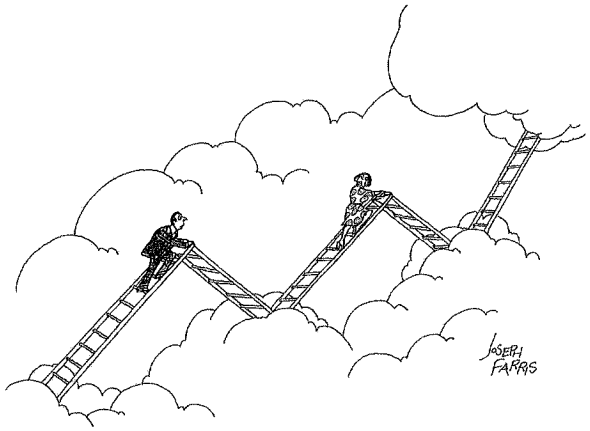
- When something sparks your interest, follow it. Usually when something captures your attention, it is short-lived—an idea, a song, a flower. Too often we are too busy to explore the idea, song, or flower further. Or we think these areas are none of our business because we are not experts about them. Yet the world is our business. We can't know which part of it is best suited to our interests until we make a serious effort to learn as much about as many aspects of it as possible.
- Wake up in the morning with a specific goal to look forward to. Creative people wake up eager to start the day. Why? Not necessarily because they are cheerful, enthusiastic types but because they know that there is something meaningful to accomplish each day, and they can't wait to get started.
- Spend time in settings that stimulate your creativity. In Csikszentmihalyi's (1995) research, he gave people an electronic pager and beeped them randomly at different times of the day. When he asked them how they felt, they reported the highest levels of creativity when walking, driving, or swimming. I (your author) do my most creative thinking when I'm jogging. These activities are semiautomatic in that they take a certain amount of attention while leaving some time free to make connections among ideas. Another setting in which highly creative people report coming up with novel ideas is the sort of half-asleep, half-awake state we are in when we are deeply relaxed or barely awake.

Careers and Work

Earning a living, choosing an occupation, establishing a career, and developing in a career—these are important themes of early adulthood. Let's consider some of the factors that go into choosing a career and a job, and examine how work typically affects the lives of young adults.

Careers

What are some developmental changes young adults experience as they choose a career? How effectively are individuals finding a path to purpose today?



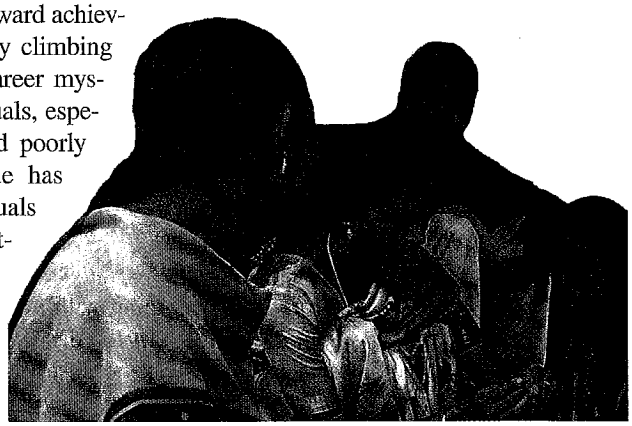
"Did you think the ladder of success would be straight up?"

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Developmental Changes

Many children have idealistic fantasies about what they want to be when they grow up. For example, many young children want to be superheroes, sports stars, or movie stars. In the high school years, they often have begun to think about careers on a somewhat less idealistic basis. In their late teens and early twenties, their career decision making has usually turned more serious as they explore different career possibilities and zero in on the career they want to enter. In college, this often means choosing a major or specialization that is designed to lead to work in a particular field. By their early and mid-twenties, many individuals have completed their education or training and started to enter a full-time occupation. From the mid-twenties through the remainder of early adulthood, individuals often seek to establish their emerging career in a particular field. They may work hard to move up the career ladder and improve their financial standing.

Phyllis Moen (2009a) described the career mystique, which includes ingrained cultural beliefs that engaging in hard work for long hours through adulthood will produce a path to status, security, and happiness. That is, many individuals have an idealized concept of a career path toward achieving the American dream of upward mobility by climbing occupational ladders. However, the lockstep career mystique has never been a reality for many individuals, especially ethnic minority individuals, women, and poorly educated adults. Further, the career mystique has increasingly become a myth for many individuals in middle-income occupations as global outsourcing of jobs and widespread layoffs during the 2007–2009 recession have led to reduced job security for millions of Americans.



Hari Prabhakar (*in rear*) at a screening camp in India that he created as part of his Tribal India Health Foundation. Hari reflects William Damon's concept of finding a path to purpose. His ambition is to become an international health expert. A 2006 graduate from Johns Hopkins University (with a double major in public health and writing and a 3.9 GPA), he pursued many activities outside the classroom, in the health field. As he transitioned from high school to college, Hari created the Tribal India Health Foundation (www.tihf.org), which provides assistance in bringing low-cost health care to rural areas in India. Juggling roles as a student and as the foundation's director, Hari spent 15 hours a week leading Tribal India Health during his undergraduate years. Hari said (Johns Hopkins University, 2006): "I have found it very challenging to coordinate the international operation. . . . It takes a lot of work, and there's not a lot of free time. But it's worth it when I visit our patients and see how they and the community are getting better."

© Hari Prabhakar

Finding a Path to Purpose

In his book *The Path to Purpose: Helping Our Children Find Their Calling in Life*, William Damon (2008) suggested that purpose is a missing ingredient in many adolescents' and emerging adults' achievement and career development. Too many youth drift aimlessly through their high school and college years, Damon says, engaging in behavior that places them at risk for not fulfilling their potential and not finding a life pursuit that energizes them.

In interviews with 12- to 22-year-olds, Damon found that only about 20 percent had a clear vision of where they wanted to go in life, what they wanted to achieve, and why. The largest percentage—about 60 percent—had engaged in some potentially purposeful

activities, such as service learning or fruitful discussions with a career counselor—but they still did not have a real commitment or any reasonable plans for reaching their goals. And slightly more than 20 percent expressed no aspirations and in some instances said they didn't see any reason to have aspirations.

Damon concludes that most teachers and parents communicate the importance of such goals as studying hard and getting good grades, but rarely discuss the purpose of these goals and where they might lead young adults. Damon emphasizes that too often students focus only on short-term goals and don't explore the big, long-term picture of what they want to do with their life. The following interview questions that Damon (2008, p. 135) has used in his research are good springboards for getting individuals to reflect on their purpose:

- What's most important to you in your life?
- Why do you care about those things?
- Do you have any long-term goals?
- Why are these goals important to you?
- What does it mean to have a good life?
- What does it mean to be a good person?
- If you were looking back on your life now, how would you like to be remembered?

Recent research has provided support for the importance of purpose in people's lives. In one study, purpose predicted emerging adults' well-being (Hill & others, 2016). In another study, a high sense of purpose in life was associated with a lower incidence of cardiovascular disease and a longer life (Cohen, Bavishi, & Rozanski, 2016).

Work

In this final section, we'll examine how work affects people's lives, the role of work in college, the occupational outlook, unemployment, dual-earner couples, and diversity in the workplace.

The Impact of Work

Work defines people in fundamental ways (Parker, 2014). It is an important influence on their financial standing, housing, the way they spend their time, where they live, their friendships, and their health. Some people define their identity through their work. Work also creates a structure and rhythm to life that is often missed when individuals do not work for an extended period. When they are unable to work, many individuals experience emotional distress and low self-esteem.

Most individuals spend about one-third of their lives at work. In one survey, 35 percent of Americans worked 40 hours a week, but 18 percent worked 51 hours or more per week (Center for Survey Research at the University of Connecticut, 2000). Only 10 percent worked less than 30 hours a week.

Special concerns about the work lives of emerging adults are the unemployment rate of college graduates as well as the high percentage of recent college graduates who have had to take jobs that do not require a college degree. In 2015, the unemployment rate for college graduates was 7.2 percent, an increase from 6.4 percent at the peak of the 2009 recession (Davis, Kimball, & Gould, 2015; Gabor, 2014). Also, among college graduates who found jobs in 2014, 46 percent were in jobs that did not require a college degree (Davis, Kimball, & Gould, 2015).

A trend in the U.S. workforce is the disappearing long-term career for an increasing number of adults, especially men in private-sector jobs (Hollister, 2011). Among the reasons for this disappearance of many long-term jobs is the dramatic increase in technology and cheaper labor in other countries.

Many young and older adults are working at a series of jobs, and many work in short-term jobs (Greenhaus, 2013). Early careers are especially unstable as some young workers move from "survival jobs" to "career jobs" in the process of finding a job that matches their personal interests and goals (Mortimer, 2012; Staff,

Mont'Alvao, & Mortimer, 2015). A study of more than 1,100 individuals from 18 to 31 years of age revealed that maintaining a high aspiration and certainty over career goals better insulated individuals against unemployment during the severe economic recession that began in 2007 (Vuolo & others, 2012).

An important consideration regarding work is how stressful it is (Demsky, Ellis, & Fritz, 2014; Lamb & Kwok, 2016). A national survey of U.S. adults revealed that 55 percent indicated they were less productive because of stress (American Psychological Association, 2007). In this study, 52 percent reported that they considered or made a career decision, such as looking for a new job, declining a promotion, or quitting a job, because of stress in the workplace. In this survey, main sources of stress included low salaries (44 percent), lack of advancement opportunities (42 percent), uncertain job expectations (40 percent), and long hours (39 percent). A recent study revealed that stressors at work were linked to arterial hypertension in employees (Lamy & others, 2014).

Many adults hold changing expectations about work, yet employers often aren't meeting their expectations (Hall & Mirvis, 2013). For example, current policies and practices were designed for a single-breadwinner (male) workforce and an industrial economy, making these policies and practices out of step with a service-oriented workforce of women and men, and of single parents and dual earners. Many workers today want flexibility and greater control over the time and timing of their work, and yet most employers offer little flexibility, even if policies like flextime are "on the books."

Work During College

The percentage of full-time U.S. college students who also held jobs increased from 34 percent in 1970 to 47 percent in 2008, then declined to 41 percent in 2011 (down from a peak of 52 percent in 2000) (National Center for Education Statistics, 2013). In this recent survey, 74 percent of part-time U.S. college students were employed, down from 81 percent in 2008.

Working can pay for schooling or help offset some of its costs, but working also can restrict students' opportunities to learn. For those who identified themselves primarily as students, one national study found that as the number of hours worked per week increased, their grades suffered (National Center for Education Statistics, 2002) (see Figure 7). Thus, college students need to carefully examine whether the number of hours they work is having a negative impact on their college success.

How Would You...?

As an **educator,** what advice would you give to a student who has a full-time job while taking college classes?

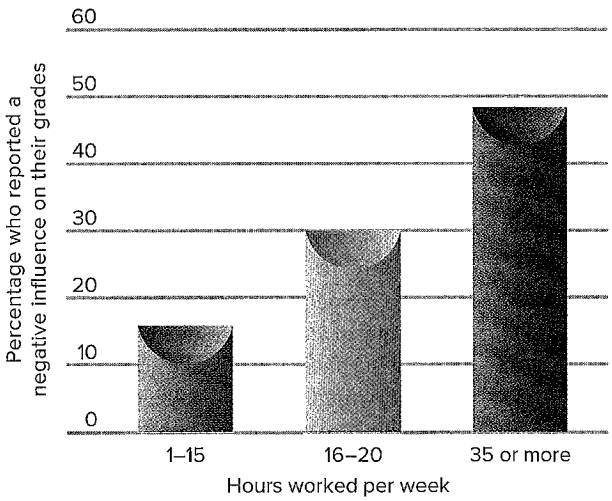


Figure 7 The Relation of Hours Worked Per Week in College to Grades

Among college students working to pay for school expenses, 16 percent of those working 1 to 15 hours per week reported that working had a negative impact on their grades (National Center for Education Statistics, 2002). Thirty percent of college students who worked 16 to 20 hours a week said the same, as did 48 percent who worked 35 hours or more per week.

Monitoring the Occupational Outlook

As you explore the type of work you are likely to enjoy and in which you can succeed, it is important to be knowledgeable about different fields and companies. Occupations may have many job openings one year but few in another year as economic conditions change. Thus, it is critical to keep up with the occupational outlook in various fields. An excellent resource for doing this is the U.S. government's *Occupational Outlook Handbook,* which is revised every two years.

According to the 2016–2017 handbook, the job categories of wind turbine service technicians, occupational therapy assistants, physical therapist assistants, physical therapist aides, home health aides, commercial drivers, nurse practitioners, physical therapists, and

statisticians are projected to be the fastest-growing through 2024. Projected job growth varies widely by educational requirements. Jobs that require a college degree are expected to grow the fastest. Most of the highest-paying occupations require a college degree.



The economic recession that hit in 2007 resulted in millions of Americans losing their jobs, such as these individuals who are waiting to apply for unemployment benefits in Chicago. *What are some of the potential negative outcomes of the stress caused by job loss?*

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Unemployment

Unemployment produces stress regardless of whether the job loss is temporary, cyclical, or permanent (Frasquilho & others, 2016; Jalles & Andresen, 2014). Banking problems and the recession toward the end of the first decade of the twenty-first century have produced very high unemployment rates, especially in the United States. Researchers have linked unemployment to physical problems (such as heart attack and stroke), emotional problems (such as depression and anxiety), marital difficulties, and homicide (Rizvi & others, 2015; Yoo & others, 2016). A recent study revealed that 90 or more days of unemployment was associated with subsequent cardiovascular disease across an 8-year follow-up period (Lundin & others, 2014). A 15-year longitudinal study of more than 24,000 adults found that their life satisfaction dropped considerably during unemployment and increased after they were reemployed but did not completely return to the same level of life satisfaction they had experienced prior to being unemployed (Lucas & others, 2004). Another study also revealed that immune system functioning declined with unemployment and increased with new employment (Cohen & others, 2007). A research review concluded that unemployment was associated with an increased mortality risk for individuals in the early and middle stages of their careers, but the link was weaker for those in the later years of their career (Roelfs & others, 2011). And a recent study found that involuntary job loss was linked to an increase in attempted suicide and suicide (Milner & others, 2014). Also, in a recent study, unemployment was associated with higher mortality and the link was higher for those who were unmarried (Van Hedel & others, 2015).

Might unemployment be linked to certain characteristics in childhood? Longitudinal data revealed that low self-control in childhood was linked to the emergence and persistence of unemployment from 21 to 50 years of age (Daly & others, 2015).

Stress from unemployment comes not only from a loss of income and the resulting financial hardships but also from decreased self-esteem (Howe & others, 2012). Individuals who cope best with unemployment have financial resources to rely on, often savings or the earnings of other family members. Emotional support from understanding, adaptable family members also helps individuals to cope with unemployment. Job counseling and self-help groups can provide practical advice on job searching, résumé writing, and interviewing skills, and also can lend emotional support (van Hooft, 2014).

Dual-Earner Couples

Dual-earner couples may have special problems finding a balance between work and the rest of life (Aazami, Shamsuddin, & Akmal, 2015; Schooreel & Verbruggen, 2016). If both partners are working, who cleans the house or calls the repairman or takes care of the other endless details involved in maintaining a home? If the couple has children, who is responsible for being sure that the children get to school or to piano lessons, and who writes the notes to approve field trips or meets the teacher or makes the dental appointments?

Many dual-earner couples engage in a range of adaptive strategies to coordinate their work and manage the family side of the work-family equation (Flood & Genadek, 2016; Moen, 2009b). Researchers have found that even though couples may strive for gender equality in dual-earner families, gender inequalities persist (Cunningham, 2009). For example, women still do not earn as much as men in the same jobs, and this inequity contributes to gender divisions in how much time each partner spends in paid work, homemaking, and caring for children. Thus, the decisions that dual-earner couples often make are in favor of men's greater earning power and women spending more time than men in homemaking and caring for children (Moen, 2009b). A recent study indicated that women reported more family interference from work than did men (Allen & Finkelstein, 2014). Another recent study found that partner coping, having a positive attitude toward multiple roles, using planning and management skills, and not having to cut back on professional responsibilities were linked to better relationships between dual earners (Matias & Fontaine, 2015).

Summary

The Transition from Adolescence to Adulthood

- Emerging adulthood, the time of transition from adolescence to adulthood, is characterized by experimentation and exploration.
- The transition from high school to college can involve both positive and negative features.

Physical Development

- Peak physical performance is often reached between 19 and 26 years of age. Then, toward the latter part of early adulthood, a detectable slowdown in physical performance is apparent for most individuals.
- Health problems in emerging and young adults may include obesity, a serious problem throughout the United States. Binge drinking is a special problem among U.S. college students, but by the mid-twenties alcohol and drug use often decreases.

Sexuality

- Patterns of sexual activity change during emerging adulthood.
- An individual's sexual preference likely stems from a combination of genetic, hormonal, cognitive, and environmental factors.
- Sexually transmitted infections, also called STIs, are contracted primarily through sexual contact.

Cognitive Development

- It has been proposed that the idealism of Piaget's formal operational stage declines in young adults and is replaced by more realistic, pragmatic thinking. A qualitatively different, fifth cognitive stage called postformal thought also has been proposed.
- Creativity peaks in adulthood, often in the forties, and then declines. Csikszentmihalyi proposed that the first step toward living a creative life is to cultivate curiosity and interest.

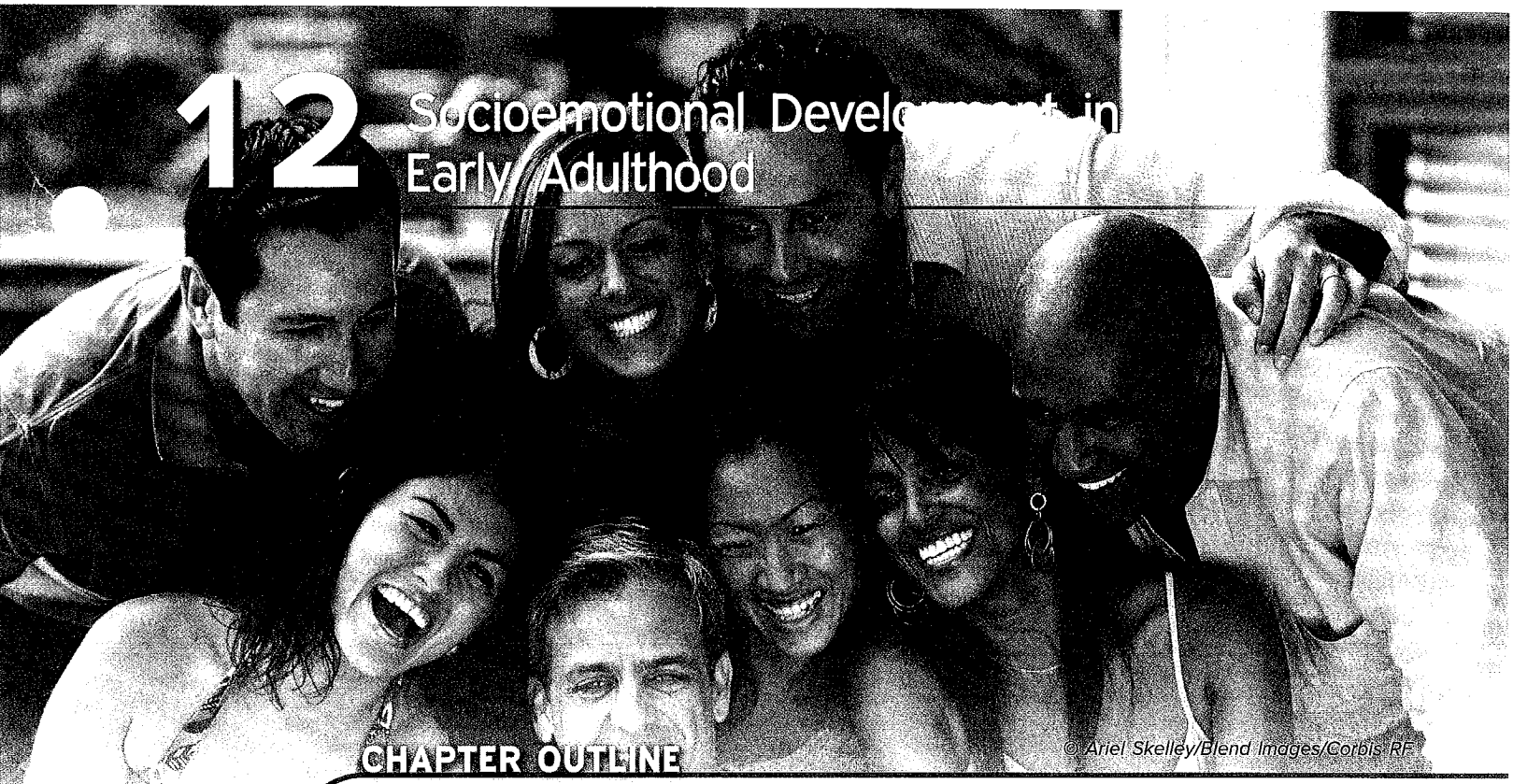
Careers and Work

- Thoughts about career choice for adolescents and young adults reflect developmental changes. Damon argues that too many individuals have difficulty finding a path to purpose today.
- Work defines people in fundamental ways and is a key aspect of their identity. Working during college can have a positive outcome, but it may also have a negative impact on grades. Jobs that require a college education will be the fastest-growing and highest-paying careers in the United States during the next decade.
- As the number of women working outside the home has increased, new issues involving work and family have arisen.

Key Terms

aerobic exercise
emerging adulthood
postformal thought
sexually transmitted infections (STIs)

12 Socioemotional Development in Early Adulthood



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CHAPTER OUTLINE

STABILITY AND CHANGE FROM CHILDHOOD TO ADULTHOOD

LOVE AND CLOSE RELATIONSHIPS

Intimacy
Friendship
Romantic and Affectionate Love
Consummate Love

ADULT LIFESTYLES

Single Adults
Cohabiting Adults
Married Adults
Divorced Adults
Remarried Adults
Gay and Lesbian Adults

CHALLENGES IN MARRIAGE, PARENTING, AND DIVORCE

Making Marriage Work
Becoming a Parent
Dealing with Divorce

Stories of Life-Span Development: Gwenna's Pursuit and Greg's Lack of Commitment

Commitment is an important issue in a romantic relationship for most individuals. Consider Gwenna, who decides that it is time to have a talk with Greg about his commitment to their relationship (Lerner, 1989, pp. 44–45):

> She shared her perspective on both the strengths and weaknesses of their relationship and what her hopes were for the future. She asked Greg to do the same. Unlike earlier conversations, this one was conducted without her pursuing him, pressuring him, or diagnosing his problems with women. At the same time, she asked Greg some clear questions, which exposed his vagueness.
>
> "How will you know when you are ready to make a commitment? What specifically would you need to change or be different than it is today?"
>
> "I don't know," was Greg's response. When questioned further, the best he could come up with was that he'd just feel it.
>
> "How much more time do you need to make a decision one way or another?"
>
> "I'm not sure," Greg replied. "Maybe a couple of years, but I really can't answer a question like that. I can't predict my feelings."
>
> And so it went.
>
> Gwenna really loved this man, but two years (and maybe longer) was longer than she could comfortably wait. So, after much thought, she told Greg that she would wait till fall (about ten months), but that she would move on if he couldn't commit himself to marriage by then.

She was open about her wish to marry and have a family with him, but she was equally clear that her first priority was a mutually committed relationship. If Greg had not reached that point by fall, then she would end the relationship—painful though it would be.

During the waiting period, Gwenna was able to not pursue him and not get distant or otherwise reactive to his expressions of ambivalence and doubt. In this way she gave Greg emotional space to struggle with his dilemma, and the relationship had its best chance of succeeding. Her bottom-line position ("a decision by fall") was not a threat or an attempt to rope Greg in, but rather a clear statement of what was acceptable to her.

When fall arrived, Greg told Gwenna he needed another six months to make up his mind. Gwenna deliberated a while and decided she could live with that. But when the six months were up, Greg was uncertain and asked for more time. It was then that Gwenna took the painful but ultimately empowering step of ending their relationship.

Love is of central importance in each of our lives, as it is in Gwenna's and Greg's lives. Shortly, we discuss the many faces of love, as well as the diversity of adult lifestyles, aspects of marriage and the family, and the role of gender in relationships. To begin, though, we will return to an issue we initially raised in the introductory chapter of this text: stability and change. ■

Stability and Change from Childhood to Adulthood

For adults, socioemotional development revolves around adaptively integrating our emotional experiences into enjoyable relationships with others on a daily basis. Young adults like Gwenna and Greg face choices and challenges in adopting lifestyles that will be emotionally satisfying, predictable, and manageable for them. Clearly they do not come to these tasks as blank slates, but do their decisions and actions simply reflect the persons they had already become when they were 5 years old or 10 years old or 20 years old?

Current research shows that the first 20 years of life lay the foundation for an adult's socioemotional development (Cassidy, 2016; Cicchetti & Toth, 2015, 2016; Fraley & Shaver, 2016; Thompson, 2015, 2016). And there is also every reason to believe that experiences in the early adult years are important in determining what the individual will be like later in adulthood. A common finding is that the smaller the time intervals over which we measure socioemotional characteristics, the more similar an individual will look from one measurement to the next. Thus, if we measure an individual's self-concept at the age of 20, and then again at the age of 30, we will probably find more stability than if we measured the individual's self-concept at the age of 10 and then again at the age of 30.

In trying to understand the young adult's socioemotional development, it would be misleading to look at an adult's life only in the present, ignoring the unfolding of social relationships and emotions. So, too, it would be a mistake to search only through a 30-year-old's first five to ten years of life in trying to understand why he or she is having difficulty in a close relationship. To further explore stability and change, let's examine attachment.

Attachment appears during infancy and plays an important part in socioemotional development (Pasco-Fearon & others, 2016; Thompson, 2015, 2016). We've discussed its role in infancy and adolescence. How do these earlier patterns of attachment and adults' attachment styles influence the lives of adults?



How Would You...?

As a **human development and family studies professional,** how would you help individuals understand how early relationship experiences might influence their close relationships in adulthood?

Although relationships with romantic partners differ from those with parents, romantic partners fulfill some of the same needs for adults as parents do for their children (Mikulincer & Shaver, 2016; Zayas & Hazan, 2014).

Recall that *securely attached* infants are defined as those who use the caregiver as a secure base from which to explore the environment. Similarly, adults may count on their romantic partner to be a secure base to which they can return and obtain comfort and security during stressful times (Mikulincer & Shaver, 2016).





How are attachment patterns in childhood linked to relationships in emerging and early adulthood?

(left) © Runstudio/Taxi Japan/Getty Images; (right) © Jade/Blend Images/Getty Images RF

secure attachment style An attachment style that describes adults who have positive views of relationships, find it easy to get close to others, and are not overly concerned or stressed out about their romantic relationships.

avoidant attachment style An attachment style that describes adults who are hesitant about getting involved in romantic relationships and once they are in a relationship tend to distance themselves from their partner.

Do adult attachment patterns with partners reflect childhood attachment patterns with parents and parental sensitivity in infancy? In a retrospective study, Cindy Hazan and Phillip Shaver (1987) revealed that young adults who were securely attached in their romantic relationships were more likely to describe their early relationship with their parents as securely attached. In a longitudinal study, infants who were securely attached at age 1 were securely attached 20 years later in their adult romantic relationships (Steele & others, 1998). Also, a longitudinal study revealed that securely attached infants were in more stable romantic relationships in adulthood than their insecurely attached counterparts (Salvatore & others, 2011). A longitudinal study found that insecure avoidant attachment at 8 years of age was linked to a lower level of social initiative and prosocial behavior and a higher level of social anxiety and loneliness at 21 years of age (Fransson & others, 2016). Further, a recent study of adoptees found that higher maternal sensitivity in infancy and middle and late childhood predicted more secure attachment to partners in emerging adulthood (Schoenmaker & others, 2015). However, in another longitudinal study, links between early attachment styles and later attachment styles were lessened by stressful and disruptive experiences such as the death of a parent or instability of caregiving (Lewis, Feiring, & Rosenthal, 2000).

Adults' attachment can be categorized as secure, avoidant, or anxious:

- **Secure attachment style.** Securely attached adults have positive views of relationships, find it easy to get close to others, and are not overly concerned with or stressed out about their romantic relationships. These adults tend to enjoy sexuality in the context of a committed relationship and are less likely than others to have one-night stands.
- **Avoidant attachment style.** Avoidant individuals are hesitant about getting involved in romantic relationships, and once they are in a relationship, they tend to distance themselves from their partner.



What are some key dimensions of attachment in adulthood, and how are they related to relationship patterns and well-being?

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- **Anxious attachment style.** These individuals demand closeness, are less trusting, and are more emotional, jealous, and possessive.

anxious attachment style An attachment style that describes adults who demand closeness, are less trusting, and are more emotional, jealous, and possessive.

The majority of adults (about 60 to 80 percent) describe themselves as securely attached, and not surprisingly adults prefer having a securely attached partner (Zeifman & Hazan, 2008). Researchers are studying links between adults' current attachment styles and various aspects of their lives (Birnbaum, 2015; Mikulincer & Shaver, 2016; Reiner & others, 2016; Zayas, Merrill, & Hazan, 2015). For example, securely attached adults are more satisfied with their close relationships than insecurely attached adults, and the relationships of securely attached adults are more likely to be characterized by trust, commitment, and longevity. In a recent study, young adults with an anxious attachment style were more likely to be characterized by higher negative affect, stress, and perceived social rejection; those with an avoidant attachment style were more likely to be characterized by less desire to be with others when alone (Sheinbaum & others, 2015). In another recent study, secure attachment in adults was linked to fewer sleep disruptions than insecure avoidant and anxious attachment (Adams & McWilliams, 2015). Also, in one study, insecurely attached adults had a higher level of social anxiety than their securely attached counterparts (Notzon & others, 2016). And a recent meta-analysis of 94 samples of U.S. college students from 1988 to 2011 found that the percentage of students with a secure attachment style had decreased in recent years while the percentage of students with insecure attachment styles had increased (Konrath & others, 2014).

If you have an insecure attachment style, are you stuck with it and does it doom you to have problematic relationships? Attachment categories are somewhat stable in adulthood, but adults do have the capacity to change their attachment thinking and behavior (Mikulincer & Shaver, 2016). Although attachment insecurities are linked to relationship problems, attachment style is only one factor that contributes to relationship functioning; other factors also contribute to relationship satisfaction and success. Later in the chapter, we will discuss some of these factors in our coverage of marital relationships.

Love and Close Relationships

Love refers to a vast and complex territory of human behavior, spanning a range of relationships that includes friendship, romantic love, affectionate love, and consummate love (Berscheid, 2010; Sternberg & Sternberg, 2013). In most of these types of love, one recurring theme is intimacy.



Why is intimacy an important aspect of early adulthood?

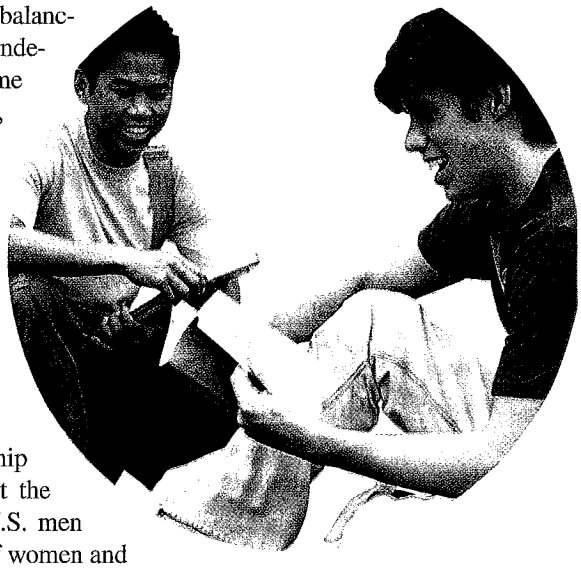
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Intimacy

Self-disclosure and the sharing of private thoughts are hallmarks of intimacy (Prager, 2013). Adolescents have an increased need for intimacy. At the same time, they are engaged in the essential tasks of developing an identity and establishing their independence from their parents. Juggling the competing demands of intimacy, identity, and independence also becomes a central task of adulthood.

Recall that Erik Erikson (1968) argues that identity versus identity confusion—pursuing who we are, what we are all about, and where we are going in life—is the most important issue to be negotiated in adolescence. In early adulthood, according to Erikson, after individuals are well on their way to establishing stable and successful identities, they enter the sixth developmental stage, which is intimacy versus isolation. Erikson describes intimacy as finding oneself while losing oneself in another person, and it requires a commitment to another person.

Development in early adulthood often involves balancing intimacy and commitment on the one hand, and independence and freedom on the other. At the same time that individuals are trying to establish an identity, they face the challenges of increasing their independence from their parents, developing an intimate relationship with another individual, and continuing their friendship commitments. They also face the task of making decisions for themselves without always relying on what others say or do.



How is adult friendship different among female friends, male friends, and cross-gender friends?
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Friendship

Increasingly, researchers are finding that friendship plays an important role in development throughout the life span (Blieszner & Roberto, 2012a, b). Most U.S. men and women have a best friend. Ninety-two percent of women and 88 percent of men have a best friend of the same sex (Blieszner, 2009). Many friendships are long-lasting, as 65 percent of U.S. adults have known their best friend for at least 10 years and only 15 percent have known their best friend for less than 5 years. Adulthood brings opportunities for new friendships; when individuals move to new locations, they may establish new friendships in their neighborhood or at work (Blieszner, 2009).

As in the childhood years, there are gender differences in adult friendship (Blieszner & Roberto, 2012b). Compared with men, women have more close friends and their friendships involve more self-disclosure and mutual support (Wood, 2012). Women are more likely to listen at length to what a friend has to say and be sympathetic, and women have been labeled "talking companions" because talk is so central to their relationships (Gouldner & Strong, 1987). Women's friendships tend to be characterized not only by depth but also by breadth: Women share many aspects of their experiences, thoughts, and feelings (Helgeson, 2012). One study revealed that in their early twenties, women showed more emotional intimacy with their closest friend than did men (Boden, Fischer, & Niehuis, 2010).

Cross-gender friendships can provide both opportunities and problems (Helgeson, 2012). The opportunities involve learning more about common feelings and interests and shared characteristics, as well as acquiring knowledge and understanding of beliefs and activities that historically have been typical of the other gender. Problems can arise in cross-gender friendships because of different expectations. One problem that can plague an adult cross-gender friendship is unclear sexual boundaries, which can produce tension and confusion (Hart, Adams, & Tullett, 2016).

Romantic and Affectionate Love

Although friendship is included in some conceptualizations of love, when we think about what love is, other types of love typically come to mind. In this section we explore two widely recognized types of love: romantic love and affectionate love.

Romantic Love

Some friendships evolve into **romantic love,** which is also called passionate love, or *eros.* Romantic love has strong components of sexuality and infatuation, and as well-known love researcher Ellen Berscheid (2010) has found, it often predominates in the early part of a love relationship. A meta-analysis found that males show higher avoidance and lower anxiety about romantic love than females do (Del Giudice, 2011).

romantic love Also called passionate love, or *eros;* romantic love has strong sexual and infatuation components and often predominates in the early period of a love relationship.



How Would You...?

As a **health-care professional,** how would you advise individuals who are concerned about their sexual functioning because their romantic relationship seems to be losing its spark?

affectionate love In this type of love, also called companionate love, an individual desires to have the other person near and has a deep, caring affection for the other person.

A complex intermingling of different emotions goes into romantic love—including passion, fear, anger, sexual desire, joy, and jealousy. Sexual desire is the most important ingredient of romantic love (Berscheid, 2010). Obviously, some of these emotions are a source of anguish, which can lead to other issues such as depression. One study found that a relationship between romantic lovers was more likely than a relationship between friends to be a cause of depression (Berscheid & Fei, 1977). Also, a recent study revealed that a heightened state of romantic love in young adults was linked to stronger depression and anxiety symptoms but better sleep quality (Bajoghli & others, 2014). And a recent study confirmed that declaring a relationship status on Facebook was associated with both romantic love and jealousy (Orosz & others, 2015).

Affectionate Love

Love is more than just passion. **Affectionate love,** also called companionate love, is the type of love that occurs when someone desires to have the other person near and has a deep, caring affection for the person.

The early stages of love have more romantic love ingredients—but as love matures, passion tends to give way to affection (Berscheid, 2010). Phillip Shaver (1986) proposed a developmental model of love in which the initial phase of romantic love is fueled by a mixture of sexual attraction and gratification, a reduced sense of loneliness, uncertainty about the security of developing another attachment, and excitement from exploring the novelty of another human being. With time, he says, sexual attraction wanes, attachment anxieties either lessen or produce conflict and withdrawal, novelty is replaced with familiarity, and lovers find themselves either securely attached in a deeply caring relationship or distressed—feeling bored, disappointed, lonely, or hostile, for example. In the latter case, one or both partners may eventually end the relationship and then move on to another relationship.

Consummate Love

So far we have discussed two forms of love: romantic (or passionate) and affectionate (or companionate). According to Robert J. Sternberg (1988; Sternberg & Sternberg, 2013), these are not the only forms of love. Sternberg proposed a triarchic theory of love in which love can be thought of as a triangle with three main dimensions—passion, intimacy, and commitment. Passion involves physical and sexual attraction to another. Intimacy relates to the emotional feelings of warmth, closeness, and sharing in a relationship. Commitment is the cognitive appraisal of the relationship and the intent to maintain the relationship even in the face of problems.

In Sternberg's theory, the strongest, fullest form of love is *consummate love,* which involves all three dimensions (see Figure 1). If passion is the only ingredient in a relationship (with intimacy and commitment low or absent), we are merely *infatuated.* An affair or a fling in which there is little intimacy and even less commitment is an example. A relationship marked by intimacy and commitment but low or lacking in passion is called *affectionate love,* a pattern often found among couples who have been married for many years. If passion and commitment are present but intimacy is not, Sternberg calls the relationship *fatuous love,* as when one person worships another from a distance. But if couples share all three dimensions—passion, intimacy, and commitment—they experience consummate love (Sternberg & Sternberg, 2013).

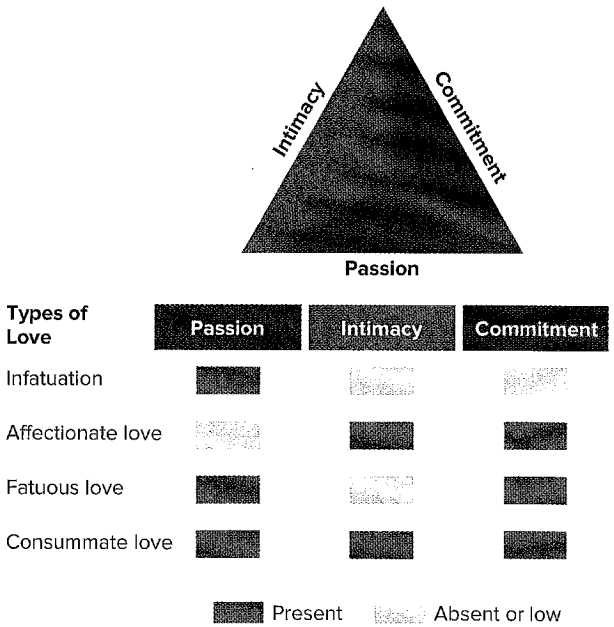


Figure 1 Sternberg's Triangle of Love
Sternberg identified three dimensions of love: passion, intimacy, and commitment. Various combinations of these dimensions result in infatuation, affectionate love, fatuous love, and consummate love.

Adult Lifestyles

A striking social change in recent decades has been the decreased stigma attached to individuals who do not maintain what were long considered conventional families. Adults today choose many lifestyles and form many types of families (Hiekel, Liefbroer, & Poortman, 2015). They live alone, cohabit, marry, divorce, or live with someone of the same sex.

In his book *The Marriage-Go-Round* sociologist Andrew Cherlin (2009) concluded that the United States has more marriages and remarriages, more divorces, and more short-term cohabiting (living together) relationships than most countries. Combined, these lifestyles create more turnover and movement in and out of relationships in the United States than in virtually any other country. Let's explore these varying relationship lifestyles.

Single Adults

Recent decades have seen a dramatic rise in the percentage of single adults. In 2014, 45 percent of U.S. adults 18 years of age and older had never been married (U.S. Census Bureau, 2015a). In the 18- to 29-year-old age bracket, the percentage of individuals who are single and never been married increased from 48 percent in 2005 to 64 percent in 2014 (Gallup Poll, 2015). The increasing number of single adults reflects rising rates of cohabitation and a trend toward postponing marriage. The United States has a lower percentage of single adults than many other countries such as Great Britain, Germany, and Japan. The fastest growth in adopting a single adult lifestyle is occurring in rapidly developing countries such as China, India, and Brazil (Klinenberg, 2013).

Common challenges faced by single adults may include forming intimate relationships with other adults, confronting loneliness, and finding a niche in a society that is marriage-oriented. Bella DePaulo (2006, 2011) argues that society has a widespread bias against unmarried adults that is seen in everything from missed perks in jobs to deep social and financial prejudices.

Advantages of being single include having time to make decisions about one's life course, time to develop personal resources to meet goals, freedom to make autonomous decisions and pursue one's own schedule and interests, opportunities to explore new places and try out new experiences, and privacy.

Cohabiting Adults

Cohabitation refers to living together in a sexual relationship without being married. Cohabitation has undergone considerable changes in recent years (Barr, Simons, & Simons, 2015; Hognas & Thomas, 2016; Tach & Eads, 2015; Willoughby & Belt, 2016). There has been a dramatic increase in the number of cohabiting U.S. couples since 1970, with more than 60 percent cohabiting prior to getting married (National Marriage Project, 2011). As shown in Figure 2, the upward trend shows no sign of letting up—from 3.8 million cohabiting couples in 2000 to 7.8 million cohabiting couples in 2012 (Vespa, Lewis, & Kreider, 2013). Cohabitation rates are even higher in some countries—in Sweden, for example, cohabitation before marriage is virtually universal (Stokes & Raley, 2009).

A number of couples view their cohabitation not as a precursor to marriage but as an ongoing lifestyle (Klinenberg, 2013). These couples do not want the official aspects of marriage. In the United States, cohabiting arrangements tend to be short-lived, with

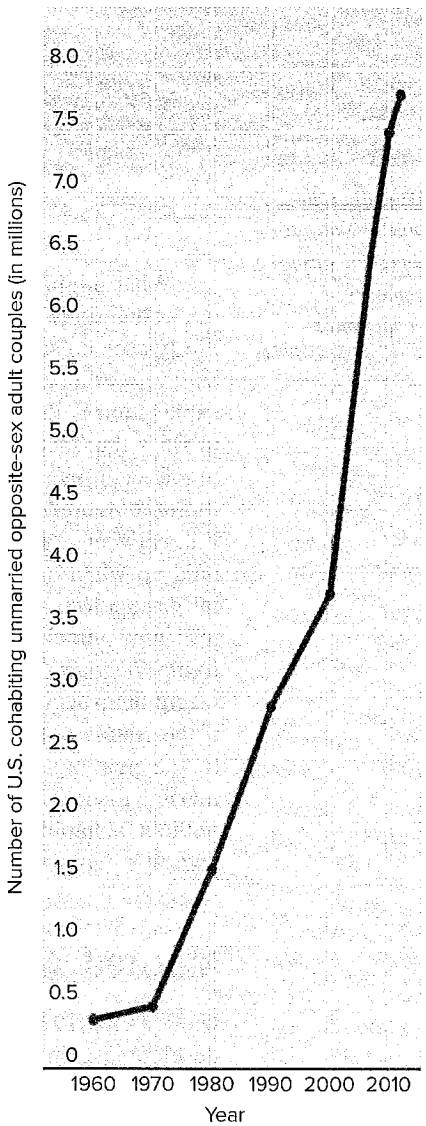


Figure 2 The Increase in Cohabitation in the United States Since 1970, there has been a dramatic increase in the number of unmarried adults living together in the United States.



What are some potential advantages and disadvantages of cohabitation?
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one-third lasting less than a year (Hyde & DeLamater, 2014). Fewer than 1 out of 10 lasts five years. Of course, it is easier to dissolve a cohabitation relationship than a marriage.

Couples who cohabit face certain problems (Blumberg, Vahratian, & Blumberg, 2014; Willoughby & Belt, 2015). Disapproval by parents and other family members can place emotional strain on the cohabiting couple. Some cohabiting couples have difficulty owning property jointly. Legal rights on the dissolution of the relationship are less certain than in a divorce.

If a couple live together before they marry, does cohabiting help or harm their chances of later having a stable and happy marriage? The majority of studies have found lower rates of marital satisfaction and higher rates of divorce in couples who lived together before getting married (Copen, Daniels, & Mosher, 2013; Whitehead & Popenoe, 2003). However, recent research indicates that the link between marital cohabitation and marital instability in first marriages has weakened in recent cohorts (Smock & Gupta, 2013).

What might explain the finding that cohabiting is linked with divorce more than not cohabiting? The most frequently given explanation is that the less traditional lifestyle of cohabitation may attract less conventional individuals who are not great believers in marriage in the first place (Whitehead & Popenoe, 2003). An alternative explanation is that the experience of cohabiting changes people's attitudes and habits in ways that increase their likelihood of divorce.

Recent research has provided clarification of cohabitation outcomes. One meta-analysis found the negative link between cohabitation and marital instability did not hold up when only cohabitation with the eventual marital partner was examined, indicating that these cohabitors may attach more long-term positive meaning to living together (Jose, O'Leary, & Moyer, 2010). Also, a recent analysis indicated that cohabiting does not have a negative effect on marriage if the couple did not have any previous live-in lovers and did not have children prior to the marriage (Cherlin, 2009). And a recent study concluded that the risk of marital dissolution between cohabitors (compared with individuals who married without cohabiting) was much smaller when they cohabited in their mid-twenties and later (Kuperberg, 2014).

How Would You...?

As a **psychologist,** how would you counsel a couple deciding whether to cohabit before marriage?

Married Adults

Until about 1930, stable marriage was widely accepted as the endpoint of adult development. In the last 70 to 80 years, however, personal fulfillment both inside and outside marriage has emerged as a goal that competes with marital stability. The changing norm of male-female equality in marriage and increasingly high expectations for what a marital relationship should be have produced marital relationships that are more fragile and intense than they were for earlier generations (Seccombe, 2015). A study of 502 newlyweds found that nearly all couples had optimistic forecasts of how their marriage would change over the next four years (Lavner & Bradbury, 2013). Despite their optimistic forecasts, their marital satisfaction declined across this time frame. Wives with the most optimistic forecasts showed the steepest declines in marital satisfaction.

Some characteristics of marital partners predict whether the marriage will last longer. Two such characteristics are education and ethnicity. A recent interview study involving more than 22,000 women found that both women and men with a bachelor's degree were more likely to delay marriage but were also more likely to eventually get

married and stay married for more than 20 years (Copen, Daniels, & Mosher, 2013). Also in this study, Asian American women were the most likely of all ethnic groups to be in a first marriage that lasted at least 20 years—70 percent were in a first marriage that lasted this long, compared with 54 percent for non-Latino White women, 53 percent for Latino women, and 37 percent for African American women.

Marital Trends

In recent years, marriage rates in the United States have declined. Recently, the marriage rate continued to drop to 6.7 per 1,000 individuals, down from 8.2 in 2000 (Centers for Disease Control and Prevention, 2014). In 2012, 48.6 percent of Americans were married, down from 72 percent in 1960 (U.S. Census Bureau, 2013).

More adults are remaining single longer, with 27 percent of U.S. adults currently having never married (Pew Research Center, 2010). By 2014, the U.S. average age for a first marriage had climbed to 29.3 years for men and 27 years for women, higher than at any other point in history (U.S. Census Bureau, 2015b). In 1960, the average age for a first marriage in the United States was 23 years for men and 20 years for women. In addition, the increase in cohabitation and a slight decline in the percentage of divorced individuals who remarry contribute to declining marriage rates in the United States (Copen & others, 2012).

An increasing number of children are growing up in families with unmarried parents not because of divorce but because their parents have never married, a circumstance that is far more likely to occur when the mother has a low level of education (Pew Research Center, 2015b). In a recent study, women with lower levels of education were more likely to have a birth in a cohabiting relationship that was established prior to conception (Gibson-Davis & Rackin, 2014). In this study, the probability that a low-educated mother would have a conventional married birth was only 11.5 percent compared with 78.4 percent for highly educated mothers.

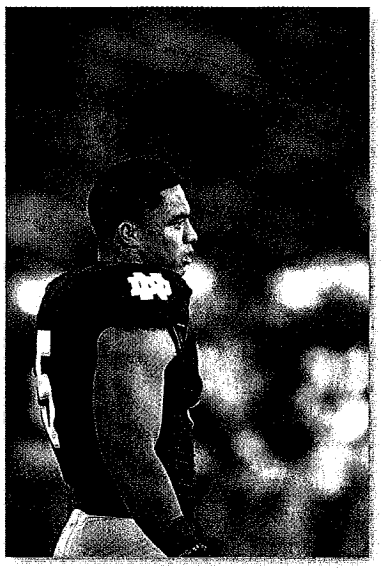
A recent study explored what U.S. never-married men and women are looking for in a potential spouse (Wang, 2014). Following are the percentages who reported that various factors would be very important for them:

Factor	Men	Women
Similar ideas about having and raising children	62	70
A steady job	46	78
Same moral and religious beliefs	31	38
At least as much education	26	28
Same racial or ethnic background	7	10

Thus, in this study, never-married men said that the most important factor for a potential spouse was similar ideas about having and raising children, but never-married women placed greater importance on having a partner with a steady job.

Despite the decline in marriage rates, the United States is still a marrying society (Welch, 2015). In 2010, by 40 years of age, 77 percent of individuals had ever been married, although this figure is substantially below the figure of 93 percent in the 1960s (Pew Research Center, 2011). In a national poll, more than 40 percent of Americans under 30 expressed a belief that marriage was headed for extinction, yet only 5 percent of those young adults said they didn't want to get married (Pew Research Center, 2010). These findings may reflect marriage's role as a way to show friends and family that you have a successful social life (Cherlin, 2009).

Recently, romantic attraction has not only taken place in person but also over the Internet (Khan & Chaudhry, 2015; Kmietowicz, 2015; Reed, Tolman, & Ward, 2016). In a recent U.S. survey, 10 percent of 18- to 24-year-olds, 22 percent of 25- to 34-year-olds, and 17 percent of 35- to 44-year-olds reported that they had used online dating sites or apps (Pew Research Center, 2015a). In their twenties, women have more online pursuers than men, but in their forties men have more online pursuers. When online dating began in 2005 it was viewed by most people as not being a good way to meet people, but in a recent national survey a majority



Manti Te'o.

© John Biever/Sports Illustrated/Getty Images

of Americans said that online dating is a good way to meet people (Pew Research Center, 2015a).

Is looking for love and a marital partner online likely to work out? It didn't work out well in 2012 for Notre Dame linebacker Manti Te'o, whose online girlfriend turned out to be a "catfish," someone who fakes an identity online. However, online dating sites claim that their sites often have positive outcomes. A poll commissioned by Match.com in 2009 reported that twice as many marriages occurred between individuals who met through an online dating site as between people who met at bars, clubs, and other social events.

One problem with online matchmaking is that many individuals misrepresent their characteristics, such as how old they are, how attractive they are, and their occupation. Despite such dishonesty, some researchers have found that romantic relationships initiated on the Internet are more likely than relationships established in person to last for more than two years (Bargh & McKenna, 2004). And a national study of more than 19,000 individuals found that more than one-third of marriages now begin online (Cacioppo & others, 2013). Also in this study, marriages that began online were slightly less likely to break up and were characterized by slightly higher marital satisfaction than those that started in traditional offline contexts.

Is there a best age to get married? Marriages in adolescence are more likely to end in divorce than marriages in adulthood (Copen & others, 2012). However, researchers have not been able to pin down a specific age range for getting married that is most likely to result in a successful marriage (Furstenberg, 2007).

How happy are people who do marry? The average duration of a marriage in the United States is currently just over nine years. As indicated in Figure 3, the percentage of married individuals in the United States who said their marriages were "very happy" declined from the 1970s through the early 1990s, but recently the decline has begun to flatten out (Popenoe, 2009). Notice in Figure 3 that men consistently report being happier in their marriages than women do.

The Benefits of a Good Marriage

Are there any benefits to having a good marriage? Individuals who are happily married live longer, healthier lives than either divorced individuals or those who are unhappily married (Kilpi & others, 2015; Lo, Cheng, & Simpson, 2015). In a recent research review, it was concluded that the experience of divorce or separation confers risk for poor health outcomes, including a 23 percent higher mortality rate (Sbarra, 2015). A survey of U.S. adults 50 years and older also revealed that a lower portion

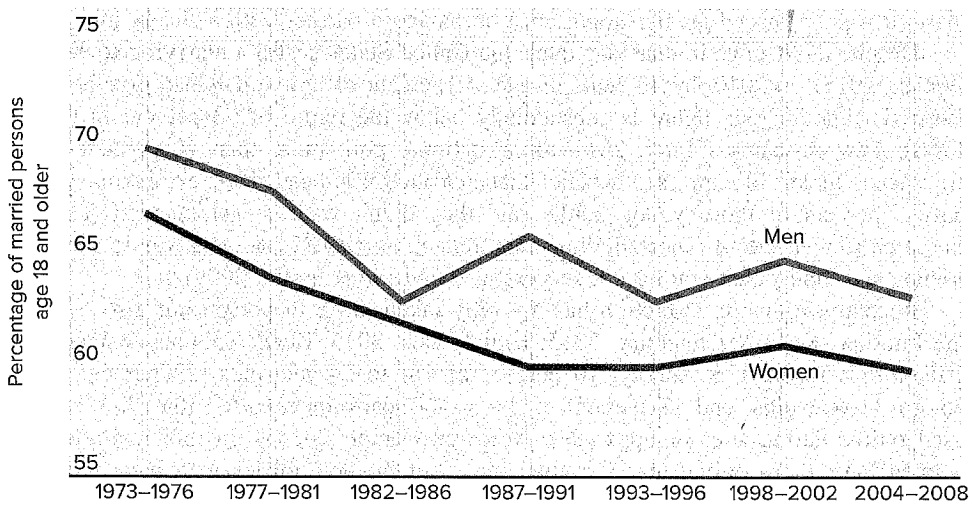


Figure 3 Percentage of Married Persons Age 18 and Older with "Very Happy" Marriages

of adult life spent in marriage was linked to an increased likelihood of dying at an earlier age (Henretta, 2010). Also, in a recent large-scale study in the United States and six European countries, not being in the labor force was associated with higher mortality but marriage attenuated the increased mortality risk linked to labor force inactivity (Van Hedel & others, 2015). Further, an unhappy marriage can shorten a person's life by an average of four years (Gove, Style, & Hughes, 1990).

What are the reasons for the benefits of a happy marriage? People in happy marriages are likely to feel less physically and emotionally stressed, which puts less wear and tear on a person's body. Such wear and tear can lead to numerous physical ailments, such as high blood pressure and heart disease, as well as psychological problems such as anxiety, depression, and substance abuse.

Divorced Adults

In the 1980s divorce reached epidemic proportions in the United States (Braver & Lamb, 2013). However, the divorce rate declined in recent decades, peaking at 5.1 divorces per 1,000 people in 1981 and declining to 3.2 divorces per 1,000 people in 2014 (Centers for Disease Control and Prevention, 2015). The 2014 divorce rate of 3.2 compares with a marriage rate of 6.9 per 1,000 people in 2014.

Although the divorce rate has dropped, the United States still has one of the highest divorce rates in the world. Russia has the highest divorce rate (4.7 divorces per 1,000 people) (UNSTAT, 2011). In the United States, nearly half of first marriages will break up within 20 years (Copen, Daniels, & Mosher, 2013).

Individuals in some groups have higher rates of divorce (Repetti, Flook, & Sperling, 2011). Youthful marriage, low educational level, low income, not having a religious affiliation, having parents who are divorced, and having a baby before marriage are factors that are associated with increases in divorce (Hoelter, 2009). And certain characteristics of one's partner increase the likelihood of divorce: alcoholism, psychological problems, domestic violence, infidelity, and inadequate division of household labor (Hoelter, 2009).

Earlier, we indicated that researchers have not been able to pin down a specific age that is the best time to marry so that the marriage will be less likely to end in a divorce. However, if a divorce is going to occur, it usually takes place early in a marriage, most often between the fifth and tenth years of marriage (National Center for Health Statistics, 2000) (see Figure 4). For example, a recent study found that divorce peaked in Finland at approximately 5 to 7 years after a marriage, then the rate of divorce gradually declined (Kulu, 2014). This timing may reflect an effort by partners in troubled marriages to stay in the marriage and try to work things out.



Figure 4 The Divorce Rate in Relation to Number of Years Married
Shown here is the percentage of divorces as a function of how long couples have been married. Notice that most divorces occur in the early years of marriage, peaking in the fifth to tenth years of marriage.

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If after several years these efforts have not improved the relationship, the couple may then seek a divorce.

Both partners experience challenges after a marriage dissolves (Sbarra, Hasselamo, & Bourassa, 2015). Divorced adults have higher rates of depression, anxiety, physical illnesses, suicide, motor vehicle accidents, alcoholism, and mortality (Braver & Lamb, 2013). Both divorced women and divorced men complain of loneliness, diminished self-esteem, anxiety about the unknowns in their lives, and difficulty in forming satisfactory new intimate relationships (Hetherington, 2006). A recent research review concluded that both divorced men and women are more likely to commit suicide than their married counterparts (Yip & others, 2015). And in a recent study, both divorced men and women had a higher risk for having a heart attack than those who were married, but the risk for this cardiovascular disease was higher for divorced women than for divorced men (Dupre & others, 2015).

There are gender differences in the process and outcomes of divorce (Braver & Lamb, 2013). Women are more likely to sense that something is wrong with the marriage and are more likely to seek a divorce than are men. Women also show better emotional adjustment and are more likely to perceive divorce as a "second chance" to increase their happiness, improve their social lives, and seek better work opportunities. However, divorce typically has a more negative economic impact on women than it does on men.

Remarried Adults

Adults who remarry usually do so rather quickly, with approximately 50 percent remarrying within three years after they initially divorce (Sweeney, 2009, 2010). Men remarry sooner than women. Men with higher incomes are more likely to remarry than their counterparts with lower incomes. Remarriage occurs sooner for partners who initiate a divorce (especially in the first several years after divorce and for older women) than for those who do not initiate it (Sweeney, 2009, 2010). And some remarried individuals are more adult-focused, responding more to the concerns of their partner, while others are more child-focused, responding more to the concerns of their children (Anderson & Greene, 2011).

Recent data indicate that the remarriage rate in the United States has declined, going from 50 of every 1,000 divorced or widowed Americans in 1990 to 28 of every 1,000 in 2013 (Payne, 2015). One reason for the decline is the dramatic increase in cohabitation in recent years. Men are more likely to get remarried than women; in 2013, the remarriage rate was almost twice as high for men as women (40 per 1,000 for men and 21 per 1,000 for women in that year) (Payne, 2015). Thus, men are either more eager or more able to find new spouses than are women.

Remarried adults often find it difficult to stay remarried. Why? For one thing, many remarry not for love but for financial reasons, for help in rearing children, and to reduce loneliness. They also might carry into the stepfamily negative patterns that produced failure in an earlier marriage. Remarried couples also experience more stress in rearing children than parents in never-divorced families (Ganong, Coleman, & Russell, 2015; Sierra, 2015). One study revealed that positive attitudes about divorce, low marital quality, and divorce proneness were more common among remarried persons than among their counterparts in first marriages (Whitton & others, 2013). Another recent study found that remarried adults had less frequent sex than those in their first marriage (Stroope, McFarland, & Uecker, 2015).

Gay and Lesbian Adults

Until recently, the legal context of marriage created barriers to breaking up that did not exist for same-sex partners. However, the legalization of same-sex marriage in all 50 states in 2015 also created this barrier for same-sex partners. In many additional ways, researchers have found that gay and lesbian relationships are similar—in their satisfactions, loves, joys, and conflicts—to heterosexual relationships (Fingerhut & Peplau, 2013). For example, like heterosexual couples, gay and lesbian couples need

to find a balance of romantic love, affection, autonomy, and equality that is acceptable to both partners (Hope, 2009). An increasing number of gay and lesbian couples are creating families that include children.

transgender A broad term that refers to individuals whose gender identity or behavior is either completely or partially at odds with the sex into which they were born.

Data from the American Community Survey conducted in 2006–2010 indicate that among same-sex couples in the United States, lesbian couples are approximately five times more likely to be raising children than are gay couples (Miller & Price, 2013). An increasing number of same-sex couples are adopting children (Farr & Patterson, 2013). The percentage of same-sex couples who had adopted children nearly doubled from 10 percent in 2000 to 19 percent in 2009 (DiBennardo & Gates, 2014). Recall that recent research indicated lesbian and gay couples shared child care more than heterosexual couples did, with lesbian couples being the most supportive and gay couples the least supportive (Farr & Patterson, 2013). Also, a recent survey found that a greater percentage of same-sex, dual-earner couples than different sex couples said they share laundry (44 versus 31 percent), household repairs (33 versus 15 percent), and routine (74 versus 38 percent) and sick (62 versus 32 percent) child care responsibilities (Matos, 2015).

There are a number of misconceptions about gay and lesbian couples. Contrary to stereotypes, one partner is masculine and the other feminine in only a small percentage of gay and lesbian couples. Only a small segment of the gay population has a large number of sexual partners, and this is uncommon among lesbians. Furthermore, researchers have found that gay and lesbian couples prefer long-term, committed relationships (Fingerhut & Peplau, 2013). About half of committed gay couples do have an open relationship that allows the possibility of sex (but not affectionate love) outside of the relationship. Lesbian couples usually do not have an open relationship.

A special concern is the stigma, prejudice, and discrimination that lesbian, gay, and bisexual individuals experience because of widespread social devaluation of same-sex relationships (van der Star & Branstrom, 2015). However, researchers have found that many individuals in these relationships saw stigma as bringing them closer together and strengthening their relationship (Frost, 2011).

Recently, considerable interest has been shown in the term **transgender,** a broad term that refers to individuals whose gender identity or behavior is either completely or partially at odds with the sex into which they were born. For example, an individual may have a female body but identify more strongly with being masculine than being feminine. Transgender persons also may not want to be labeled "he" or "she" but prefer a more neutral label such as "they" or "ze" (Scelfo, 2015). Transgender individuals can be straight, gay, lesbian, or bisexual.

Challenges in Marriage, Parenting, and Divorce

No matter what lifestyles young adults choose, their choices will bring certain challenges. Because many choose the lifestyle of marriage, we'll consider some of the challenges in marriage and how to make it work. We also examine some challenges in parenting and trends in childbearing. Given the statistics about divorce rates in the previous section, we'll then consider how to deal with divorce.

Making Marriage Work

John Gottman (1994, 2006, 2011; Gottman & Gottman, 2009; Gottman & Silver, 2000) uses many methods to analyze what makes marriages work. He interviews couples about the history of their marriage, their philosophy about marriage, and how they view their parents' marriages. He videotapes them talking to each other about how their day went and evaluates what they say about the good and bad times of their marriages. Gottman also uses physiological measures to chart their heart

rate, blood flow, blood pressure, and immune functioning moment by moment. In addition, he checks back with the couples every year to see how their marriage is faring. Gottman's research represents the most extensive assessment of marital relationships available. Currently, he and his colleagues are following 700 couples in seven studies.

Among the principles Gottman has found that determine whether a marriage will work are the following:



What makes marriages work? What are the benefits of having a good marriage?

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- *Establishing love maps.* Individuals in successful marriages have personal insights and detailed maps of each other's life and world. They aren't psychological strangers. In good marriages, partners are willing to share their feelings with each other. They use these "love maps" to express not only their understanding of each other but also their fondness and admiration.
- *Nurturing fondness and admiration.* In successful marriages, partners sing each other's praises. More than 90 percent of the time, when couples put a positive spin on their marriage's history, the marriage is likely to have a positive future.
- *Turning toward each other instead of away.* In good marriages, spouses are adept at turning toward each other regularly. They see each other as friends. This friendship doesn't keep arguments from occurring, but it can prevent differences from overwhelming the relationship. In these good marriages, spouses respect each other and appreciate each other's point of view despite disagreements.
- *Letting your partner influence you.* Bad marriages often involve one spouse who is unwilling to share power with the other. Although power-mongering is more common in husbands, some wives also show this trait. A willingness to share power and to respect the other person's view is a prerequisite to compromising.
- *Creating shared meaning.* The more partners can speak candidly and respectfully with each other, the more likely they are to create shared meaning in their marriage. This also includes sharing goals with one's spouse and working together to achieve each other's goals.



How Would You...?

As a **human development and family studies professional,** how would you counsel a newly married couple seeking advice on how to make their marriage work?

In a provocative book titled *Marriage, a History: How Love Conquered Marriage,* Stephanie Coontz (2005) concluded that marriages in America today are fragile not because Americans have become self-centered and career-minded but because expectations for marriage have become unrealistically high compared with previous generations. To make a marriage work, Coontz emphasizes like Gottman that partners need to develop a deep friendship, show respect for each other, and embrace commitment.

Becoming a Parent

For many young adults, parental roles are well planned, coordinated with other roles in life, and developed with the individual's economic situation in mind. For others, the discovery that they are about to become parents is a startling surprise. In either event, the prospective parents may have mixed emotions and romantic illusions about having a child (Florsheim, 2014).

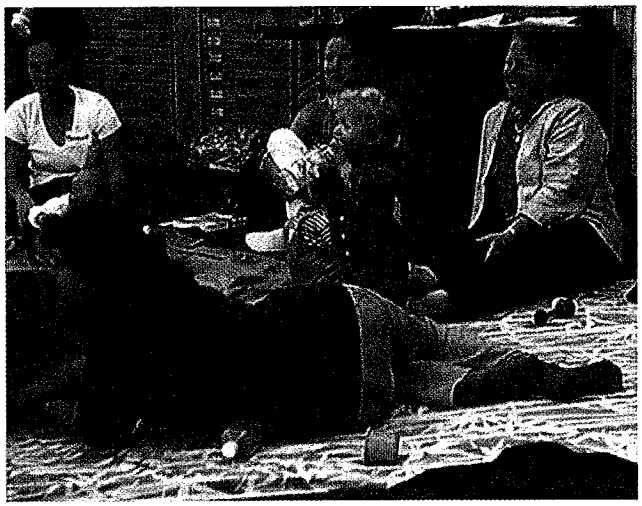
Careers in life-span development

Janis Keyser, Parent Educator

Janis Keyser is a parent educator who teaches in the Department of Early Childhood Education at Cabrillo College in California. In addition to teaching college classes and conducting parenting workshops, she has co-authored a book with Laura Davis (1997): *Becoming the Parent You Want to Be: A Sourcebook of Strategies for the First Five Years.*

Janis co-authors a nationally syndicated parenting column, "Growing Up, Growing Together." She is the mother of three, stepmother of five, grandmother of twelve, and great-grandmother of six.

Parent educators may have different educational backgrounds and occupational profiles. Janis Keyser has a background in early childhood education and, as just indicated, teaches at a college. Many parent educators have majored in areas such as child development as an undergraduate and/or taken a specialization of parenting and family courses in a master's or doctoral degree program in human development and family studies, clinical psychology, counseling psychology, or social work. As part of, or in addition to, their work in colleges and clinical settings, they may conduct parent education groups and workshops.

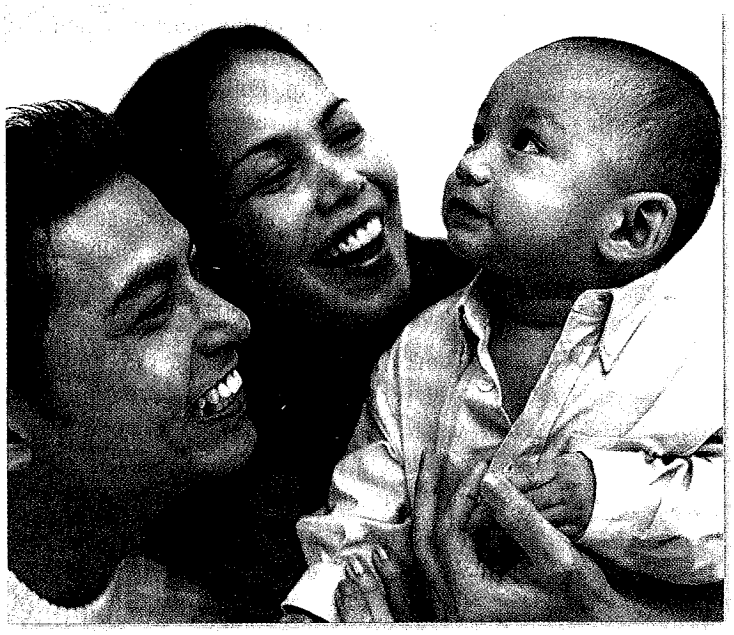


Janis Keyser (*right*) conducts a parenting workshop.

© Janis Keyser

Parenting requires a number of interpersonal skills and imposes emotional demands, yet there is little in the way of formal education for this task. Most parents learn parenting practices from their own parents—some they accept, some they discard. Unfortunately, when parenting practices are passed on from one generation to the next, both desirable and undesirable practices are perpetuated. Adding to the challenges of the task of parenting, husbands and wives may bring different parenting practices to the marriage (Huston & Holmes, 2004). The parents, then, may disagree about which is a better way to interact with a child.

Parent educators seek to help individuals become better parents. To read about the work of one parent educator, see *Careers in Life-Span Development.*



What are some trends in having children?

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Like the age when individuals first marry, the age at which individuals have children has been increasing (Baca Zinn, Eitzen, & Wells, 2016; Benokraitis, 2015). In 2014, the average age of U.S. women who gave birth for the first time was 26, up from 21 in 2001 (Martin & others, 2015). A recent national poll of 40- to 50-year-old U.S. women found that those with a master's degree or more first became mothers at 30; in comparison, the average age for women with a high school diploma was just 24 (Pew Research Center, 2015b).

As birth control has become common practice, many individuals consciously choose when they will have children and how many children they will rear. The

number of one-child families is increasing, for example, and U.S. women overall are having fewer children. These childbearing results are creating several trends:

- By giving birth to fewer children, and reducing the demands of child care, women free up a significant portion of their life spans for other endeavors.
- As working women increase in number, they invest less actual time in the child's development.
- Men are apt to invest a greater amount of time in fathering.
- Parental care is often supplemented by institutional care (child care, for example).

As more women show an increased interest in developing a career, they are not only marrying later, but also having fewer children and having them later in life. What are some of the advantages of having children early or late? Some of the advantages of having children early (in the twenties) are that the parents are likely to have more physical energy (for example, they can cope better with such matters as getting up in the middle of the night with infants and waiting up until adolescents come home at night); the mother is likely to have fewer medical problems with pregnancy and childbirth; and the parents may be less likely to build up expectations for their children, as do many couples who have waited many years to have children.



How Would You...?

As a human development and family studies professional, how would you advise a young woman who is inquiring about the best age to have children?

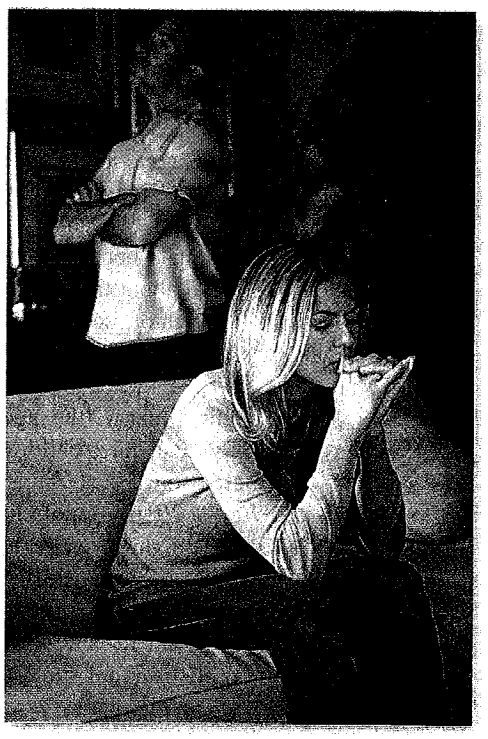
There are also advantages to having children later (in the thirties). These parents have had more time to consider and achieve some of their goals in life and to determine what they want from their family and career roles. Older parents also are more mature and able to benefit from their life experiences to engage in more competent parenting, and they are more securely established in their careers and tend to have more income for child-rearing expenses than younger parents do.

Dealing with Divorce

If a marriage doesn't work, what happens after divorce? Psychologically, one of the most common characteristics of divorced adults is difficulty trusting someone else in a romantic relationship. Following a divorce, though, people's lives can take diverse turns (Hatemi, McDermott, & Eaves, 2015; Sbarra, Hasselmo, & Bourasssa, 2015). For example, in one research study 20 percent of the divorced group became more competent and better adjusted following their divorce (Hetherington & Kelly, 2002).

Strategies for divorced adults include the following (Hetherington & Kelly, 2002):

- Think of divorce as a chance to grow personally and to develop more positive relationships.
- Make decisions carefully, realizing that the consequences of your decisions regarding work, lovers, and children may last a lifetime.
- Focus more on the future than the past. Think about what is most important for you going forward in your life, set some challenging goals, and plan how to reach them.
- Use your strengths and resources to cope with difficulties.
- Don't expect to be successful and happy in everything you do. The path to a more enjoyable life will likely have a number of twists and turns, and moving forward will require considerable effort and resilience.



What are some strategies for coping with divorce?

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Summary

Stability and Change from Childhood to Adulthood

- The first 20 years are important in predicting an adult's personality, but so are ongoing experiences in the adult years. Attachment styles, for example, reflect childhood patterns and continue to influence relationships in adulthood. Adult attachments are categorized as secure, avoidant, or anxious. A secure attachment style is linked with positive aspects of relationships.

Love and Close Relationships

- Erikson theorized that intimacy versus isolation is the key developmental issue in early adulthood.
- Friendship plays an important role in adult development, especially in terms of emotional support.
- Romantic love, also called passionate love, includes passion, sexuality, and a mixture of emotions, not all of which are positive. Affectionate love, also called companionate love, usually becomes more important as relationships mature.
- Sternberg proposed a triarchic model of love: passion, intimacy, and commitment. If all three qualities are present, the result is consummate love.

Adult Lifestyles

- Being single has become an increasingly prominent lifestyle. Autonomy is one of its advantages. Challenges faced by single adults include achieving intimacy, coping with loneliness, and finding a positive identity in a marriage-oriented society.
- Cohabitation, an increasingly popular lifestyle, does not lead to greater marital happiness but sometimes is linked to possible negative consequences if a cohabiting couple marries.
- The age at which individuals marry in the United States is increasing. Though marriage rates have declined, a large percentage of Americans still marry. The benefits of marriage include better physical and mental health and a longer life.
- The U.S. divorce rate increased dramatically in the middle of the twentieth century but began to decline in the 1980s.
- Divorce is a complex and emotional experience.
- Stepfamilies are complex, and adjustment is difficult. Evidence on the benefits of remarriage after divorce is mixed.
- One of the most striking research findings about gay and lesbian couples is how similar their relationships are to heterosexual couples' relationships. Considerable interest has recently been shown in the term *transgender.*

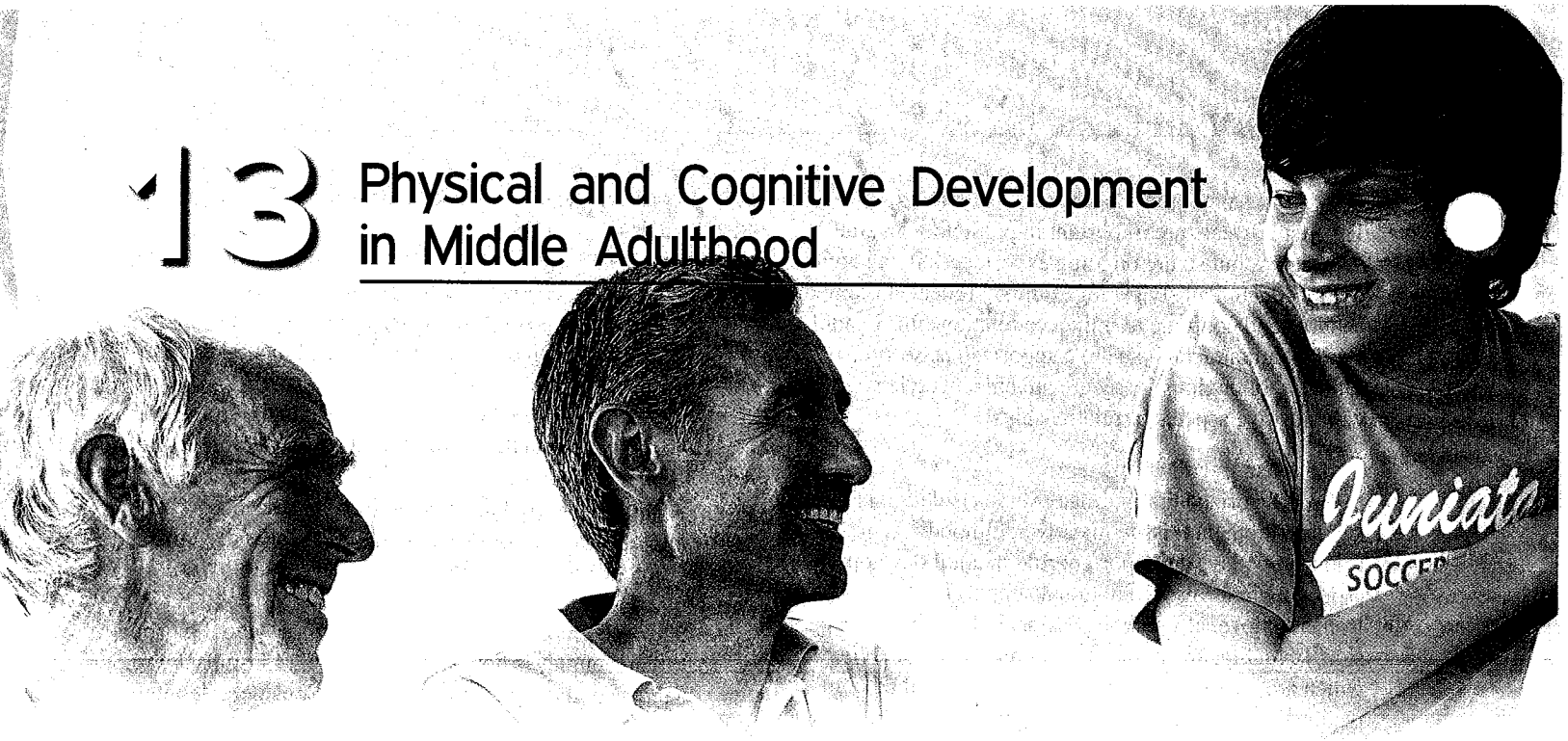
Challenges in Marriage, Parenting, and Divorce

- Gottman's research indicates that couples in successful marriages establish love maps, nurture fondness and admiration, turn toward each other, accept the influence of the partner, and create shared meaning.
- Families are becoming smaller, and many women are delaying childbirth until they have become well established in a career.
- Divorced adults often have difficulty trusting someone else in a romantic relationship. Certain strategies are effective in dealing with divorce.

Key Terms

affectionate love
anxious attachment style
avoidant attachment style
romantic love
secure attachment style
transgender

13 Physical and Cognitive Development in Middle Adulthood



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CHAPTER OUTLINE

THE NATURE OF MIDDLE ADULTHOOD
Changing Midlife
Defining Middle Adulthood

PHYSICAL DEVELOPMENT
Physical Changes
Health and Disease
Mortality Rates
Sexuality

COGNITIVE DEVELOPMENT
Intelligence
Information Processing

CAREERS, WORK, AND LEISURE
Work in Midlife
Career Challenges and Changes
Leisure

RELIGION AND MEANING IN LIFE
Religion and Adult Lives
Religion and Health
Meaning in Life

Stories of Life-Span Development: Changing Perceptions of Time

Our perception of time depends on where we are in the life span. We are more concerned about time at some points in life than others (Hoppmann & others, 2016; MacDonald, DeCarlo, & Dixon, 2011). Pink Floyd, in their song "Time," described how when people are young life seems longer and time passes more slowly, but when we get older, time seems to pass much more quickly.

In middle adulthood, individuals increasingly think about time-left-to-live instead of time-since-birth (Brothers & others, 2016; Kotter-Gruhn & Smith, 2011; Setterson, 2009; Strough & others, 2016). Middle-aged adults begin to look back to where they have been, reflecting on what they have done with the time they have had. They look toward the future in terms of how much time remains to accomplish what they hope to do with their lives. Older adults look backward even more than middle-aged adults, which is not surprising given the shorter future that awaits them. Also not surprisingly, given the many years they still have to live, emerging adults and young adults are more likely to look forward in time than backward in time.

In this first chapter on middle adulthood, we discuss physical changes; cognitive changes; changes in careers, work, and leisure. We also discuss the importance of religion and meaning in life. To begin, though, we explore how middle age is changing. ■

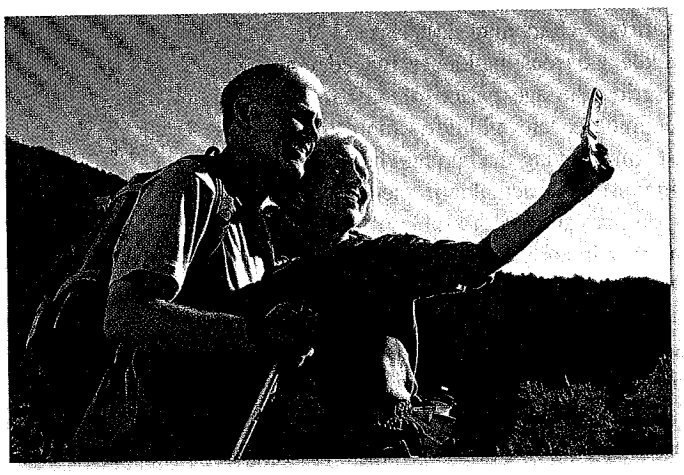
The Nature of Middle Adulthood

Is midlife experienced the same way today as it was 100 years ago? How can middle adulthood be defined, and what are some of its main characteristics?

Changing Midlife

Many of today's 50-year-olds are in better shape, more alert, and more productive than their 40-year-old counterparts from a generation or two earlier. As more people lead healthier lifestyles and medical discoveries help to slow down the aging process, the boundaries of middle age are being pushed upward. It seems that middle age is starting later and lasting longer for increasing numbers of active, healthy, and productive people. A current saying is "60 is the new 40," implying that many 60-year-olds today are living a life that is as active, productive, and healthy as earlier generations did in their forties.

Questions such as, "To which age group do you belong?" and "How old do you feel?" reflect the concept of *age identity*. A consistent finding is that as adults become older their age identity is younger than their chronological age (Setterson & Trauten, 2009; Westerhof, 2009). One study found that almost half of the individuals 65 to 69 years of age considered themselves middle-aged (National Council on Aging, 2000), and another study found a similar pattern: Half of the 60- to 75-year-olds viewed themselves as middle-aged (Lachman, Maier, & Budner, 2000). And a recent British survey of people over 50 years of age revealed that they perceived middle age to begin at 53 (Beneden Health, 2013). In this study, respondents said that being middle aged is characterized by enjoying afternoon naps, groaning when you bend down, and preferring a quiet night in rather than a night out. Also, some individuals consider the upper boundary of midlife as the age when they make the transition from work to retirement.



How is midlife changing?

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When Carl Jung studied midlife transitions early in the twentieth century, he referred to midlife as "the afternoon of life" (Jung, 1933). Midlife serves as an important preparation for late adulthood, "the evening of life" (Lachman, 2004, p. 306). But "midlife" came much earlier in Jung's time. In 1900 the average life expectancy was only 47 years of age; only 3 percent of the population lived past 65. Today, the average life expectancy is 79, and 12 percent of the U.S. population is older than 65 (U.S. Census Bureau, 2015). As a much greater percentage of the population lives to older ages, the midpoint of life and what constitutes middle age or middle adulthood are getting harder to pin down (Cohen, 2012). Statistically, the middle of life today is about 39.5 years of age, but most 39-year-olds don't want to be called "middle-aged." What we think of as middle age comes later—anywhere from 40 or 45 to about 60 or 65 years of age. And as more people live longer, the upper boundary of middle age will likely be nudged higher still.

In comparison with previous decades and centuries, an increasing percentage of today's population is made up of middle-aged and older adults. In the past, the age structure of the population could be represented by a pyramid, with the largest percentage of the population in the childhood years. Today, the percentages of people at different ages in the life span are more similar, creating what is called the "rectangularization" of the age distribution (a vertical rectangle) (Himes, 2009).

Compared to late adulthood, far less research attention has been given to middle adulthood (Lachman, Teshale, & Agrigoroaei, 2015). In a recent U.S. Census Bureau (2012) assessment, more than 102,713,000 people in the U.S. were 40 to 64 years of

age, which accounts for 33.2 percent of the U.S. population. Given the large percentage of people in middle adulthood and the key roles that individuals in midlife play in families, the workplace, and the community, researchers need to give greater attention to this age period.

middle adulthood The developmental period beginning at approximately 40 years of age and extending to about 60 to 65 years of age.

Defining Middle Adulthood

Although the age boundaries are not set in stone, we will consider **middle adulthood** to be the developmental period that begins at approximately 40 years of age and extends to about 60 to 65 years of age. For many people, middle adulthood is a time of declining physical skills and expanding responsibility; a period in which people become more conscious of the young-old polarity and the shrinking amount of time left in life; a point when individuals seek to transmit something meaningful to the next generation; and a time when people reach and maintain satisfaction in their careers. In sum, middle adulthood involves "balancing work and relationship responsibilities in the midst of the physical and psychological changes associated with aging" (Lachman, 2004, p. 305).



What are the main characteristics of middle adulthood? What differentiates early and late midlife?

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In midlife, as in other age periods, individuals make choices, selecting what to do, deciding how to invest time and resources, and evaluating what aspects of their lives they need to change (Hahn & Lachman, 2015; Robinson, Rickenbach, & Lachman, 2015). In midlife, "a serious accident, loss, or illness" may be a "wake-up call" that produces "a major restructuring of time and a reassessment" of life's priorities (Lachman, 2004, p. 310).

For many increasingly healthy adults, middle age is lasting longer. Indeed, a growing number of experts on middle adulthood describe the age period of 55 to 65 as *late midlife* (Deeg, 2005). Compared with earlier midlife, late midlife is more likely to be characterized by the death of a parent, the last child leaving the parental home, becoming a grandparent, preparing for retirement, and in most cases actual retirement. Many people in this age range experience their first confrontation with health problems. Overall, then, although gains and losses may balance each other in early midlife, losses may begin to outweigh gains for many individuals in late midlife (Baltes, Lindenberger, & Staudinger, 2006). Margie Lachman and her colleagues (2015) recently described middle age as a pivotal period because it is a time of balancing growth and decline, linking earlier and later periods of development, and connecting younger and older generations.

Keep in mind, though, that midlife is characterized by individual variations (Hayslip, Pruett, & Caballero, 2015; Lachman, Agrigoroaei, & Hahn, 2016; List & others, 2015). As life-span expert Gilbert Brim (1992) commented, middle adulthood is full of changes, twists, and turns; the path is not fixed. People move in and out of states of success and failure.

Physical Development

What physical changes accompany the change to middle adulthood? How healthy are middle-aged adults? How sexually active are they?

Physical Changes

Although everyone experiences some physical changes due to aging in the middle adulthood years, the rates of this aging vary considerably from one individual to

another. Genetic makeup and lifestyle factors play important roles in whether chronic disease will appear and when (Simons & others, 2016; Theendakara & others, 2016; Zhu & others, 2016). Middle age is a window through which we can glimpse later life while there is still time to engage in prevention and to influence some of the course of aging (Bertrand, Graham, & Lachman, 2013; Lachman, Teshale, & Agrigoroaei, 2015).



How Would You...?

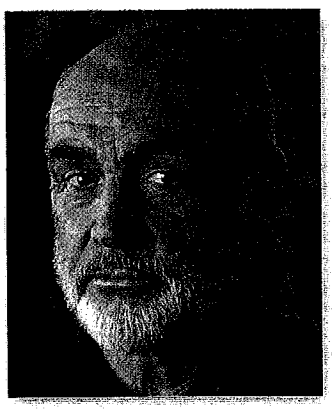
As a **human development and family studies professional,** how would you characterize the impact of the media in shaping middle-aged adults' expectations about their changing physical appearance?

Visible Signs

One of the most visible signs of change in middle adulthood is physical appearance. The first outwardly noticeable signs of aging usually are apparent by the forties or fifties. The skin begins to wrinkle and sag because of a loss of fat and collagen in underlying tissues (Miyawaki & others, 2016; Pageon & others, 2014). Small, localized areas of pigmentation in the skin produce age spots, especially in areas that are exposed to sunlight, such as the hands and face. For most people, their hair becomes thinner and grayer. Fingernails and toenails develop ridges and become thicker and more brittle. A recent twin study found that twins who had been smoking longer were more likely to have more sagging facial skin and wrinkles, especially in the middle and lower portion of the face (Okada & others, 2013).

Since a youthful appearance is valued in our culture, many individuals whose hair is graying, whose skin is wrinkling, whose bodies are sagging, and whose teeth are yellowing strive to make themselves look younger. Undergoing cosmetic surgery, dyeing hair, wearing wigs, enrolling in weight-reduction programs, participating in exercise regimens, and taking heavy doses of vitamins are common in middle age. Many baby boomers have shown a strong interest in plastic surgery and Botox, which may reflect their desire to take control of the aging process (Carruthers & others, 2015; Solish & others, 2016).





Famous actor Sean Connery as a young adult in his twenties (*top*) and as a middle-aged adult in his fifties (*bottom*). *What are some of the most outwardly noticeable signs of aging in middle adulthood?*

(Top) © Bettmann/Corbis; (bottom) © Matthew Mendelsohn/Corbis

Height and Weight

Individuals lose height in middle age, and many gain weight (Haftenberger & others, 2016; Winett & others, 2014). On average, from 30 to 50 years of age, men lose about half an inch in height; they may lose another 3/4 inch from 50 to 70 years of age (Hoyer & Roodin, 2009). The height loss for women can be as much as 2 inches over a 50-year span from 25 to 75 years of age. Note that there are large variations in the extent to which individuals become shorter with aging. The decrease in height is due to bone loss in the vertebrae.

Although people in middle age may lose height, many gain weight (Wang & others, 2016). On average, body fat accounts for about 10 percent of body weight in adolescence; it makes up 20 percent or more in middle age. Obesity increases from early to middle adulthood. In a recent national U.S. survey, in 2011–2012 39.5 percent of U.S. adults 40 to 59 years of age were classified as obese compared with 30.3 percent of younger adults (Ogden & others, 2013). Being overweight is a critical health problem in middle adulthood and increases the risk that individuals will develop a number of other health problems such as hypertension and diabetes (Kawakami & others, 2015; Xie & others, 2016).



How Would You...?

As a **social worker,** how would you apply information on weight and health to promote healthier lifestyles for middle-aged adults?

Strength, Joints, and Bones

Maximum physical strength often is attained in the twenties. The term *sarcopenia* refers to age-related loss of muscle mass and strength (Bianchi & others, 2016; Spira & others, 2015). Muscle loss with age occurs at a rate of approximately 1 to 2 percent per year past the age of 50 (Marcell, 2003).

A loss of strength especially occurs in the back and legs. Obesity is a risk factor for sarcopenia (Cauley, 2015). Recently, researchers have increasingly used the term "sarcopenic obesity" to describe individuals who have sarcopenia and are obese (Lee & others, 2016; Ma & others, 2016). In a recent study sarcopenic obesity was associated with a 24 percent increase in risk for all-cause mortality, with a higher risk of mortality for men than for women (Tian & Xu, 2016).

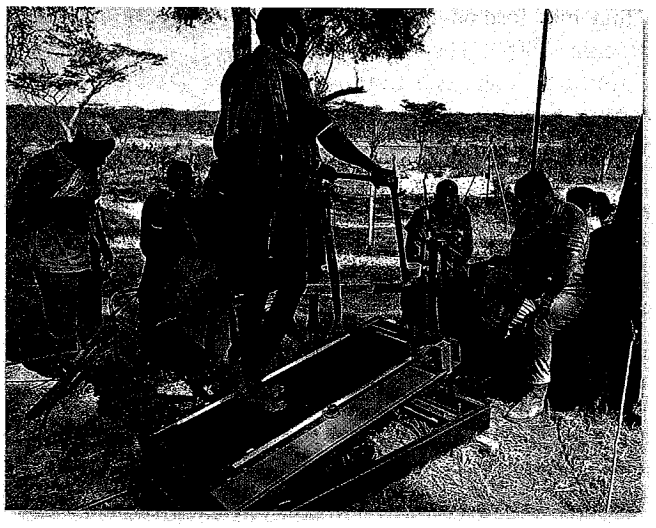
Peak functioning of the body's joints also usually occurs in the twenties. The cartilage that cushions the movement of bones and other connective tissues, such as tendons and ligaments, become less efficient in the middle-adult years, a time when many individuals experience joint stiffness and greater difficulty in movement.

Maximum bone density occurs by the mid- to late thirties, from which point there is a progressive loss of bone. The rate of this bone loss begins slowly but accelerates during the fifties (Baron, 2012). Women lose bone mass about twice as quickly as men. By the end of midlife, bones break more easily and heal more slowly (Gulsahi, 2015).

Vision and Hearing

Accommodation of the eye—the ability to focus and maintain an image on the retina—declines sharply between 40 and 59 years of age. In particular, middle-aged individuals begin to have difficulty viewing close objects, which means that many individuals have to wear glasses with bifocal lenses—lenses with two sections that enable the wearer to see items at different distances (Schieber, 2006). Also, there is some evidence that the retina becomes less sensitive to low levels of illumination. Laser surgery and implantation of intraocular lenses have become routine procedures for correcting vision in middle-aged adults (Fang, Wang, & He, 2013).

Hearing also can start to decline by the age of 40 (Roring, Hines, & Charness, 2007). Sensitivity to high pitches usually declines first. The ability to hear low-pitched sounds does not seem to decline much in middle adulthood, though. Men usually lose their sensitivity to high-pitched sounds sooner than women do. However, this gender difference might be due to men's greater exposure to noise in occupations such as mining, automobile work, and so on (Scialfa & Kline, 2007). Also, recent advances in the effectiveness of hearing aids are dramatically improving the hearing of many aging adults (Banerjee, 2011). However, even with the advent of technologically sophisticated hearing devices, many people don't always wear them, or wear them inappropriately.



Members of the Masai tribe in Kenya, Africa, can walk on a treadmill for long periods of time because of their high activity levels. Incidence of heart disease is extremely low in the Masai tribe, which also can be attributed to their energetic lifestyle.

© The Family of Dr. George V. Mann

Cardiovascular System

Midlife is the time when high blood pressure and high cholesterol take many individuals by surprise (Wu & others, 2016). Cardiovascular disease increases considerably in middle age (Hulsegge & others, 2016; Wu & others, 2016).

The level of cholesterol in the blood increases through the adult years and in midlife begins to accumulate on the artery walls, increasing the risk of cardiovascular disease (Choi & Lee, 2016; Hasvold & others, 2016). High blood pressure (hypertension), too, often occurs in the forties and fifties (Kitaoka & others, 2016). One study found that uncontrolled hypertension can damage the brain's structure and function as early as the late thirties and early forties (Maillard & others, 2012). Another study revealed that hypertension in middle age was linked to risk of cognitive impairment in late adulthood (23 years later) (Virta & others, 2013).

Exercise, weight control, and a diet rich in fruits, vegetables, and whole grains can often help to stave off many cardiovascular problems in middle

age (Atashak, Stannard, & Azizheigi, 2016; Niu & others, 2016; Sallam & Laher, 2016). In a recent study, a high level of physical activity was associated with a lower risk of cardiovascular disease in the three weight categories studied (normal, overweight, and obese) (Carlsson & others, 2016). Also, in a recent study, middle-aged adults who had exercised regularly during adolescence were less likely to develop cardiovascular disease (Nechuta & others, 2015). A recent national study confirmed that moderate-to-vigorous physical activity (such as running, swimming, bicycling) on a regular basis was linked to reduced rates of all-cause mortality, especially for men (Loprinzi, 2015). Another recent study found that having an unhealthy diet was a strong predictor of cardiovascular disease (Menotti & others, 2015). Also, although heredity influences cholesterol levels, LDL (the bad cholesterol) can be reduced and HDL (the good cholesterol) increased by eating food that is very low in saturated fat and cholesterol and by exercising regularly (Koba & others, 2016). Further, the health benefits of cholesterol-lowering and hypertension-lowering drugs are a major factor in improving the health of many middle-aged adults and increasing their life expectancy (Wenger & others, 2014; Yusuf & others, 2016).

Lungs

There is little change in lung capacity through most of middle adulthood. However, at about the age of 55, the proteins in lung tissue become less elastic. This change, combined with a gradual stiffening of connective tissues in the chest wall, decreases the lungs' capacity to shuttle oxygen from the air people breathe to the blood in their veins. The lung capacity of individuals who are smokers drops precipitously in middle age, but if the individuals quit smoking their lung capacity improves, although not to the level of individuals who have never smoked. Recent research also has found that low cognitive ability in early adulthood is linked to reduced lung functioning in middle age (Carroll & others, 2011).

Exercise is linked to better lung functioning and a lower risk of developing lung cancer (Strookappe & others, 2015). In a recent study, more than 17,000 men were given a cardiovascular fitness assessment at 50 years of age (Lakoski & others, 2013). Subsequent analysis of Medicare claims and deaths found that the risk of being diagnosed with lung cancer was reduced by 68 percent for men who were the most fit compared with those who were the least fit.

Sleep

Some aspects of sleep become more problematic in middle age (Green & others, 2012; Prairie & others, 2015). The total number of hours slept usually remains the same as in early adulthood, but beginning in the forties, wakeful periods are more frequent and there is less of the deepest type of sleep (stage 4). The amount of time spent lying awake in bed at night begins to increase in middle age, and this can produce a feeling of being less rested in the morning (Abbott, 2003). Sleep-disordered breathing and restless legs syndrome become more prevalent in middle age (Polo-Kantola, 2011). One study found that middle-aged adults who sleep less than six hours a night on average had an increased risk of developing stroke symptoms (Ruiter & others, 2012). Another study revealed that sleep deprivation was associated with less effective immune system functioning (Wilder-Smith & others, 2013). Also, a recent study revealed that poor sleep quality in middle adulthood was linked to cognitive decline (Waller & others, 2016), and a research review concluded that sleep deprivation is linked to problems with long-term memory consolidation (Abel & others, 2013). And a recent Korean study found that these factors were linked to sleep problems in middle age: unemployment, being unmarried, currently being a smoker, lack of exercise, having irregular meals, and frequently experiencing stressful events (Yoon & others, 2015).

Health and Disease

In middle adulthood, the frequency of accidents declines, and individuals are less susceptible to colds and allergies than in childhood, adolescence, or early adulthood.

Indeed, many individuals live through middle adulthood without having a disease or persistent health problem. For others, however, disease and persistent health problems become more common in middle adulthood than in earlier life stages.

Stress is increasingly being identified as a factor in disease (Jansen & others, 2016; Lagraauw, Kuiper, & Bot, 2015; Sin & others, 2016). The cumulative effect of chronic stress often takes a toll on the health of individuals by the time they reach middle age. A recent study of middle-aged adults found that when they had a high level of allostatic load (wearing down of the body's systems in response to high stress levels), their episodic memory and executive function were harmed (Karlamangia & others, 2013). And a recent study of occupationally active 44- to 58-year-olds revealed that perceived stress symptoms in midlife were linked to self-care disability and mobility limitations 28 years later (Kulmala & others, 2013).

Chronic stressors have been linked to a downturn in immune system functioning in a number of contexts, including worries about living next to a damaged nuclear reactor, failures in close relationships (divorce, separation, and marital distress), depression, loneliness, and burdensome caregiving for a family member with progressive illness (Bennett, Fagundes, & Kiecolt-Glaser, 2016; Fagundes & others, 2016; Jaremka, Derry, & Kiecolt-Glaser, 2016). A recent study discovered that chronic stress accelerated pancreatic cancer growth (Kim-Fuchs & others, 2014). Recent research indicates that stress-reducing activities such as yoga, relaxation, and hypnosis have positive influences on immune system functioning (Derry & others, 2015; Kiecolt-Glaser & others, 2014).

How individuals react to stressors is linked to health outcomes. In one study, how people reacted to daily stressors in their lives was linked to future chronic health problems (Piazza & others, 2013). Also, in a recent study, adults who did not maintain positive affect when confronted with minor stressors in everyday life had elevated levels of IL-6, an inflammation marker (Sin & others, 2015). And in another recent study, a greater decrease in positive affect in response to daily stressors was associated with earlier death (Mroczek & others, 2015).

Mortality Rates

Infectious disease was the main cause of death until the middle of the twentieth century. As infectious disease rates declined and more individuals lived through middle age, chronic disorders increased. These are characterized by a slow onset and a long duration (Kelley-Moore, 2009). Chronic disorders account for 86 percent of total health-care spending in the United States (Qin & others, 2015).

In middle age, many deaths are caused by a single, readily identifiable condition, whereas in old age, death is more likely to result from the combined effects of several chronic conditions. For many years heart disease was the leading cause of death in middle adulthood, followed by cancer; however, since 2005 more individuals 45 to 64 years of age in the United States died of cancer, followed by cardiovascular disease (Centers for Disease Control and Prevention, 2015). The gap between cancer and the second leading cause of death widens as individuals age from 45 to 54 and from 55 to 64 years of age. In 2013, about 46,000 45- to 54-year-olds died of cancer and about 35,000 died of cardiovascular disease; about 113,000 55- to 64-year-olds died of cancer and about 73,000 died of cardiovascular disease (Centers for Disease Control and Prevention, 2015). Men have higher mortality rates than women for all of the leading causes of death (Kochanek & others, 2011).

Sexuality

What kinds of changes characterize the sexuality of women and men as they go through middle age? **Climacteric** is a term used to describe the midlife transition during which fertility declines. Let's explore the substantial differences in the climacteric of women and men during middle adulthood.

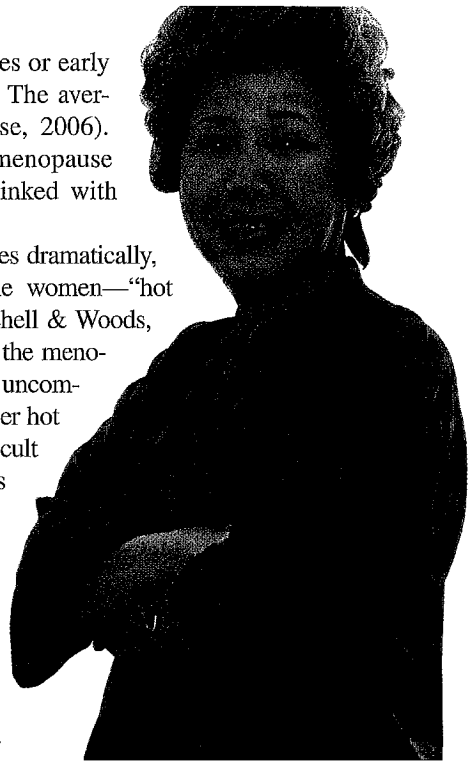
climacteric The midlife transition in which fertility declines.

Menopause

Menopause is the time in middle age, usually in the late forties or early fifties, when a woman's menstrual periods cease completely. The average age at which women have their last period is 51 (Wise, 2006). However, there is large variation in the age at which menopause occurs—from 39 to 59 years of age. Later menopause is linked with increased risk of breast cancer (Mishra & others, 2009).

In menopause, production of estrogen by the ovaries declines dramatically, and this decline produces uncomfortable symptoms in some women—"hot flashes," nausea, fatigue, and rapid heartbeat, for example (Mitchell & Woods, 2015). However, cross-cultural studies reveal wide variations in the menopause experience (Sievert, 2014). For example, hot flashes are uncommon in Mayan women (Beyene, 1986). Asian women report fewer hot flashes than women in Western societies (Payer, 1991). It is difficult to determine the extent to which these cross-cultural variations are due to genetic, dietary, reproductive, or cultural factors.

Menopause overall is not the negative experience for most women that it was once thought to be (Henderson, 2011). Most women do not have severe physical or psychological problems related to menopause. For example, a recent research review concluded that there is no clear evidence that depressive disorders occur more often during menopause than at other times in a woman's reproductive life (Judd, Hickey, & Bryant, 2011).



Researchers have found that almost 50 percent of Canadian and American women have occasional hot flashes, but only one in seven Japanese women do (Lock, 1998). *What factors might account for these variations?*

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Hormone replacement therapy (HRT) augments the declining levels of reproductive hormone production by the ovaries (Baber & others, 2016; Gambacciani & Levancini, 2015; Thorley, 2016). HRT can consist of various forms of estrogen, usually in combination with a progestin.

The National Institutes of Health recommends that women who have not had a hysterectomy and who are currently taking hormones consult with their doctor to determine whether they should continue the treatment. If they are taking HRT for short-term relief of menopausal symptoms, the benefits may outweigh the risks. Many middle-aged women are seeking alternatives to HRT such as regular exercise, dietary supplements, herbal remedies, relaxation therapy, acupuncture, and nonsteroidal medications (Asghari & others, 2016; Goldstein & others, 2016; Mansikkamaki & others, 2016; Nasiri, 2015; Yazdkhasti, Simbar, & Abdi, 2015). A recent study revealed that in sedentary women, aerobic training for six months decreased menopausal symptoms, especially night sweats, mood swings, and irritability (Moilanen & others, 2012). Another recent study found that yoga improved the quality of life of menopausal women (Reed & others, 2014).

Hormonal Changes in Middle-Aged Men

Do men go through anything like the menopause that women experience? In other words, is there a male menopause? During middle adulthood, most men do not lose their capacity to father children, although there usually is a modest decline in their sexual hormone level and activity (Blumel & others, 2014). They experience hormonal changes in their fifties and sixties, but nothing like the dramatic drop in estrogen that women experience. Testosterone production begins to decline about 1 percent a year during middle adulthood, and sperm count usually shows a slow decline, but men do not lose their fertility in middle age. The term *male hypogonadism* is used to describe a condition in which the body does not produce enough testosterone (Mayo Clinic, 2016).

Recently, there has been a dramatic surge of interest in *testosterone replacement therapy (TRT)* (Hisasue, 2015). Recent research indicates that TRT can improve sexual functioning, muscle strength, and

menopause The complete cessation of a woman's menstrual cycles, which usually occurs in the late forties or early fifties.

How Would You...?



As a **human development and family studies professional,** how would you counsel middle-aged women who voice the belief that hormone replacement therapy will help them to "stay young"?

bone health (Almehmadi & others, 2016; Hassan & Barkin, 2016; Mayo Clinic, 2016; Seftel, Kathrins, & Niederberger, 2015; Snyder & others, 2016). A recent study found that TRT was associated with increased longevity in men with a low level of testosterone (Comhaire, 2016). Also, a recent large-scale study of more than 80,000 men revealed that testosterone replacement therapy was associated with a reduced incidence of heart attack or a stroke, as well as a reduction in all-cause mortality (Sharma & others, 2015). Men who have prostate cancer or breast cancer should not take TRT, and men who are at risk for blood clotting (those who have atrial fibrillation, for example) also should not use TRT (Osterberg, Bernie, & Ramasamy, 2014).

The gradual decline in men's testosterone levels in middle age can reduce their sexual drive (O'Connor & others, 2011). Their erections are less full and less frequent, and men require more stimulation to achieve them. Researchers once attributed these changes to psychological factors, but increasingly they find that as many as 75 percent of the erectile dysfunctions in middle-aged men stem from physiological problems. Smoking, diabetes, hypertension, elevated cholesterol levels, and obesity are at fault in many erectile problems in middle-aged men (Corona & others, 2015).

Erectile dysfunction (ED), difficulty in attaining or maintaining an erection, is present in approximately 50 percent of men 40 to 70 years of age (Mola, 2015). The main treatment for erectile dysfunction has not focused on TRT but on the drug Viagra and on similar drugs such as Levitra and Cialis (Hosny, El-Say, & Ahmed, 2016; Sheu & others, 2016). Viagra works by allowing increased blood flow into the penis, which produces an erection. Its success rate is in the 60 to 85 percent range (Claes & others, 2010).

Sexual Attitudes and Behavior

Although the ability of men and women to function sexually shows little biological decline in middle adulthood, sexual activity usually occurs less frequently than in early adulthood (Huhtaniemi, 2014). Career interests, family matters, diminishing energy levels, and routine may contribute to this decline (Avis & others, 2009).

In the Sex in America survey, the frequency of sexual activity was greatest for individuals 25 to 29 years old (47 percent had sex twice a week or more) and dropped off for individuals in their fifties (23 percent of 50- to 59-year-old males said they had sex twice a week or more, while only 14 percent of the females in this age group reported this frequency) (Michael & others, 1994). Note, though, that the Sex in America survey may underestimate the frequency of sexual activity of middle-aged adults because the data were collected prior to the widespread use of erectile dysfunction drugs such as Viagra.

Living with a spouse or partner makes all the difference in whether people engage in sexual activity, especially for women over 40 years of age. In one study conducted as part of the Midlife in the United States Study (MIDUS), 95 percent of women in their forties with partners said that they had been sexually active in the last six months, compared with only 53 percent of those without partners (Brim, 1999). By their fifties, 88 percent of women living with a partner have been sexually active in the last six months, but only 37 percent of those who are neither married nor living with someone say they have had sex in the last six months.

A large-scale study of U.S. adults 40 to 80 years of age found that early ejaculation (26 percent) and erectile difficulties (22 percent) were the most common sexual problems



How does the pattern of sexual activity change when individuals become middle-aged?

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How Would You...?

As a **psychologist,** how would you counsel a couple about the ways that the transition to middle adulthood might affect their sexual relationship?

of older men (Laumann & others, 2009). In this study, the most common sexual problems of women were lack of sexual interest (33 percent) and lubrication difficulties (21 percent).

A person's health in middle age is a key factor in sexual activity in middle age (Field & others, 2013). A recent study of aging adults 55 years and older revealed that their level of sexual activity was associated with their physical and mental health (Bach & others, 2013).

Cognitive Development

We have seen that middle-aged adults may not see as well, run as fast, or be as healthy as they were in their twenties and thirties. We've also seen a decline in their sexual activity. What about their cognitive skills? Do these skills decline as we enter and move through middle adulthood? To answer this question, we will explore the possibility of age-related changes in intelligence and information processing.

Intelligence

Our exploration of possible changes in intelligence in middle adulthood focuses on the concepts of fluid and crystallized intelligence, cohort effects, and the Seattle Longitudinal Study.

How Would You...?



As an **educator,** how would you explain how changes in fluid and crystallized intelligence might influence the way middle-aged adults learn?

Fluid and Crystallized Intelligence

John Horn argues that some abilities begin to decline in middle age, whereas others increase (Horn & Donaldson, 1980). He argues that **crystallized intelligence,** an individual's accumulated information and verbal skills, continues to increase in middle adulthood, whereas **fluid intelligence,** one's ability to reason abstractly, begins to decline during middle adulthood (see Figure 1).

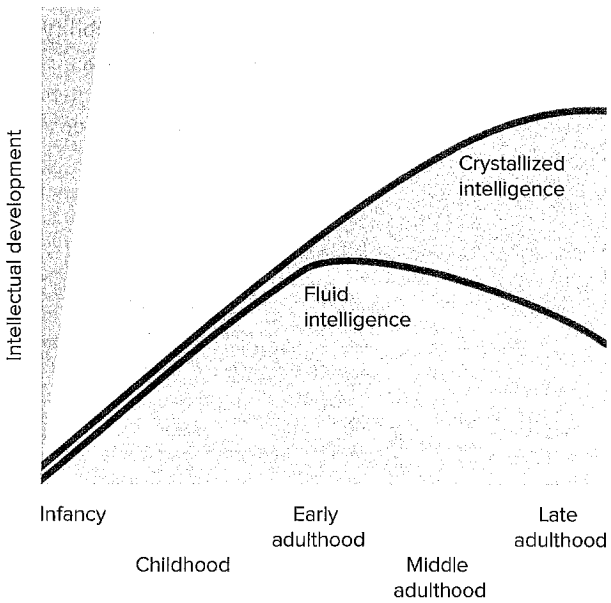


Figure 1 Fluid and Crystallized Intelligence Across the Life Span
According to Horn, crystallized intelligence (based on cumulative learning experiences) increases throughout the life span, but fluid intelligence (the ability to perceive and manipulate information) steadily declines from middle adulthood onward.

Horn's data were collected in a cross-sectional manner. Recall that a cross-sectional study assesses individuals of different ages at the same point in time. For example, a cross-sectional study might assess the intelligence of different groups of 40-, 50-, and 60-year-olds in a single evaluation, such as in 1980. The 40-year-olds in the study would have been born in 1940 and the 60-year-olds in 1920—different eras that offered different economic and educational opportunities. The 60-year-olds likely had fewer educational opportunities as they grew up. Thus, if we find differences between 40- and 60-year-olds on intelligence tests when they are assessed cross-sectionally, these differences might be due to cohort effects related to educational differences rather than to age.

crystallized intelligence Accumulated information and verbal skills, which increase in middle age, according to Horn.

fluid intelligence The ability to reason abstractly, which steadily declines from middle adulthood on, according to Horn.

By contrast, recall that in a longitudinal study, the same individuals are studied over a period of time. Thus, a longitudinal study of intelligence in middle adulthood might consist of giving the same intelligence test to the same individuals when they are 40, then 50, and then 60 years of age. As we see next, whether data on intelligence are

collected cross-sectionally or longitudinally can make a difference in what is found about changes in crystallized and fluid intelligence and about intellectual decline.

The Seattle Longitudinal Study

K. Warner Schaie (1996, 2005, 2010, 2011, 2013) is conducting an extensive study of intellectual abilities in adulthood. Five hundred individuals initially were tested in 1956. New waves of participants are added periodically. The main focus in the Seattle Longitudinal Study has been on individual change and stability in intelligence. The main mental abilities tested are *verbal comprehension* (ability to understand ideas expressed in words); *verbal memory* (ability to encode and recall meaningful language units, such as a list of words); *numeric ability* (ability to perform simple mathematical computations such as addition, subtraction, and multiplication); *spatial orientation* (ability to visualize and mentally rotate stimuli in two- and three-dimensional space); *inductive reasoning* (ability to recognize and understand patterns and relationships in a problem and use this understanding to solve other instances of the problem); and *perceptual speed* (ability to quickly and accurately make simple discriminations in visual stimuli).

The highest level of functioning for four of the six intellectual abilities occurred during middle adulthood (Schaie, 2013) (see Figure 2). For both women and men, peak performance on verbal ability, verbal memory, inductive reasoning, and spatial orientation was attained in middle age. Only two of the six abilities—numeric ability and perceptual speed—showed a decline in middle age. Perceptual speed showed the earliest decline, actually beginning in early adulthood. Interestingly, in terms of John Horn's ideas that were discussed earlier, for the participants in the Seattle Longitudinal Study, middle age was a time of peak performance for some aspects of both crystallized intelligence (verbal ability) and fluid intelligence (spatial orientation and inductive reasoning).

Notice in Figure 2 that declines in functioning for most cognitive abilities began in the sixties, although verbal ability did not drop until the mid-seventies. From the mid-seventies through the mid-nineties, all cognitive abilities showed considerable decline.

When Schaie (1994) assessed intellectual abilities both cross-sectionally and longitudinally, he found declines more often in the cross-sectional than in the

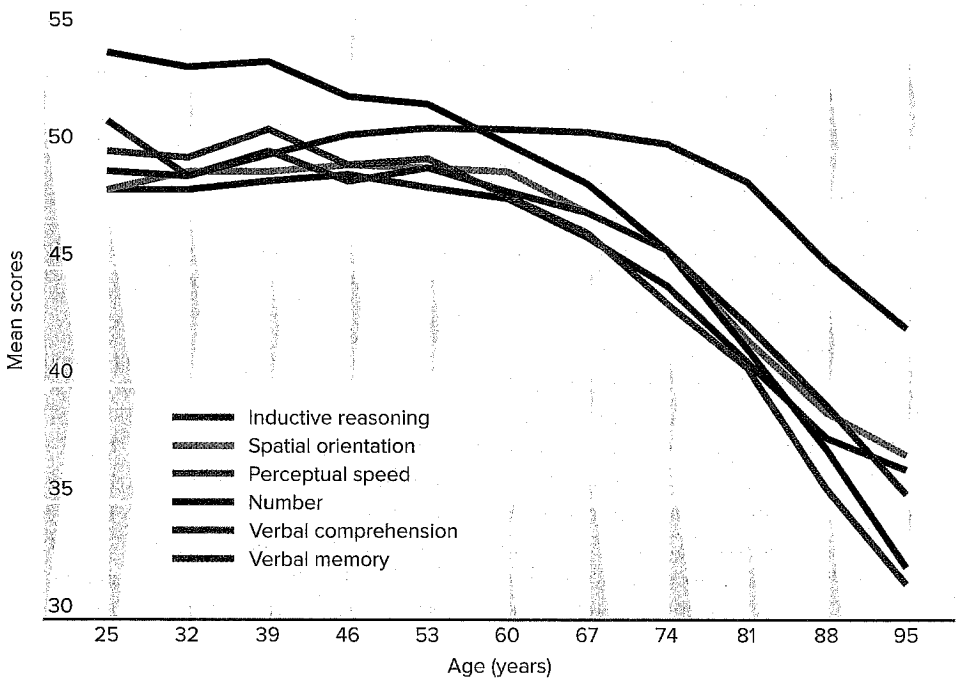


Figure 2 Longitudinal Changes in Six Intellectual Abilities from Age 25 to Age 95
Source: Adapted from Schaie, K.W. Figure 5.7a in *Developmental Influences on Intelligence: The Seattle Longitudinal Study* (2nd rev ed.), 2013, p. 162. New York: Oxford University Press.

longitudinal assessments. For example, as shown in Figure 3, when assessed cross-sectionally, inductive reasoning showed a consistent decline during middle adulthood. In contrast, when assessed longitudinally, inductive reasoning increased until toward the end of middle adulthood, when it began to show a slight decline. In Schaie's (2009, 2010, 2011, 2013, 2016) view, it is during middle adulthood, not early adulthood, that people reach a peak in their cognitive functioning for many intellectual skills.

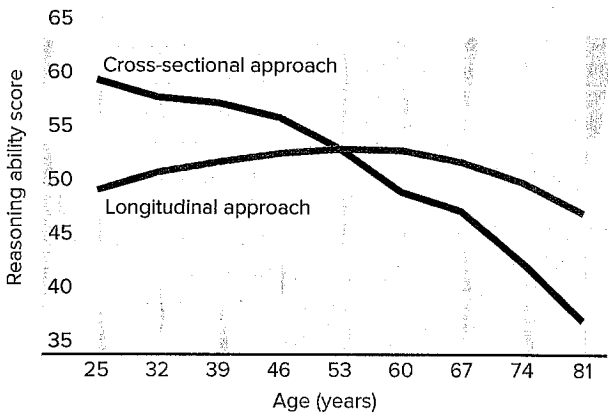


Figure 3 Cross-Sectional and Longitudinal Comparisons of Intellectual Change in Middle Adulthood
Why do you think reasoning ability peaks during middle adulthood?

Such differences across generations involve *cohort effects*. In a recent analysis, Schaie (2013, 2016) concluded that the advances in cognitive functioning in middle age that have occurred in recent decades are likely due to a combination of factors: educational attainment, occupational structures (increasing numbers of workers in professional occupations with greater work complexity), changes in health care and lifestyles, immigration, and social interventions in poverty. The impressive gains in cognitive functioning in recent cohorts have been documented more clearly for fluid intelligence than for crystallized intelligence (Schaie, 2013).

Some researchers disagree with Schaie that middle adulthood is the time when the level of functioning in a number of cognitive domains is maintained or even increases (Finch, 2009). For example, Timothy Salthouse (2009, 2012) has emphasized that a lower level of cognitive functioning in middle adulthood is likely due to age-related neurobiological decline. Salthouse (2014, 2016) also recently argued that a main reason for different trends in longitudinal and cross-sectional comparisons of cognitive functioning is that prior experience with tests increases scores the next time a test is taken.

Information Processing

As we saw in the coverage of theories of development and of cognitive development from infancy through adolescence, the information-processing approach provides another way to examine cognitive abilities. Among the information-processing changes that take place in middle adulthood are those involved in speed of processing information, memory, and expertise.

Speed of Information Processing

As we just discussed, in Schaie's (1996, 2013) Seattle Longitudinal Study, perceptual speed begins declining in early adulthood and continues to decline in middle adulthood. A common way to assess speed of information processing is through a reaction-time task, in which individuals simply press a button as soon as they see a light appear. Middle-aged adults are slower to push the button when the light appears than young adults are (Dirk & Schmiedek, 2012; Salthouse, 2009, 2012). However, keep in mind that the decline is not dramatic—less than 1 second in most investigations. Also, in a longitudinal study, a smaller decline in processing speed in middle and late adulthood was one of the key predictors of living longer (Aichele, Rabbitt, & Ghisletta, 2016).

Memory

In Schaie's (1994, 1996, 2013) Seattle Longitudinal Study, verbal memory peaked in the fifties. However, in some other studies, verbal memory has shown a decline in middle age, especially when assessed in cross-sectional studies (Salthouse, 2009). For example, when asked to remember lists of words, numbers, or meaningful prose, younger adults outperformed middle-aged adults (Salthouse &

working memory Closely related to short-term memory but places more emphasis on mental work. Working memory is like a mental "workbench" where individuals can manipulate and assemble information when making decisions, solving problems, and deciphering written and spoken language.

Skovronek, 1992). Although there still is some controversy about whether memory declines during middle adulthood, most experts conclude that it does decline, at least in late middle age (Ferreira & others, 2015; Salthouse, 2014).

Aging and cognition expert Denise Park (2001) argues that starting in late middle age, more time is needed to learn new information. The slowdown in learning new information has been linked to changes in **working memory,** the mental "workbench" where individuals manipulate and assemble information when making decisions, solving problems, and comprehending written and spoken language (Baddeley, 2007, 2012). In this view, in late middle age, working memory capacity—the amount of information that can be immediately retrieved and used—becomes more limited.

Memory decline is more likely to occur among individuals who don't use effective memory strategies, such as organization and imagery (Hoyer & Roodin, 2009). By organizing lists of phone numbers into different categories or imagining the phone numbers as representing different objects around the house, many people can improve their memory in middle adulthood.

Expertise

Because it takes so long to attain, expertise often shows up more in middle adulthood than in early adulthood (Charness & Krampe, 2008). Recall that *expertise* involves having extensive, highly organized knowledge and understanding of a particular domain. Developing expertise and becoming an "expert" in a field usually is the result of many years of experience, learning, and effort (Ericsson & others, 2016).

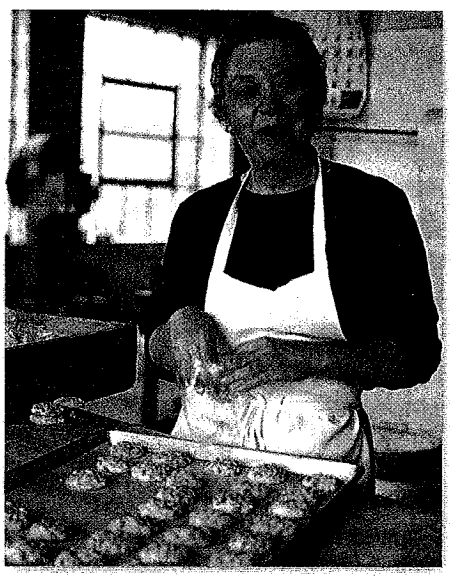
Adults in middle age who have become experts in their fields are likely to do the following: rely on their accumulated experience to solve problems; process information automatically and analyze it more efficiently when solving a problem; devise better strategies and shortcuts to solving problems; and be more creative and flexible in solving problems.

Careers, Work, and Leisure

What are some issues that workers face in midlife? What role does leisure play in the lives of middle-aged adults?

Work in Midlife

The role of work, whether one works in a full-time career, at a part-time job, as a volunteer, or as a homemaker, is central during the middle years (Cahill, Giandrea, & Quinn, 2016; Wang & Shi, 2016). Middle-aged adults may reach their peak in position and earnings. They may also be saddled with multiple financial burdens including rent or mortgage payment, medical bills, home repairs, college tuition, loans to family members, or bills from nursing homes for aging parents. A recent study found that difficulty managing different job demands was associated with poor health in middle-aged adults (Nabe-Nielsen & others, 2014).



What characterizes work in middle adulthood?

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In 2015 in the United States, 79.4 percent of 45- to 54-year-olds were in the workforce (a decrease of 3.4 percent since 2000) and 64.1 percent of 55- to 64-year-olds were in the workforce (an increase of 8 percent since 2000) (Short, 2015). Later we will describe various aspects of workforce participation among individuals age 65 and over in the United States, which has increased by a remarkable 50 percent since 2000 (Short, 2015).



How Would You...?

As a **social worker,** what advice would you offer to middle-aged adults who are dissatisfied with their careers?

Do middle-aged workers perform their work as competently as younger adults? Age-related declines occur in some occupations, such as air traffic controllers and professional athletes, but for most jobs, no differences have been found in the work performance of young adults and middle-aged adults (Salthouse, 2012). However, leading Finnish researcher Clas-Hakan Nygard (2013) concludes from his longitudinal research that the ability to work effectively peaks during middle age because of increased motivation, work experience, employer loyalty, and better strategic thinking. Nygard also has found that the quality of work done by middle-aged employees is linked to how much their work is appreciated and how well they get along with their immediate supervisors. And Nygard and his colleagues discovered that work ability in middle age was linked to mortality and disability 28 years later (von Bonsdorff & others, 2011, 2012).

For many people, midlife is a time of evaluation, assessment, and reflection in terms of the work they are doing and want to do in the future (Cahill, Giandrea, & Quinn, 2016). Among the work issues that some people face in midlife are recognizing limitations in career progress, deciding whether to change jobs or careers, deciding whether to rebalance family and work, and planning for retirement (Sterns & Huyck, 2001).

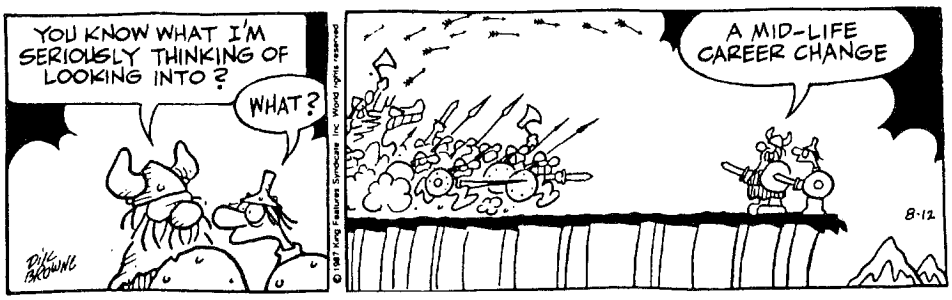
Career Challenges and Changes

The current middle-aged worker faces several important challenges in the twenty-first century (Brand, 2014). These include the globalization of work, rapid developments in information technologies, downsizing of organizations, pressure to choose early retirement, and concerns about pensions and health care.

Globalization has replaced what was once a primarily non-Latino White male workforce in the United States with employees of different ethnic and national backgrounds who have emigrated from different parts of the world. To improve profits, many companies are restructuring, downsizing, and outsourcing jobs. One of the outcomes of this change has been for companies to offer incentives to middle-aged employees who choose to retire early—in their fifties, or in some cases even forties, rather than their sixties.

The decline in defined-benefit pensions and increased uncertainty about the fate of health insurance are eroding the sense of personal control among middle-aged workers. As a consequence, many are delaying their retirement from work.

Some midlife career changes are self-motivated, while others are the consequence of losing one's job (Moen, 2009a, b). Some individuals in middle age decide that they don't want to continue doing the same work for the rest of their working lives (Hoyer & Roodin, 2009). One aspect of middle adulthood involves adjusting idealistic hopes to reflect realistic possibilities in light of how much time individuals have before they retire and how fast they are reaching their occupational goals (Levinson, 1978). Individuals could become motivated to change jobs if they perceive that they are behind schedule, if their goals are unrealistic, if they don't like the work they are doing, or if their job has become too stressful.



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Sigmund Freud once commented that the two things adults need to do well to adapt to society's demands are to work and to love. To his list we add "to play." In our fast-paced society, it is all too easy to get caught up in the frenzied, hectic pace of our achievement-oriented work world and ignore leisure and play. Imagine your life as a middle-aged adult. *What would be the ideal mix of work and leisure? What leisure activities do you want to enjoy as a middle-aged adult?*

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A final point to make about career development in middle adulthood is that cognitive factors earlier in development are linked to occupational attainment in middle age. In one study, task persistence at 13 years of age was related to occupational success in middle age (Andersson & Bergman, 2011).

Leisure

As adults, not only must we learn how to work well, but we also need to learn how to relax and enjoy leisure (Eriksson Sorman & others, 2014). **Leisure** refers to the pleasant times after work when individuals are free to pursue activities and interests of their own choosing—hobbies, sports, or reading, for example. In one analysis of research on what U.S. adults regret the most, not engaging in more leisure-time pursuits was one of the top six regrets (Roese & Summerville, 2005). A recent Finnish study found that engaging in little leisure-time activity in middle age was linked to risk of cognitive impairment in late adulthood (23 years later) (Virta & others, 2013). Another recent study revealed that middle-aged individuals who engaged in high levels of leisure-time physical activity were less likely to have Alzheimer disease 28 years later (Tolppanen & others, 2015).

Also, the type of leisure activity may be linked to different outcomes. A recent study found that engaging in higher complexity of work before retirement was associated with less cognitive decline during retirement (Andel, Finkel, & Pedersen, 2016). However, when those who had worked in occupations with fewer cognitive challenges prior to retirement engaged in physical (sports, walking) and cognitive (reading books, doing puzzles, and playing chess) leisure activities during retirement, they showed less cognitive decline. Further, a study revealed that middle-aged adults who engaged in active leisure-time pursuits had a higher-level cognitive performance in late adulthood (Ihle & others, 2015). And in another recent study, individuals who engaged in a greater amount of sedentary screen-based leisure time activity (TV, video games, computer use) had shorter telomere length (telomeres cover the end of chromosomes and as people age their telomeres become shorter and this shorter telomere length is linked to earlier mortality) (Loprinzi, 2015).

Leisure can be an especially important aspect of middle adulthood (Parkes, 2006). By middle adulthood, more money may be available to many individuals, and there may be more free time and paid vacations. In short, midlife changes may produce expanded opportunities for leisure. For many individuals, middle adulthood is the first time in their lives when they have the opportunity to explore their leisure-time interests.

Adults in midlife need to begin preparing psychologically for retirement. Developing constructive and fulfilling leisure-time activities in middle adulthood is an important part of this preparation (Gibson, 2009). If an adult chooses activities that can be continued into retirement, the transition from work to retirement can be less stressful.

How Would You...?

As a **psychologist,** how would you explain the link between leisure and stress reduction to a middle-aged individual?



Religion and Meaning in Life

What role does religion play in our development as adults? Is discovering the meaning of life an important theme for many middle-aged adults?

leisure The pleasant times after work when individuals are free to pursue activities and interests of their own choosing.

Religion and Adult Lives

In research that was part of the Midlife in the United States Study (MIDUS), more than 70 percent of U.S. middle-aged adults said that they are religious and that they consider spirituality a major part of their lives (Brim, 1999). In thinking about religion and adult development, it is important to consider the role of individual differences. Religion is a powerful influence in some adults' lives, whereas it plays little or no role in others' lives (Krause & Hayward, 2016). In a longitudinal study of individuals from their early thirties through their late sixties and early seventies, a significant increase in spirituality occurred between late middle (mid-fifties/early sixties) and late adulthood (Wink & Dillon, 2002) (see Figure 4). And a recent survey found that 77 percent of 30- to 49-year-olds and 84 percent of 50- to 64-year-olds reported having a religious affiliation (compared with 67 percent of 18- to 29-year-olds and 90 percent of adults 90 years of age and older) (Pew Research Center, 2012).

Females have consistently shown a stronger interest in religion than males have (Bijur & others, 1993). Compared with men, they participate more in both organized and personal forms of religion, are more likely to believe in a higher power or presence, and are more likely to feel that religion is an important dimension of their lives. In the longitudinal study just described, the spirituality of women increased more than that of men during the second half of life (Wink & Dillon, 2002).

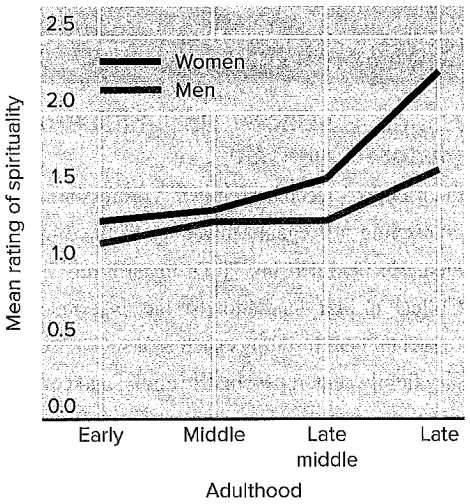


Figure 4 Levels of Spirituality in Four Adult Age Periods

In a longitudinal study, the spirituality of individuals in four different adult age periods—early (thirties), middle (forties), late middle (mid-fifties/early sixties), and late (late sixties/early seventies) adulthood—was assessed (Wink & Dillon, 2002). Based on responses to open-ended questions in interviews, the spirituality of the individuals was coded on a five-point scale with 5 being the highest level of spirituality and 1 the lowest.

Religion and Health

What might be some of the effects of religion on physical health? Some cults and religious sects encourage behaviors that are damaging to health, such as ignoring sound medical advice. For individuals in the religious mainstream, however, researchers are increasingly finding positive links between religion and physical health (Krause & Hayward, 2016). Researchers have found that religious attendance is linked to a reduction in hypertension (Gillum & Ingram, 2007). And in a recent analysis of a number of studies, adults with a higher level of spirituality/religion had an 18 percent increase in longevity (Lucchetti, Lucchetti, & Koenig, 2011). In this analysis, a high level of spirituality/religion was more closely tied to longevity than 60 percent of 25 other health interventions (such as eating fruits and vegetables and taking statin drugs for cardiovascular disease).



What roles do religion and spirituality play in the lives of middle-aged adults? Why might religion promote health?

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Why might religion promote physical health? There are several possible answers (Park, 2013). First, there are *lifestyle issues*—for example, religious individuals have lower rates of drug use than their nonreligious counterparts (Gartner, Larson, & Allen, 1991). Second are *social networks*—the degree to which

Careers in life-span development

Gabriel Dy-Liacco, University Professor and Pastoral Counselor

Gabriel Dy-Liacco currently is a professor in religious and pastoral counseling at Regent University in the Virginia Beach, Virginia, area. He obtained his Ph.D. in pastoral counseling from Loyola College in Maryland and also has experience as a psychotherapist in mental health settings such as a substance-abuse program, military family center, psychiatric clinic, and community mental health center. Earlier in his career he was a pastoral counselor at the Pastoral Counseling and Consultation Centers of Greater Washington, DC, and taught at Loyola University in Maryland. As a pastoral counselor, he works with adolescents and adults in the aspects of their lives that they show the most concern about—psychological, spiritual, or the interface of both. Having lived in Peru, Japan, and the Philippines, he brings considerable multicultural experience to teaching and counseling settings.

individuals are connected to others affects their health. Well-connected individuals have fewer health problems (Hill & Pargament, 2003). Religious groups, meetings, and activities provide social connectedness for individuals. A third answer involves *coping with stress*—religion offers a source of comfort and support when individuals are confronted with stressful events. A recent study revealed that highly religious individuals were less likely than their moderately religious, somewhat religious, and non-religious counterparts to be psychologically distressed (Park, 2013).

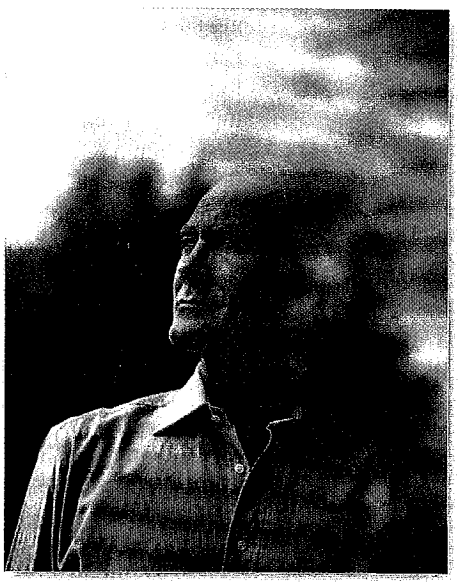
Religious counselors often advise people about mental health and coping. To read about the work of one religious counselor, see *Careers in Life-Span Development.*

Meaning in Life

Austrian psychiatrist Viktor Frankl's mother, father, brother, and wife died in the concentration camps and gas chambers in Auschwitz, Poland, during World War II. Frankl survived the concentration camp and went on to write about the search for meaning in life. In his book, *Man's Search for Meaning,* Frankl (1984) emphasized each person's uniqueness and the finiteness of life. He believed that examining the finiteness of our existence and the certainty of death adds meaning to life. If life were not finite, said Frankl, we could spend our life doing just about whatever we pleased because our time would be unlimited.

Frankl said that the three most distinctly human qualities are spirituality, freedom, and responsibility. Spirituality, in his view, does not have a religious underpinning. Rather, it refers to a human being's uniqueness of spirit, philosophy, and mind. Frankl proposed that people ask themselves questions about why they exist, what they want from life, and what their lives mean.

It is in middle adulthood that individuals begin to face death more often, especially the deaths of parents and other older relatives. As they become increasingly aware of the diminishing number of years ahead of them, many individuals in middle age begin to ask and evaluate the questions that Frankl proposed. And meaning-making coping is especially helpful in times of chronic stress and loss.



What characterizes the search for meaning in life?
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Researchers are increasingly studying the factors involved in a person's exploration of meaning in life and exploring whether developing a sense of meaning in life is linked to positive developmental outcomes (Park, 2010, 2012). In research studies, many individuals state that religion played an important role in increasing their exploration of meaning in life (Krause, 2008, 2009; Krause & Hayward, 2016). Studies also suggest that individuals who have found a sense of meaning in life are physically healthier and happier, and

experience less depression, than their counterparts who report that they have not discovered meaning in life (Krause, 2009).

Having a sense of meaning in life can lead to clearer guidelines for living one's life and enhanced motivation to take care of oneself and reach goals. A higher level of meaning in life also is linked to a higher level of psychological well-being and physical health (Park, 2012).

Summary

The Nature of Middle Adulthood

- As more people live to older ages, what we think of as middle age is starting later and lasting longer.
- Middle age involves extensive individual variation. For most people, middle adulthood involves declining physical skills, expanding responsibility, awareness of the young-old polarity, motivation to transmit something meaningful to the next generation, and reaching and maintaining career satisfaction. Increasingly, researchers are distinguishing between early and late midlife.

Physical Development

- The physical changes of midlife are usually gradual. Decline occurs in a number of aspects of physical development.
- In middle adulthood, the frequency of accidents declines and individuals are less susceptible to colds. Stress can be a factor in disease.
- Until recently, cardiovascular disease was the leading cause of death in middle age, but now cancer is the leading cause of death in this age group.
- Most women do not have serious physical or psychological problems related to menopause. Sexual behavior occurs less frequently in middle adulthood than early adulthood.

Cognitive Development

- Horn argued that crystallized intelligence continues to increase in middle adulthood, whereas fluid intelligence declines. Schaie found that declines in cognitive development are less likely to occur when longitudinal rather than cross-sectional studies are conducted. He also discovered that the highest levels of a number of intellectual abilities occur in middle age.
- Working memory declines in late middle age. Memory is more likely to decline in middle age when individuals don't use effective memory strategies. Expertise often increases in middle adulthood.

Careers, Work, and Leisure

- Midlife is often a time to reflect on career progress and prepare for retirement.
- Today's middle-aged workers face a number of challenges.
- In preparing for late adulthood, adults in midlife not only need to learn to work well, but also discover how to enjoy leisure.

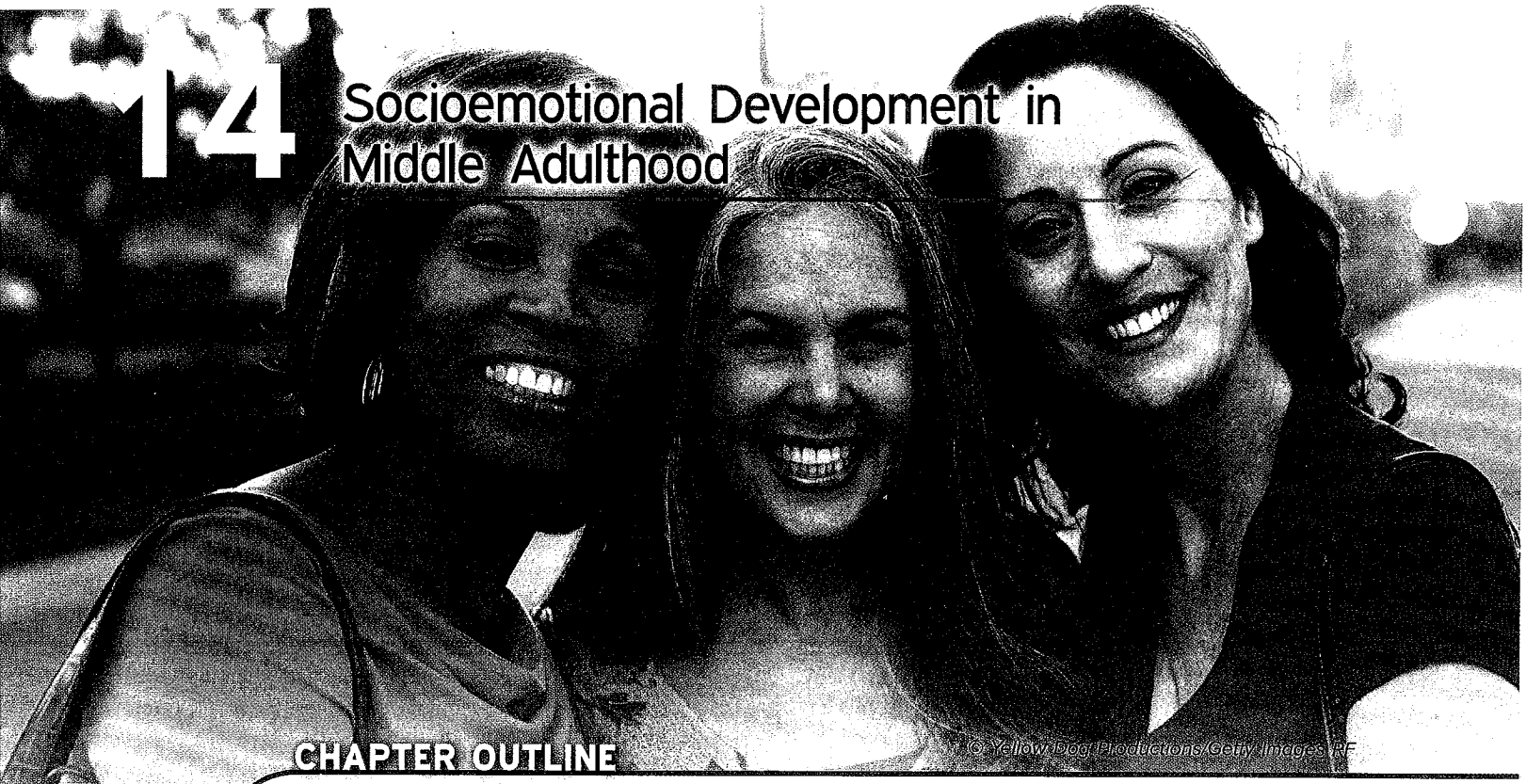
Religion and Meaning in Life

- The majority of middle-aged adults say that spirituality is a major part of their lives.
- In mainstream religions, religion is positively linked to physical health. Religion can play an important role in coping for some individuals.
- Many middle-aged individuals reflect on life's meaning.

Key Terms

climacteric
crystallized intelligence
fluid intelligence
leisure
menopause
middle adulthood
working memory

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CHAPTER OUTLINE

PERSONALITY THEORIES AND DEVELOPMENT
Adult Stage Theories
The Life-Events Approach
Stress and Personal Control in Midlife

STABILITY AND CHANGE
Longitudinal Studies
Conclusions

CLOSE RELATIONSHIPS
Love and Marriage at Midlife
The Empty Nest and Its Refilling
Sibling Relationships and Friendships
Grandparenting
Intergenerational Relationships

Stories of Life-Span Development: Sarah and Wanda, Middle-Age Variations

Forty-five-year-old Sarah feels tired, depressed, and angry when she looks back on the way her life has gone. She became pregnant when she was 17 and married Ben, the baby's father. They stayed together for three years after their son was born, and then Ben left her for another woman. Sarah went to work as a salesclerk to make ends meet. Eight years later, she married Alan, who had two children of his own from a previous marriage. Sarah stopped working for several years to care for the children. Then, like Ben, Alan started cheating on her. She found out about it from a friend. Nevertheless, Sarah stayed with Alan for another year. Finally, he was gone so much that she could not take it anymore and decided to divorce him. Sarah went back to work again as a salesclerk; she has been in the same position for 16 years now. During those 16 years, she has dated a number of men, but the relationships never seemed to work out. Her son never finished high school and has drug problems. Her father died last year, and Sarah is trying to help her mother financially, although she can barely pay her own bills. Sarah looks in the mirror and does not like what she sees. She sees her past as a shambles, and the future does not look rosy, either.

Forty-five-year-old Wanda feels energetic, happy, and satisfied. As a young woman, she graduated from college and worked for three years as a high school math teacher. She married Andy, who had just finished law school. One year later, they had their first child, Josh. Wanda stayed home with Josh for two years and then returned to her job as a math teacher. Even during her pregnancy, Wanda stayed active and exercised regularly, playing

tennis almost every day. After her pregnancy, she kept up her exercise habits. Wanda and Andy had another child, Wendy. Now, as they move into their middle-age years, their children are both in college, and Wanda and Andy are enjoying spending more time with each other. Last weekend they visited Josh at his college, and the weekend before they visited Wendy at her college. Wanda continued working as a high school math teacher until six years ago. She had developed computer skills as part of her job and taken some computer courses at a nearby college, doubling up during the summer months. She resigned her math teaching job and took a job with a computer company, where she has already worked her way into management. Wanda looks in the mirror and likes what she sees. She sees her past as enjoyable, although not without hills and valleys, and she looks to the future with zest and enthusiasm.

As with Sarah and Wanda, there are individual variations in the way people experience middle age. To begin the chapter, we examine personality theories and development in middle age, including ideas about individual variation. Then we turn our attention to how much individuals change or stay the same as they go through the adult years, and finally we explore a number of aspects of close relationships during middle adulthood. ■

Personality Theories and Development

What is the best way to conceptualize middle age? Is it a stage or a crisis? How extensively is middle age influenced by life events? Do middle-aged adults experience stress differently from younger and older adults? Is personality linked with contexts such as the point in history in which individuals go through midlife, their culture, and their gender?

Adult Stage Theories

A number of adult stage theories have been proposed and have contributed to the view that midlife brings a crisis in development. Two prominent theories that define stages of adult development are Erik Erikson's life-span view and Daniel Levinson's seasons of a man's life.

Erikson's Stage of Generativity Versus Stagnation

Erikson (1968) proposed that middle-aged adults face a significant issue—generativity versus stagnation, which is the name Erikson gave to the seventh stage in his life-span theory. **Generativity** encompasses adults' desire to leave legacies of themselves to the next generation. Through these legacies adults achieve a kind of immortality. By contrast, **stagnation** (sometimes called "self-absorption") develops when individuals sense that they have done little or nothing for the next generation.

How Would You...?

As an **educator,** how would you describe ways in which the profession of teaching might establish generativity for someone in middle adulthood?



generativity Adults' desire to leave legacies of themselves to the next generation; the positive side of Erikson's generativity versus stagnation middle adulthood stage.

stagnation Sometimes called "self-absorption," this state of mind develops when individuals sense that they have done little or nothing for the next generation; this is the negative side of Erikson's generativity versus stagnation middle adulthood stage.

Generative adults commit themselves to the continuation and improvement of society as a whole through their connection to the next generation. Generative adults develop a positive legacy of the self and then offer it as a gift to the next generation (Hofer & others, 2016; Tabuchi & others, 2015). Middle-aged adults can achieve generativity in a number of ways (Kotre, 1984). Through biological generativity, adults have offspring. Through parental generativity, adults nurture and guide children. Through work generativity, adults develop skills that are passed down to others. And through cultural generativity, adults create, renovate, or conserve some aspect of culture that ultimately survives.

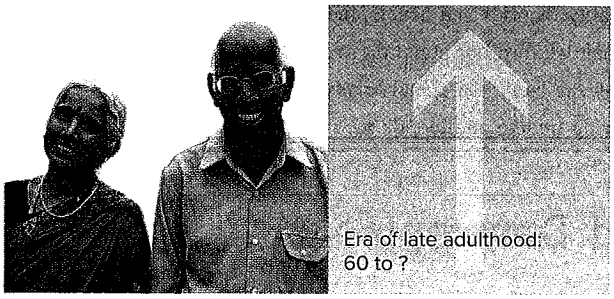
Through generativity, adults promote and guide the next generation by parenting, teaching, leading, and doing things that benefit the community (Pratt & others, 2008). One of the participants in a study of aging said: "From twenty to thirty I learned how to get along with my wife. From thirty to forty I learned how to be a success at my job, and at forty to fifty I worried less about myself and more about the children" (Vaillant, 2002, p. 114).

Does research support Erikson's theory that generativity is an important dimension of middle age? Yes, it does (Newton & Stewart, 2012). In one study, Carol Ryff (1984) examined the views of women and men at different ages and found that middle-aged adults especially were concerned about generativity. In a longitudinal study of Smith College women, the desire for generativity increased as the participants aged from their thirties to their fifties (Stewart, Ostrove, & Helson, 2001). In another study, generativity was strongly linked to middle-aged adults' positive social engagement in contexts such as family life and community activities (Cox & others, 2010). And in a recent study of males, achievement of generativity in middle age was related to better health in late adulthood (Landes & others, 2014).

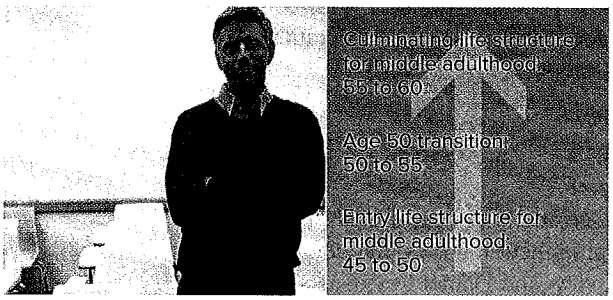
How Would You...?



As a **human development and family studies professional,** how would you advise a middle-aged woman who never had children and now fears she has little opportunity to leave a legacy to the next generation?



Late adult transition: Age 60 to 65



Middle adult transition: Age 40 to 45



Early adult transition: Age 17 to 22

Figure 1 Levinson's Periods of Adult Development
According to Levinson, adulthood for men has three main stages, which are surrounded by transition periods. Specific tasks and challenges are associated with each stage.

(Top) © Amos Morgan/Getty Images RF; (middle) © Stockbyte/Getty Images RF; (bottom) © image100 Ltd RF

Levinson's Seasons of a Man's Life

In *The Seasons of a Man's Life*, clinical psychologist Daniel Levinson (1978) reported the results of extensive interviews with 40 middle-aged men. The interviews were conducted with hourly workers, business executives, academic biologists, and novelists. Levinson bolstered his conclusions with information from the biographies of famous men and the development of memorable characters in literature. Although Levinson's major interest focused on midlife change in men, he described a number of stages and transitions during the period from 17 to 65 years of age, as shown in Figure 1. Levinson emphasizes that developmental tasks must be mastered at each stage.

At the end of one's teens, according to Levinson, a transition from dependence to independence should occur. This transition is marked by the formation of a dream—an image of the kind of life the youth wants to have, especially in terms of a career and marriage. Levinson sees the twenties as a *novice phase* of adult development. It is a time of reasonably free experimentation and of testing the dream in the real world. In early adulthood, the two major tasks to be mastered are exploring the possibilities for adult living and developing a stable life structure.

From about age 28 to 33, the man goes through a transition period in which he must face the more serious question of determining his goals. During his thirties, he usually focuses on family and career development. In the later years of this period, he enters a phase of *Becoming*

One's Own Man (or BOOM, as Levinson calls it). By age 40, he has reached a stable point in his career, has outgrown his earlier, more tenuous attempts at learning to become an adult, and now must look forward to the kind of life he will lead as a middle-aged adult.

According to Levinson, the transition to middle adulthood lasts about five years (ages 40 to 45) and requires the adult male to come to grips with four major conflicts that have existed in his life since adolescence: (1) being young versus being old, (2) being destructive versus being constructive, (3) being masculine versus being feminine, and (4) being attached to others versus being separated from them. Seventy to 80 percent of the men Levinson interviewed found the midlife transition tumultuous and psychologically painful, as many aspects of their lives came into question. According to Levinson, the success of the midlife transition rests on how effectively the individual reduces the polarities and accepts each of them as an integral part of his being.

Because Levinson interviewed middle-aged males, we can consider the data about middle adulthood more valid than the data about early adulthood. When individuals are asked to remember information about earlier parts of their lives, they may distort and forget things. The original Levinson data included no females, although Levinson (1996) reported that his stages, transitions, and the crisis of middle age apply to females as well as males. Levinson's work included no statistical analysis. However, the quality and quantity of the Levinson biographies make them outstanding examples of the clinical tradition.

How Pervasive Are Midlife Crises?

Levinson (1978) views midlife as a crisis, believing that the middle-aged adult is suspended between the past and the future, trying to cope with this gap that threatens life's continuity. George Vaillant (1977) has a different view. Vaillant's study—called the "Grant Study"—involved men who were in their early thirties and in their late forties who initially had been interviewed as undergraduates at Harvard University. He concludes that just as adolescence is a time for detecting parental flaws and discovering the truth about childhood, the forties are a decade of reassessing and recording the truth about adolescence and adulthood. However, whereas Levinson sees midlife as a crisis, Vaillant maintains that only a minority of adults experience a midlife crisis.



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Today, adult development experts are virtually unanimous in their belief that midlife crises have been exaggerated (Lachman, Teshale, & Agrigoroaei, 2015). Further, happiness and positive affect have an upward trajectory from early adulthood to late adulthood (Carstensen, 2015; Sims, Hogan, & Carstensen, 2015).

The Life-Events Approach

Age-related stages represent one major way to examine adult personality development. A second major way to conceptualize adult personality development is to focus on life events (Blonski & others, 2016; Leggett, Burgard, & Zivin, 2016; Schwarzer & Luszczynska, 2013). In the early version of the life-events approach, life events were viewed as taxing circumstances for individuals, forcing them to change their personality (Holmes & Rahe, 1967). Such events as the death of a spouse, divorce, marriage, and so on were believed to involve varying degrees of stress and therefore likely to influence the individual's development. A recent study found that stressful life events were associated with cardiovascular disease in middle-aged women (Kershaw & others, 2014). And a recent meta-analysis found an association between stressful life events and autoimmune diseases such as arthritis and psoriasis (Porcelli & others, 2016).

contemporary life-events approach An approach emphasizing that how a life event influences the individual's development depends not only on the life event itself but also on mediating factors, the individual's adaptation to the life event, the life-stage context, and the sociohistorical context.

Today's life-events approach is more sophisticated. The **contemporary life-events approach** emphasizes that how life events influence the

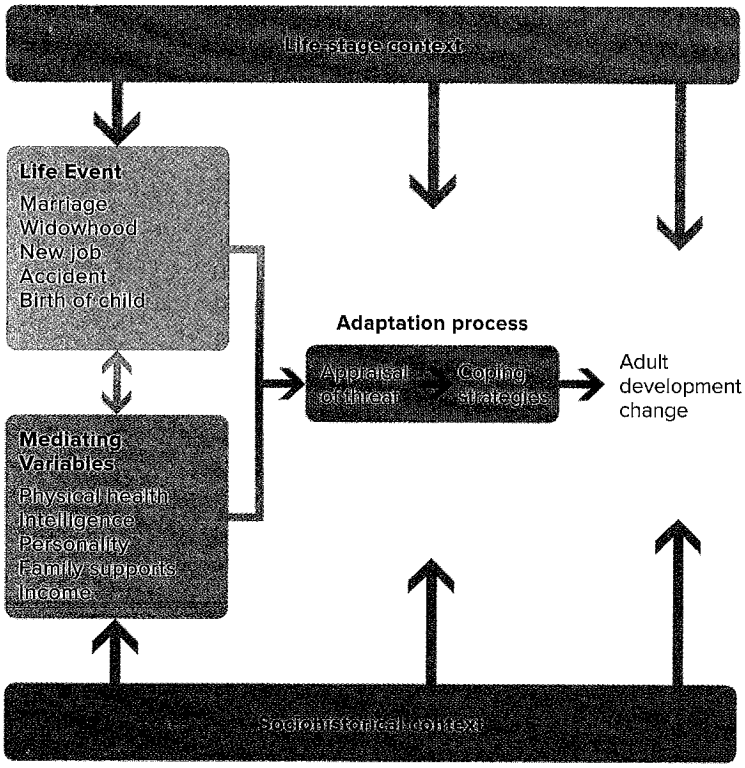


Figure 2 A Contemporary Life-Events Framework for Interpreting Adult Developmental Change
According to the contemporary life-events approach, the influence of a life event depends on the event itself, on mediating variables, on the life-stage and sociohistorical context, and on the individual's appraisal of the event and coping strategies.

individual's development depends not only on the life event itself but also on mediating factors (physical health, family supports, for example), the individual's adaptation to the life event (appraisal of the threat, coping strategies, for example), the life-stage context, and the sociohistorical context (see Figure 2). For example, if individuals are in poor health and have little family support, life events are likely to be more stressful. Whatever the context or mediating variables, however, one individual may perceive a life event as highly stressful, whereas another individual may perceive the same event as a challenge.

Although the life-events approach is a valuable addition to understanding adult development, it has its drawbacks. One significant drawback is that the life-events approach places too much emphasis on change. Another drawback is its failure to recognize that our daily experiences may be the primary sources of stress in our lives (Hamilton & Julian, 2014; Keles & others, 2016). Enduring a boring but tense job, staying in an unsatisfying marriage, or living in poverty do not show up on scales of major life events. Yet the everyday pounding we take from these living conditions can add up to a highly stressful life and eventually lead to illness (McIntosh, Gillanders, & Rodgers, 2010). A recent study found that stressful daily hassles were linked to increased anxiety and decreased physical well-being (Falconier & others, 2015).

Stress and Personal Control in Midlife

Margie Lachman and her colleagues (2015) recently described how personal control changes when individuals move into middle age. In their view, middle age is a time when a person's sense of control is frequently challenged by many demands and responsibilities, as well as physical and cognitive aging. By contrast, young people are more likely to have a sense of invulnerability, an unrealistic view of their personal control, and a lack of awareness regarding the aging process. Many young people focus primarily on self-pursuits and don't need to worry much about taking responsibility for others. But in middle age, less attention is given to self-pursuits and more to responsibility for others, including family members who are younger and older than they are. According to Lachman and her colleagues (2015), how middle adulthood plays out is largely in one's own hands, which can be stressful as individuals are faced with taking on and juggling responsibilities in different areas of their lives.



How Would You...?

As a health-care professional, how would you convince a company that it should sponsor a stress-reduction program for its middle-aged employees?

One study in which participants kept daily diaries over a one-week period found that both young and middle-aged adults had more stressful days than older adults (Almeida & Horn, 2004). In this study, although young adults experienced daily stressors more frequently than middle-aged adults did, middle-aged adults

experienced more "overload" stressors that involved juggling too many activities at once. In a recent study, healthy older adult women 63 to 93 years of age reported their daily experiences over the course of one week (Charles & others, 2010). In this study, the older the women were, the fewer stressors and less frequent negative emotions they reported. Also, in recent research, greater emotional reactivity to daily stressors was linked to increased risk of reporting a chronic physical health condition and anxiety/mood disorders 10 years later (Charles & others, 2013; Piazza & others, 2013).

Developmental Changes in Perceived Personal Control

To what extent do middle-aged adults perceive that they can control what happens to them? Researchers have found that on average a sense of personal control peaks in midlife and then declines (Lachman, 2006; Lachman, Agrigoroaei, & Hahn, 2016; Lachman, Teshale, & Agrigoroaei, 2015). Some aspects of personal control increase with age while others decrease (Lachman, Neupert, & Agrigoroaei, 2011). For example, middle-aged adults have a greater sense of control over their finances, work, and marriage than younger adults but less control over their sex life and their children (Lachman & Firth, 2004). And having a sense of control in middle age is one of the most important modifiable factors in delaying the onset of diseases in middle adulthood and reducing the frequency of diseases in late adulthood (Lachman, Neupert, & Agrigoroaei, 2011; Robinson & Lachman, 2017).

Stress and Gender

Women and men differ in the way they experience and respond to stressors (Taylor, 2015). Women are more vulnerable to social stressors such as those involving romance, family, and work. For example, women experience higher levels of stress when things go wrong in romantic and marital relationships. Women also are more likely than men to become depressed when they encounter stressful life events such as a divorce or the death of a friend. In one study of more than 2,800 adults 50 years and older in Taiwan, women were more susceptible to depressive symptoms when they felt constant stress from finances, increasing stress from jobs, and fluctuating stress in family relationships (Lin, Hsu, & Chang, 2011).



How do women and men differ in the way they experience and respond to stressors?
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When men face stress, they are likely to respond in a **fight-or-flight** manner—become aggressive, withdraw from social contact, or drink alcohol. By contrast, according to Shelley Taylor (2011a, b, c, 2015), when women experience stress, they are more likely to engage in a **tend-and-befriend** pattern, seeking social alliances with others, especially friends. Taylor argues that when women experience stress, their bodies produce elevated levels of the hormone *oxytocin*, which is linked to nurturing in animals.

Stability and Change

Questions about stability and change are an important issue in life-span development. One of the main ways that stability and change are assessed is through longitudinal studies that assess the same individuals at different points in their lives.

fight-or-flight The view that when men experience stress, they are more likely to become aggressive, withdraw from social contact, or drink alcohol.

tend-and-befriend Taylor's view that when women experience stress, they are more likely to seek social alliances with others, especially female friends.

Longitudinal Studies

We examine three longitudinal studies to help us understand the extent to which there is stability or change in adult personality development: Costa and McCrae's Baltimore Study, the Berkeley Longitudinal Studies, and Vaillant's studies.

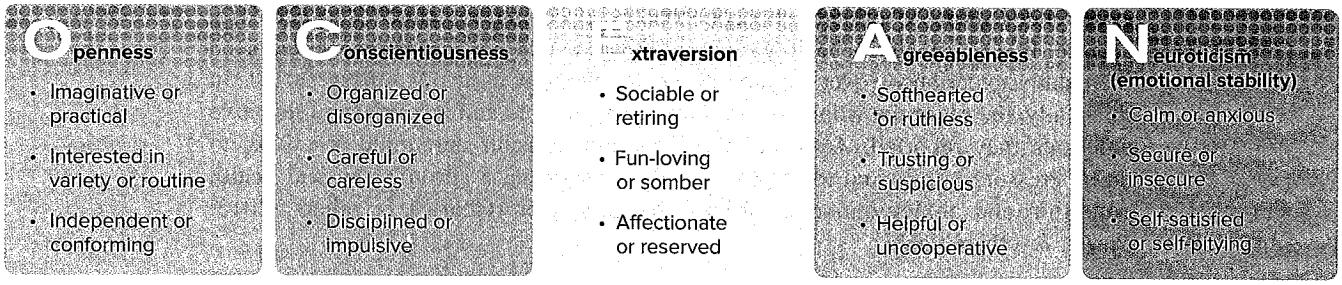


Figure 3 The Big Five Factors of Personality

Each of the broad supertraits encompasses more narrow traits and characteristics. Use the acronym OCEAN to remember the Big Five personality factors (openness, conscientiousness, extraversion, agreeableness, neuroticism).

Costa and McCrae's Baltimore Study

A major study of adult personality development continues to be conducted by Paul Costa and Robert McCrae (1998; McCrae & Costa, 2006). They focus on what are called the **Big Five factors of personality,** which are openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (emotional stability); these factors are described in Figure 3. (Notice that if you create an acronym from these factor names, you will get the word OCEAN.) A number of research studies point to these factors as important dimensions of personality (Hill & Roberts, 2016; McCrae, Gaines, & Wellington, 2013; Roberts & others, 2014).

Using their five-factor personality test, Costa and McCrae (1998, 2000) studied approximately one thousand college-educated men and women aged 20 to 96, assessing the same individuals over many years. Data collection began in the 1950s to mid-1960s and is ongoing. Costa and McCrae concluded that considerable stability exists across the adult years for the five personality factors.

However, more recent research indicates greater developmental changes in the five personality factors in adulthood (Graham & Lachman, 2013). For example, a recent study found that emotional stability, extraversion, openness, and agreeableness were lower in early adulthood, peaked between 40 and 60 years of age, and decreased in late adulthood, while conscientiousness showed a continuous increase from early adulthood to late adulthood (Specht, Egloff, & Schukle, 2011). Most research studies find that the greatest changes in personality occur in early adulthood (Hill, Allemand, & Roberts, 2014; Hill & Roberts, 2016).

Further evidence supporting the importance of the Big Five factors indicates that they are related to major aspects of a person's life such as health, intelligence, achievement, and relationships (Hampson & others, 2015; Hill & Roberts, 2016; McCrae, Gaines, & Wellington, 2013; Mike & others, 2015). The following research supports these links:

- ***Openness to experience.*** Individuals high on openness to experience are more likely have superior cognitive functioning, achievement, and IQ across the life span (Briley, Domiteaux, & Tucker-Drob, 2014), show creative achievement in the arts (Kaufman & others, 2016), and experience less negative affect to stressors (Leger & others, 2016).
- ***Conscientiousness.*** Individuals high in conscientiousness have better health and less stress (Gartland & others, 2014), engage in superior problem-focused coping (Sesker & others, 2016), are more successful at accomplishing goals (McCabe & Fleeson, 2016), and have less cognitive decline as aging adults (Luchetti & others, 2016).
- ***Extraversion.*** Individuals high in *extraversion* are more likely than others to be satisfied in relationships (Toy, Nai, & Lee, 2016), show less negative affect to stressors (Leger & others, 2016), and have a more positive sense of well-being in the future (Soto, 2015).

Big Five factors of personality Emotional stability (neuroticism), extraversion, openness to experience, agreeableness, and conscientiousness.

- *Agreeableness.* People who are high in agreeableness are more likely to be generous and altruistic (Caprara & others, 2010), have more satisfying romantic relationships (Donnellan, Larsen-Rife, & Conger, 2005), and engage in more positive affect to stressors (Leger & others, 2016).
- *Neuroticism.* People high in neuroticism are more likely to be more drug dependent (Valero & others, 2014), have a higher coronary heart disease risk (Lee & others, 2014), and have a lower sense of well-being 40 years later (Gale & others, 2013).

Researchers increasingly are finding that optimism is linked to being healthier and living longer (Anthony, Kritz-Silverstein, & Barrett-Connor, 2016; Boelen, 2015). A recent study involving adults 50 years of age and older revealed that being optimistic and having an optimistic spouse were both associated with better health and physical functioning (Kim, Chopik, & Smith, 2014). Also, in a recent study of 40- to 85-year-olds, individuals who were prepared for physical losses but also had an optimistic outlook on the future had better physical functioning and a lower level of depressive symptoms than those who were unprepared and pessimistic (Wurm & Benyamini, 2014). In another recent study, a higher level of optimism following an acute coronary event was linked to engaging in more physical activity and having fewer cardiac readmissions (Huffman & others, 2016). And a recent research review concluded that the positive influence of optimism on outcomes for people with chronic diseases (such as cancer, cardiovascular disease, and respiratory disease) may reflect either or both of the following factors: (a) a direct effect on the neuroendocrine system and on immune system function; and (b) an indirect effect on health outcomes as a result of protective health behaviors, adaptive coping strategies, and enhanced positive mood (Avvenuti, Baiardini, & Giardini, 2016).

Berkeley Longitudinal Studies

In the Berkeley Longitudinal Studies, more than 500 children and their parents were initially studied in the late 1920s and early 1930s. The book *Present and Past in Middle Life* (Eichorn & others, 1981) profiles these individuals as they became middle-aged. The results from early adolescence through a portion of midlife did not support either extreme in the debate over whether personality is characterized by stability or change. Some characteristics were more stable than others, however. The most stable characteristics were the degree to which individuals were intellectually oriented, self-confident, and open to new experiences. The characteristics that changed the most included the extent to which the individuals were nurturant or hostile and whether they had strong or weak self-control.

George Vaillant's Studies

Longitudinal studies by George Vaillant explore a question that differs somewhat from the studies described so far: Does personality at middle age predict what a person's life will be like in late adulthood? Vaillant (2002) has conducted three longitudinal studies of adult development and aging: (1) a sample of 268 socially advantaged Harvard graduates born about 1920 (called the Grant Study); (2) a sample of 456 socially disadvantaged inner-city men born about 1930; and (3) a sample of 90 middle-SES, intellectually gifted women born about 1910. These individuals have been assessed numerous times (in most cases, every two years), beginning in the 1920s to 1940s and continuing today for those still living. The main assessments involve extensive interviews with the participants, their parents, and teachers.

Vaillant categorized 75- to 80-year-olds as "happy-well," "sad-sick," or "dead." He used data collected from these individuals when they were 50 years of age to predict which categories they were likely to end up in at 75 to 80 years of age. Alcohol abuse and smoking at age 50 were the best predictors of which individuals would be dead at 75 to 80 years of age. Other factors at age 50 were linked with being in the "happy-well" category at 75 to 80 years of age: getting regular exercise, avoiding being overweight, being well-educated, having a stable marriage, being

future-oriented, being thankful and forgiving, empathizing with others, being active with other people, and having good coping skills.

Wealth and income at age 50 were not linked with being in the "happy-well" category at 75 to 80 years of age. Generativity in middle age (defined in this study as "taking care of the next generation") was more strongly related than intimacy to whether individuals would have an enduring and happy marriage at 75 to 80 years of age (Vaillant, 2002).

The results for one of Vaillant's studies, the Grant Study of Harvard men, indicated that when individuals at 50 years of age were not heavy smokers, did not abuse alcohol, had a stable marriage, exercised, maintained a normal weight, and had good coping skills, they were more likely to be alive and happy at 75 to 80 years of age.

How Would You...?

As a health-care professional, how would you use the results of Vaillant's research to advise a middle-aged adult patient who abuses alcohol and smokes?



Conclusions

What can be concluded about stability and change in personality development during the adult years? Avshalom Caspi and Brent Roberts (2001) concluded that the evidence does not support the view that personality traits become completely fixed at a certain age in adulthood. However, they argue that change is typically limited, and in some cases the changes in personality are small. They also say that age is positively related to stability and that stability peaks in the fifties and sixties. That is, people show greater stability in their personality when they reach midlife than when they were younger adults (Hill & Roberts, 2016; Nye & others, 2016). These findings support what is called a **cumulative personality model** of development, which states that with time and age, people become more adept at interacting with their environment in ways that promote stability of personality.

This does not mean that change is absent throughout midlife. Ample evidence shows that social contexts, new experiences, and sociohistorical changes can affect personality development (Lachman, Teshale, & Agrigoroaei, 2015; Mroczek, Spiro, & Griffin, 2006). However, Caspi and Roberts (2001) concluded that as people get older, stability increasingly outweighs change.

In general, changes in personality traits across adulthood also occur in a positive direction. Over time, "people become more confident, warm, responsible, and calm" (Roberts & Mroczek, 2008, p. 33). Such positive changes equate with becoming more socially mature.

In sum, recent research contradicts the old view that stability in personality begins to set in at about 30 years of age (Donnellan, Hill, & Roberts, 2015; Hill & Roberts, 2016). Although there are some consistent developmental changes in the personality traits of large numbers of people, at the individual level people can show unique patterns of personality traits—and these patterns often reflect life experiences related to themes of their particular developmental period (Roberts & Mroczek, 2008). For example, researchers have found that individuals who are in a stable marriage and on a solid career track become more socially dominant, conscientious, and emotionally stable as they go through early adulthood (Roberts & Wood, 2006). And, for some of these individuals, there is greater change in their personality traits than for other individuals (McAdams & Olson, 2010).

Close Relationships

There is a consensus among middle-aged Americans that a major component of well-being involves positive relationships with others, especially parents, spouse, and offspring (Lachman, Teshale, & Agrigoroaei, 2015). To begin our examination of midlife relationships, let's explore love and marriage in middle-aged adults.

cumulative personality model The principle that with time and age, people become more adept at interacting with their environment in ways that promote stability of personality.

Love and Marriage at Midlife

Two major forms of love are romantic love and affectionate love. The fires of romantic love burn strongly in early adulthood. Affectionate, or companionate, love increases during middle adulthood. That is, physical attraction, romance, and passion are more important in new relationships, especially those begun in early adulthood. Security, loyalty, and mutual emotional interest become more important as relationships mature, especially in middle adulthood.

One study revealed that marital satisfaction increased in middle age (Gorchoff, John, & Helson, 2008). Even some marriages that were difficult and rocky during early adulthood become more stable during middle adulthood. Although the partners may have lived through a great deal of turmoil, they eventually discover a deep and solid foundation on which to anchor their relationship. In middle adulthood, the partners may have fewer financial worries, less housework and chores, and more time with each other. Middle-aged partners are more likely to view their marriage as positive if they engage in mutual activities. Also, a recent study found that middle-aged married individuals had a lower likelihood of work-related health limitations (Lo, Cheng, & Simpson, 2016). And another recent study of middle-aged adults revealed that positive marital quality was linked to better health for both spouses (Choi, Yorgason, & Johnson, 2016).



What characterizes marriage in middle adulthood?
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Most individuals in midlife who are married voice considerable satisfaction with being married. In a large-scale study of individuals in middle adulthood, 72 percent of those who were married said their marriage was either "excellent" or "very good" (Brim, 1999). Possibly by middle age, many of the worst marriages already have dissolved. A longitudinal study of African American and non-Latino White men who were initially assessed when they were 51 to 62 years of age and then followed for 18 years found that the longevity gap that favors non-Latino White men was linked to their higher rate of marriage (Su, Stimpson, & Wilson, 2015).



What are some ways that divorce might be more positive or more negative in middle adulthood than in early adulthood?
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What trends characterize divorce in U.S. middle-aged adults? In 2014, individuals 50 to 64 years of age were twice as likely to become divorced as their counterparts in 1990 (Brown & Lin, 2013). What accounts for this increase? One explanation is the changing view of women, who initiate approximately 60 percent of the divorces after 40 years of age. Compared with earlier decades, divorce has less stigma for women and they are more likely to leave an unhappy marriage. Also compared with earlier decades, more women are employed and are less dependent on their husband's income. Another explanation involves the increase in remarriages, in which the divorce rate is 2½ times as high as it is for those in first marriages.

Divorce in middle adulthood may be a more positive experience in some ways, more negative in others, than divorce in early adulthood (Pudrovska, 2009). On the one hand, for mature individuals, the perils of divorce can be fewer and less intense than for younger individuals. They have more resources, and they can use this time as an opportunity to simplify their lives by disposing of possessions, such as a large home, which they no longer need. Their children are adults and may be able to cope with their parents' divorce more effectively than they would have been able to do in childhood or adolescence. The partners

How Would You...?

As a social worker, how would you describe the different reasons for divorce in young and middle-aged couples?



empty nest syndrome A term used to indicate a decrease in marital satisfaction after children leave home.

may have gained a better understanding of themselves and may be searching for changes that could include the end to an unhappy marriage.

On the other hand, the emotional and time commitment to marriage that has existed for so many years may not be lightly given up. Many midlife individuals perceive a divorce as failing in the best years of their lives. The divorcer might see the situation as an escape from an untenable relationship, but the divorced partner usually sees it as betrayal, the ending of a relationship that had been built up over many years and that involved a great deal of commitment and trust.

In sum, divorce in midlife may have positive outcomes for some individuals and negative outcomes for others (Pudrovska, 2009). A recent study found that women who became divorced at 40 to 59 years of age reported being more lonely following the divorce than men who became divorced during this age period (Nicolaisen & Thorsen, 2014). A recent study, though, revealed that the life satisfaction of middle-aged women in low-quality marriages increased after they became divorced (Bourassa, Sbarra, & Whisman, 2015).

A survey by AARP (2004) of 1,148 40- to 79-year-olds who were divorced at least once in their forties, fifties, or sixties found that staying married because of their children was by far the main reason many people took a long time to become divorced. Despite the worry and stress involved in going through a divorce, three in four of the divorcees said they had made the right decision to dissolve their marriage and reported a positive outlook on life. Sixty-six percent of the divorced women said they had initiated the divorce, compared with only 41 percent of the divorced men. The divorced women were much more afraid of having financial problems (44 percent) than the divorced men were (11 percent).

Following are the main reasons that middle-aged and older adults cited for their divorce:

Main Causes for Women	Main Causes for Men
1. Verbal, physical, or emotional abuse (23 percent)	**1.** No obvious problems, just fell out of love (17 percent)
2. Alcohol or drug abuse (18 percent)	**2.** Cheating (14 percent)
3. Cheating (17 percent)	**3.** Different values, lifestyles (14 percent)

The Empty Nest and Its Refilling

An important event in a family is the launching of a child into adult life. Parents face new adjustments as a result of the child's absence. College students usually think that their parents suffer from their absence. In fact, parents who live vicariously through their children might experience the **empty nest syndrome,** which includes a decline in marital satisfaction after children leave the home. For most parents, however, marital satisfaction does not decline after children have left home. Rather, for most parents marital satisfaction increases during the years after child rearing has ended (Fingerman & Baker, 2006). With their children gone, marital partners have more time to pursue careers and other interests and more time for each other. One study revealed that the transition to an empty nest increased marital satisfaction and that this improvement was linked to an increase in the quality of time—but not the quantity of time—spent with partners (Gorchoff, John, & Helson, 2008).

In today's uncertain economic climate, the refilling of the empty nest is becoming a common occurrence as adult children return to the family home after several years of college, after graduating from college, or to save money after taking a full-time job (Merrill, 2009). Young adults also may move back in with their parents after an unsuccessful career or a divorce. And some individuals don't leave home at all until their middle to late twenties because they cannot financially support themselves. Numerous labels have been applied to these young adults who return to their parents' homes to live, including "boomerang kids" and "B2B" (or Back-to-Bedroom) (Furman, 2005).

The middle generation has always provided support for the younger generation, even after the nest is bare. Through loans and monetary gifts for education, and

through emotional support, the middle generation has helped the younger generation. Adult children appreciate the financial and emotional support their parents provide at a time when they often feel considerable stress about their career, work, and lifestyle. And parents feel good that they can provide this support.



What are some strategies that can help parents and their young adult children get along better?
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However, as with most family living arrangements, there are both pluses and minuses when adult children live with their parents. One of the most common complaints voiced by both adult children and their parents is a loss of privacy. The adult children complain that their parents restrict their independence, cramp their sex lives, reduce their rock music listening, and treat them as children rather than adults. Parents often complain that their quiet home has become noisy, that they stay up late worrying until their adult children come home, that meals are difficult to plan because of conflicting schedules, that their relationship as a married couple has been invaded, and that they have to shoulder too much responsibility for their adult children. In sum, when adult children return home to live, it causes a disequilibrium in family life that requires considerable adaptation on the part of parents and their adult children.

When adult children ask to return home to live, parents and their adult children should agree on the conditions and expectations beforehand. For example, they might discuss and agree on whether the young adults will pay rent, wash their own clothes, cook their own meals, do any household chores, pay their phone bills, come and go as they please, be sexually active or drink alcohol at home, and so on. If these conditions aren't negotiated at the beginning, conflict often results because the expectations of parents and young adult children will likely be violated.

How Would You...?

As a **psychologist,** how would you counsel parents of adult children who return to the family home for a few years following their college graduation?

Sibling Relationships and Friendships

Sibling relationships persist over the entire life span for most adults (Whiteman, McHale, & Soli, 2011). Eighty-five percent of today's adults have at least one living sibling. Sibling relationships in adulthood may be extremely close, apathetic, or highly rivalrous (Bedford, 2009). The majority of sibling relationships in adulthood are close (Cicirelli, 2009). Those siblings who are psychologically close to each other in adulthood tended to be that way in childhood. It is rare for sibling closeness to develop for the first time in adulthood (Dunn, 1984). A recent study revealed that adult siblings often provide practical and emotional support to each other (Voorpostel & Blieszner, 2008). Another study revealed that men who had poor sibling relationships in childhood were more likely to develop depression by age 50 than men who had more positive sibling relationships as children (Waldinger, Vaillant, & Orav, 2007).

Friendships continue to be important in middle adulthood just as they were in early adulthood. It takes time to develop intimate friendships, so friendships that have endured over the adult years are often deeper than those that have just been formed in middle adulthood.

Grandparenting

The increase in longevity is influencing the nature of grandparenting (Monserud, 2011). In 1900 only 4 percent of 10-year-old children had four living grandparents, but by 2000 that figure had risen to more than 40 percent. And in 1990 only about

20 percent of people 30 years of age had living grandparents, a figure that is projected to increase to 80 percent in 2020 (Hagestad & Uhlenberg, 2007). Further increases in longevity are likely to support this trend in the future, although the current trend toward delayed childbearing is likely to undermine it.

Grandparent Roles

Grandparents play important roles in the lives of many grandchildren (Bol & Kalmijn, 2016; Choi, Sprang, & Eslinger, 2016; Di Gessa, Glaser, & Tinker, 2016). Many adults become grandparents for the first time during middle age. Researchers have consistently found that grandmothers have more contact with grandchildren than do grandfathers (Watson, Randolph, & Lyons, 2005). Perhaps women tend to define their role as grandmothers as part of their responsibility for maintaining ties between family members across generations. Men may have fewer expectations about the grandfather role and see it as more voluntary.



What are some changes that are occurring in grandparents' roles?
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In 2014, 10 percent (7.4 million) of children in the United States lived with at least one grandparent, a dramatic increase since 1981 when 4.7 million children were living with at least one grandparent (U.S. Census Bureau, 2015). Divorce, adolescent pregnancies, and drug use by parents are the main reasons that grandparents are thrust back into the "parenting" role they thought they had shed. One study revealed that grandparent involvement was linked with better adjustment when it occurred in single-parent and stepparent families than in two-parent biological families (Attar-Schwartz & others, 2009).



How Would You...?

As a **human development and family studies professional,** how would you educate parents about the mutual benefits of grandparents being actively involved in children's lives?

Grandparents who are full-time caregivers for grandchildren are at elevated risk for health problems, depression, and stress (Silverstein, 2009). A recent review concluded that grandparents raising grandchildren are especially at risk for developing depression (Hadfield, 2014). Caring for grandchildren is linked with these problems in part because full-time grandparent caregivers are often characterized by low-income, minority status and by not being married (Minkler & Fuller-Thompson, 2005). Grandparents who are part-time caregivers are less likely to have the negative health portrait that full-time grandparent caregivers have. In a recent study of part-time grandparent caregivers, few negative effects on grandparents were found (Hughes & others, 2007).

As divorce and remarriage have become more common, a special concern of grandparents is visitation privileges with their grandchildren. In the last 10 to 15 years, more states have passed laws giving grandparents the right to petition a court for visitation privileges with their grandchildren, even if a parent objects. Whether such forced visitation rights for grandparents are in the child's best interest is still being debated.

Intergenerational Relationships

Family is important to most people. When 21,000 adults aged 40 to 79 in 21 countries were asked, "When you think of who you are, you think mainly of _____," 63 percent said "family," 9 percent said "religion," and 8 percent said "work" (HSBC Insurance, 2007). In this study, in all 21 countries, middle-aged and older adults expressed a strong feeling of responsibility between generations in their family, with the strongest intergenerational ties indicated in Saudi Arabia, India, and Turkey. More than

80 percent of the middle-aged and older adults reported that adults have a duty to care for their parents (and parents-in-law) in time of need later in life.

Adults in midlife play important roles in the lives of the young and the old (Antonucci & others, 2016; Birditt & others, 2016; Fingerman & others, 2014; Luong, Rauers, & Fingerman, 2015). Middle-aged adults share their experience and transmit values to the younger generation. They may be launching children and experiencing the empty nest, adjusting to having grown children return home, or becoming grandparents. They also may be giving or receiving financial assistance, caring for a widowed or sick parent, or adapting to being the oldest generation after both parents have died.



Middle-aged and older adults around the world show a strong sense of family responsibility. One study of middle-aged and older adults in 21 countries found that the strongest intergenerational ties were in Saudi Arabia.

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Middle-aged adults have been described as the "sandwich," "squeezed," or "overload" generation because of the responsibilities they have for their adolescent and young adult children on the one hand and their aging parents on the other (Etaugh & Bridges, 2010). However, an alternative view is that in the United States, a "sandwich" generation, in which the middle generation cares for both grown children and aging parents simultaneously, occurs less often than a "pivot" generation, in which the middle generation alternates attention between the demands of grown children and aging parents (Antonucci & others, 2016; Luong, Rauers, & Fingerman, 2015). By middle age, more than 40 percent of adult children (most of them daughters) provide care for aging parents or parents-in-law (National Alliance for Caregiving, 2009). However, two studies revealed that middle-aged parents are more likely to provide support to their grown children than to their parents (Fingerman & others, 2011a, 2012). When middle-aged adults have a parent with a disability, their support for that parent increases (Fingerman & others, 2011b). This support might involve locating a nursing home and monitoring its quality, procuring medical services, arranging public service assistance, and handling finances. In some cases, adult children provide direct assistance with daily living, including such activities as eating, bathing, and dressing. Even less severely impaired older adults may need help with shopping, housework, transportation, home maintenance, and bill paying.

Some researchers have found that relationships between aging parents and their children are often characterized by ambivalence (Antonucci & others, 2016; Fingerman & others, 2012; Pitzer, Fingerman, & Lefkowitz, 2014). Perceptions include love, reciprocal help, and shared values on the positive side and isolation, family conflicts and problems, abuse, neglect, and caregiver stress on the negative side. A recent study found that middle-aged adults positively supported family responsibility to emerging adult children but were more ambivalent about providing care for aging parents, viewing it as both a joy and a burden (Igarashi & others, 2013).

How Would You...?

As a **health-care professional,** how would you advise a family contemplating the potential challenges of having a middle-aged family member take on primary responsibility for the daily care of a chronically ill parent?

With each new generation, personality characteristics, attitudes, and values are replicated or changed (Antonucci & others, 2016). As older family members die, their biological, intellectual, emotional, and personal legacies are carried on in the next generation. Their children become the oldest generation and their grandchildren the second generation. As adult children become middle-aged, they often develop more positive perceptions of their parents (Field, 1999). Both similarity and dissimilarity across generations are found. For example, similarity between parents and an adult child is most noticeable in religion and politics, least in gender roles, lifestyle, and work orientation.



What is the nature of intergenerational relationships?

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Gender differences also characterize intergenerational relationships (Antonucci & others, 2016; Luong, Rauers, & Fingerman, 2015). Women play an especially important role in maintaining family relationships across generations. Women's relationships across generations are typically closer than other family bonds (Merrill, 2009). In one study, mothers and their adult daughters had much closer relationships than mothers and sons, fathers and daughters, and fathers and sons (Rossi, 1989). Also in this study, married men were more involved with their wives' kin than with their own. And maternal grandmothers and maternal aunts were cited twice as often as their counterparts on the paternal side of the family as the most important or loved relative. Another study revealed that mothers' intergenerational ties were more influential for grandparent-grandchild relationships than fathers' were (Monserud, 2008).

Summary

Personality Theories and Development

- Erikson says that the seventh stage of the human life span, generativity versus stagnation, occurs in middle adulthood. Levinson concluded that a majority of Americans, especially men, experience a midlife crisis. Research, though, indicates that midlife crises are not pervasive.
- In the contemporary version of the life-events approach, how life events influence the individual's development depends not only on the life event but also on mediating factors, adaptation to the event, the life-stage context, and the sociohistorical context.
- Young and middle-aged adults experience more stress than do older adults, and as adults become older, they report less control over some areas of their lives and more control over other areas.

Stability and Change

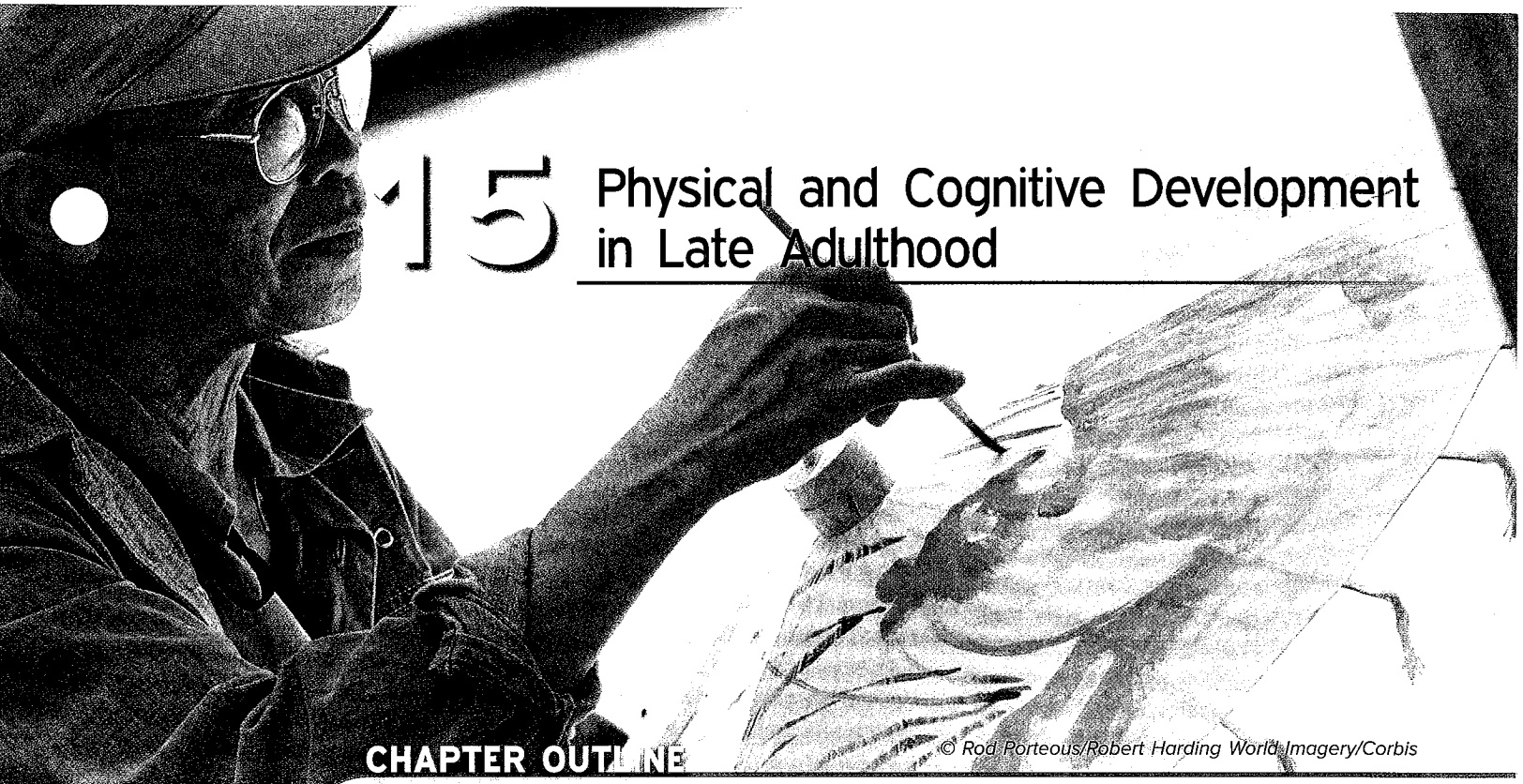
- In Costa and McCrae's Baltimore Study, the Big Five personality factors showed considerable stability. In the Berkeley Longitudinal Studies, the extremes in the stability-change argument were not supported. George Vaillant's research revealed links between a number of characteristics at age 50 and health and well-being at 75 to 80 years of age.
- Some researchers suggest that personality stability peaks in the fifties and sixties, others say that it begins to stabilize at about age 30, and still others argue that limited personality changes continue during midlife.

Close Relationships

- Affectionate love increases in midlife for many individuals.
- Rather than reducing marital satisfaction as was once thought, the empty nest increases it for most parents. Growing numbers of young adults are returning home to live with their middle-aged parents.
- Sibling relationships continue throughout life, and friendships continue to be important in middle age.
- Depending on the family's culture and situation, grandparents assume different roles. The profile of grandparents is changing.
- Family members usually maintain contact across generations. The middle-aged generation plays an important role in linking generations.

Key Terms

Big Five factors of personality
contemporary life-events approach
cumulative personality model
empty nest syndrome
fight-or-flight
generativity
stagnation
tend-and-befriend



15 Physical and Cognitive Development in Late Adulthood

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CHAPTER OUTLINE

LONGEVITY, BIOLOGICAL AGING, AND PHYSICAL DEVELOPMENT
Longevity
Biological Theories of Aging
The Aging Brain
Physical Development
Sexuality

HEALTH
Health Problems
Exercise, Nutrition, and Weight
Health Treatment

COGNITIVE FUNCTIONING
Multidimensionality and Multidirectionality
Use It or Lose It
Training Cognitive Skills
Cognitive Neuroscience and Aging

WORK AND RETIREMENT
Work
Adjustment to Retirement

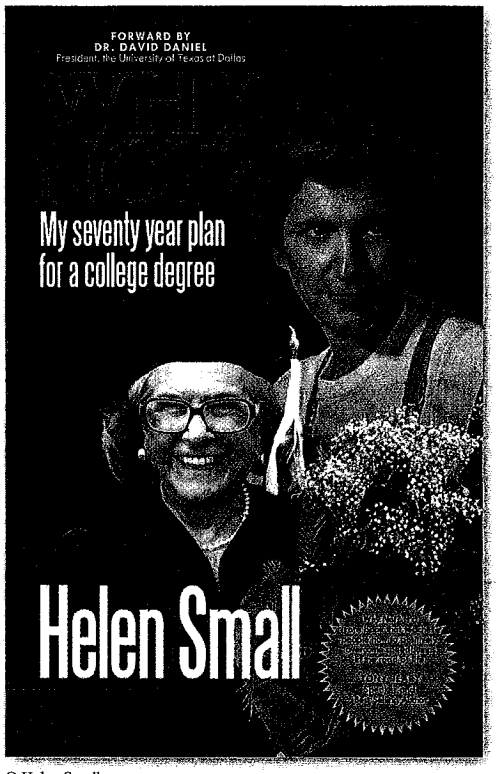
MENTAL HEALTH
Dementia and Alzheimer Disease
Parkinson Disease

Stories of Life-Span Development: Learning to Age Successfully

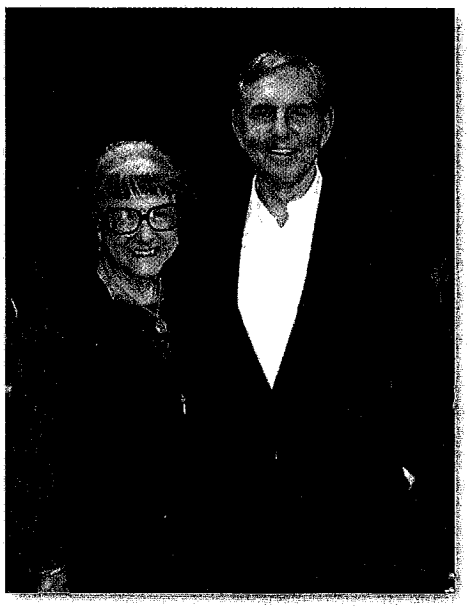
In 2010, 90-year-old Helen Small completed her master's degree at the University of Texas at Dallas. The topic of her master's degree research project was romantic relationships in late adulthood. Helen said that she had interviewed only one individual who was older than she was—a 92-year-old man.

I (your author, John Santrock) first met Helen when she took my undergraduate course in life-span development in 2006. After the first test, Helen stopped showing up and I wondered what had happened to her. It turns out that she had broken her shoulder when she tripped over a curb while hurrying to class. The next semester, she took my class again and did a great job in it, even though the first several months she had to take notes with her left hand (she's right-handed) because of her lingering shoulder problem.

Helen grew up in the Great Depression and first went to college in 1938 at the University of Akron, which she attended for only one year. She got married and her marriage lasted 62 years. After her husband's death, Helen went back to college in 2002, first at Brookhaven Community College and then at UT-Dallas. When I interviewed her recently, she told me that she had promised her mother that she would finish college. Her most important advice for college students is "Finish college and be persistent. When you make a commitment, always see it through. Don't quit. Go after what you want in life."



© Helen Small


Helen Small with the author of your text, John Santrock, in his undergraduate course on life-span development at the University of Texas at Dallas in spring 2012. Helen now returns each semester to talk with students in the class about cognitive aging.
© John Santrock

Helen not only is cognitively fit, she also is physically fit. She works out three times a week for about an hour each time—aerobically on a treadmill for about 30 minutes and then on six different weight machines.

What struck me most about Helen when she took my undergraduate course in life-span development was how appreciative she was of the opportunity to learn and how passionately she pursued studying and doing well in the course. Helen was quite popular with the younger students in the course and she was a terrific role model for them.

After her graduation, I asked her what she planned to do during the next few years and she responded, "I've got to figure out what I'm going to do with the rest of my life." Helen now comes each semester to my course in life-span development when we are discussing cognitive aging. She wows the class and has been an inspiration to all who come in contact with her.

What has Helen done recently to stay cognitively fit? She has worked as a public ambassador for Dr. Denise Park's Center for Vital Longevity at UT-Dallas, regularly served as volunteer guide for Dallas' new Perot Science Museum, and is working on archival materials for the UT-Dallas library. Also, in 2015, she began teaching English to immigrant bilingual adults. Helen also published her first book: *Why Not? My Seventy Year Plan for a College Degree* (Small, 2011). It's a wonderful, motivating invitation to live your life fully and reach your potential no matter what your age.

The story of Helen Small's physical and cognitive well-being in late adulthood raises some truly fascinating questions about life-span development, which we explore in this chapter. They include: Why do we age, and what, if anything, can we do to delay the aging process? What chance do you have of living to be 100? How does the body change in old age? How well do older adults function cognitively? What roles do work and retirement play in older adults' lives? ■

Longevity, Biological Aging, and Physical Development

What do we really know about longevity? What are the current biological theories about why we age? How does our brain change during this part of our life span? What happens to us physically? Does our sexuality change?

Longevity

The United States is no longer a youthful society. As more individuals are living past age 65, the proportion of individuals at different ages has become increasingly similar. Indeed, the concept of a period called "late adulthood," beginning in the sixties or seventies and lasting until death, is a recent one. Before the twentieth century, most individuals died before they reached 65.

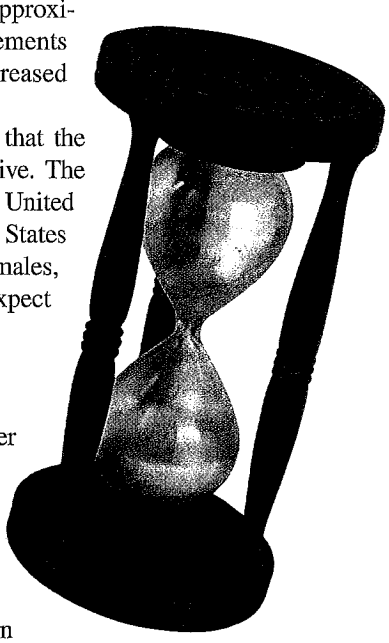
life span The upper boundary of life, which is the maximum number of years an individual can live. The maximum life span of human beings is about 120 to 125 years of age.

life expectancy The number of years that will probably be lived by the average person born in a particular year.

Life Span and Life Expectancy

Since the beginning of recorded history, **life span,** the maximum number of years an individual can live, has remained steady at approximately 120 to 125 years of age. But since 1900 improvements in medicine, nutrition, exercise, and lifestyle have increased our life expectancy by an average of 31 years.

Recall that **life expectancy** is the number of years that the average person born in a particular year will probably live. The average life expectancy of individuals born in 2013 in the United States was 78.8 years (Xu, 2016). Sixty-five-year-olds in the United States today can expect to live an average of 19.3 more years (20.5 for females, 17.9 for males) (Xu, 2016). People who are 100 years of age can only expect to live an average of 2.3 years longer (U.S. Census Bureau, 2011).



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Differences in Life Expectancy

How does the United States fare in life expectancy, compared with other countries around the world? We do considerably better than some and somewhat worse than others. In 2015, Monaco had the highest estimated life expectancy at birth (90 years), followed by Japan, Singapore, and Macau (a region of China near Hong Kong) (85 years) (Central Intelligence Agency, 2015). Of 224 countries, the United States ranked 43rd at 80 years. The lowest estimated life expectancy in 2015 occurred in the African countries of Chad and Guinea-Bissau (50) and Swaziland and Afghanistan (51 years). Differences in life expectancies across countries are due to factors such as health conditions and medical care throughout the life span.

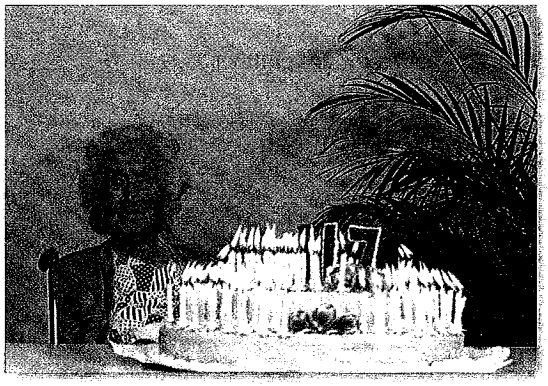
In 2013, the overall life expectancy for women was 81.2 years of age, and for men it was 76.4 years of age (Xu & others, 2016). The gender gap in longevity has come down from 7.8 years in 1979 to 4.8 years in 2013. Beginning in the mid-thirties, women outnumber men; this gap widens during the remainder of the adult years. By the time adults are 75 years of age, more than 61 percent are female; for those 85 and over, the figure is almost 70 percent female. Why can women expect to live longer than men? Social factors such as health attitudes, habits, lifestyles, and occupation are probably important (Saint-Onge, 2009). Men are more likely than women to die from most of the leading causes of death in the United States, including cancer of the respiratory system, motor vehicle accidents, cirrhosis of the liver, emphysema, and coronary heart disease (Dao-Fu & others, 2016; Pedersen & others, 2016). These causes of death are associated with lifestyle. For example, the sex difference in deaths due to lung cancer and emphysema occurs because men are heavier smokers than women.

The sex difference in longevity also is influenced by biological factors (Beltran-Sanchez, Finch, & Crimmins, 2015; Crimmins & Levine, 2016). In virtually all species, females outlive males. Women have more resistance to infections and degenerative diseases (Pan & Chang, 2012). For example, the female's estrogen production helps to protect her from arteriosclerosis (hardening of the arteries) (Valera & others, 2015). And the additional X chromosome that women carry in comparison with men may be associated with the production of more antibodies to fight off disease. The sex difference in mortality is still present in late adulthood but less pronounced than earlier in adulthood, and it is especially linked to the higher level of cardiovascular disease in men than women (Yang & Kozloski, 2011).

Centenarians

In the United States, there were only 15,000 centenarians in 1980, but that number rose to 50,000 in 2000 and to 72,000 in 2014 (Xu, 2016). The number of U.S. centenarians is projected to reach 600,000 by 2050 (U.S. Census Bureau, 2011).

Many people expect that "the older you get, the sicker you get." However, researchers are finding that this is not true for some centenarians (Willcox, Scapagnini, & Willcox, 2014). A study of 93 centenarians revealed that despite some physical limitations, they had a low rate of age-associated diseases and most had good mental



Jeanne Louise Calment, celebrating her 117th birthday. She was the world's oldest living person, dying at age 122. She said reasons for living so long included not worrying about things you can't do anything about; an occasional glass of Port wine; a diet rich in olive oil; and laughter. Regarding her longevity, she once said that God must have forgotten about her. On her 120th birthday, she was asked her what kind of future she anticipated. Calment replied, "A very short one." Becoming accustomed to the media attention she got, at 117 she stated, "I wait for death . . . and journalists." Calment walked, biked, and began taking fencing lessons at age 85 and rode a bicycle until she was 100.

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health (Selim & others, 2005). And a recent study of centenarians from 100 to 119 years of age found that the older the age group (110 to 119—referred to as *supercentenarians*—compared with 100 to 104, for example), the later the onset of diseases such as cancer and cardiovascular disease, as well as functional decline (Andersen & others, 2012). The research just described was carried out as part of the New England Centenarian Study (NECS) conducted by Thomas Perls and his colleagues. Perls has a term for this process of staving off high-mortality chronic diseases until much later ages than is usually the case in the general population: he calls it the *compression of morbidity* (Sebastiani & Perls, 2012). Further, there are far more female supercentenarians than males—a recent list (2015) of the oldest people who have ever lived had only two men (number 11 and number 17) in the top 25.

Among the factors in the NECS that are associated with living to be 100 are longevity genes and the ability to cope effectively with stress. The researchers also have discovered a strong genetic component to living to be 100 that consists of many genetic links, each with modest effects but collectively having a strong influence (Sebastiani & others, 2013). Other characteristics of centenarians in the NECS study include the following: few of the centenarians are obese, habitual smoking is rare, and only a small percentage (less than 15 percent) have had significant changes in their thinking skills (disproving the belief that most centenarians likely would develop Alzheimer disease).

Biological Theories of Aging

Even if we stay remarkably healthy, we begin to age at some point. Four biological theories provide intriguing explanations of why we age: evolutionary, cellular clock, free-radical, and hormonal stress.

Evolutionary Theory

In the **evolutionary theory of aging,** natural selection has not eliminated many harmful conditions and nonadaptive characteristics in older adults (Metcalf & Jones, 2015; Vanhaelen, 2015). Why? Because natural selection is linked to reproductive fitness, which is present only in the earlier part of adulthood. For example, consider Alzheimer disease, an irreversible brain disorder, which does not appear until late middle adulthood or late adulthood. According to evolutionary theory, possibly if Alzheimer disease occurred earlier in development, it might have been eliminated many centuries ago. Evolutionary theory has its critics (Cohen, 2015). One criticism is that the "big picture" idea of natural selection leading to the development of human traits and behaviors is difficult to refute or test because evolution occurs on a time scale that does not lend itself to empirical study. Another criticism is the failure of evolutionary theory to account for cultural influences (Singer, 2016).

Genetic/Cellular Process Theories

One recent view stated that aging is best explained by cellular maintenance requirements and evolutionary constraints (Vanhaelen, 2015). In recent decades, there has been a significant increase in research on genetic and cellular processes involved in aging (Cho & Suh, 2016; Leiser, Miller, & Kaeberlein, 2016; Sutphin & Korstanje, 2016). Five

evolutionary theory of aging The view that natural selection has not eliminated many harmful conditions and nonadaptive characteristics in older adults.

such advances involve telomeres, free radicals, mitochondria, sirtuins, and the mTOR pathway.

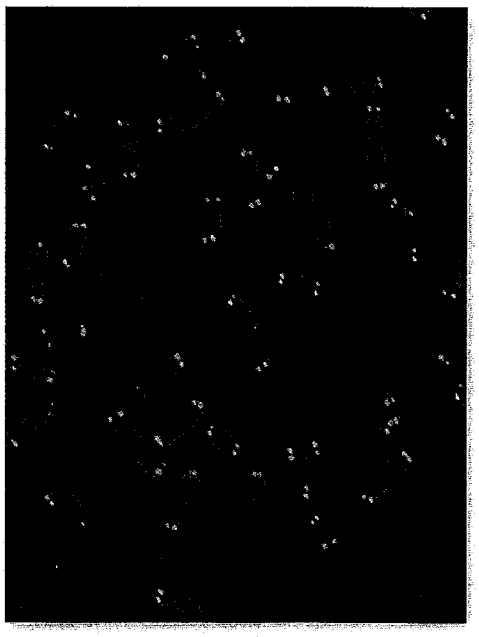


Figure 1
Telomeres and Aging
The photograph shows actual telomeres lighting up the tips of chromosomes.
© Dr. Jerry Shay

Cellular Clock Theory **Cellular clock theory** is Leonard Hayflick's (1977) theory that cells can divide a maximum of about 75 to 80 times and that as we age our cells become less capable of dividing. Hayflick found that cells extracted from adults in their fifties to seventies divided fewer than 75 to 80 times. Based on the ways cells divide, Hayflick places the upper limit of human life-span potential at about 120 to 125 years of age.

In the last decade, scientists have tried to fill in a gap in cellular clock theory (Ishikawa & others, 2016; Reynolds & Finkel, 2016). Hayflick did not know why cells die. The answer may lie at the tips of chromosomes (Silva & others, 2016; Yang, Song, & Johnson, 2016; Zhang & others, 2016).

Each time a cell divides, *telomeres,* which are DNA sequences that cap chromosomes, become shorter and shorter (see Figure 1). After about 70 or 80 replications, the telomeres are dramatically reduced, and the cell no longer can reproduce. One study revealed that healthy centenarians had longer telomeres than unhealthy centenarians (Terry & others, 2008). And in a recent study, greater leisure time screen-based sedentary behavior was linked to shorter telomere length (Loprinzi, 2015).

Injecting the enzyme *telomerase* into human cells grown in the laboratory can substantially extend the life of the cells beyond the approximately 70 to 80 normal cell divisions (Harrison, 2012). However, telomerase is present in approximately 85 to 90 percent of cancerous cells and thus may not produce healthy life extension of cells (Bertorelle & others, 2014; Fakhoury, Nimmo, & Autexier, 2007). To capitalize on the high presence of telomerase in cancerous cells, researchers currently are investigating gene therapies that inhibit telomerase and lead to the death of cancerous cells while keeping healthy cells alive (Akincilar, Unal, & Tergaonkar, 2016; Sutphin & Korstanje, 2016; Terali & Yilmazer, 2016). A recent focus of these gene therapies is on stem cells and their renewal (Okada & others, 2016). Telomeres and telomerase are increasingly thought to be key components of the stem cell regeneration process, providing a possible avenue to restrain cancer and delay aging (Naxerova & Elledge, 2016; Ozturk, 2015).

Free-Radical Theory A third theory of aging is **free-radical theory,** which states that people age because when cells metabolize energy, the by-products include unstable oxygen molecules known as *free radicals*. The free radicals ricochet around the cells, damaging DNA and other cellular structures (Pinto & Moraes, 2015). The damage can lead to a range of disorders, including cancer and arthritis (Phaniendra, Jestadi, & Periyasamy, 2015). Overeating is linked with an increase in free radicals, and researchers recently have found that calorie restriction—a diet low in calories but adequate in proteins, vitamins, and minerals—reduces the oxidative damage created by free radicals (Kalsi, 2015). A recent study of obese men found that endurance exercise reduced their oxidative damage (Samjoo & others, 2013).

cellular clock theory Leonard Hayflick's theory that the maximum number of times human cells can divide is about 75 to 80. As we age, our cells become increasingly less capable of dividing.

free-radical theory A theory of aging proposing that people age because normal cell metabolism produces unstable oxygen molecules known as free radicals. These molecules ricochet around inside cells, damaging DNA and other cellular structures.

mitochondrial theory The theory that aging is caused by the decay of mitochondria, tiny cellular bodies that supply energy for function, growth, and repair.

Mitochrondrial Theory **Mitochondrial theory** is a theory of aging that emphasizes the decay of *mitochondria*—tiny bodies within cells that supply essential energy for function, growth, and repair—that is primarily due to oxidative damage and loss of critical micronutrients supplied by the cell (Min-Wen, Jun-Hao, & Shyh-Chang, 2016; Ziegler, Wiley, & Velarde, 2016). More recently, energy sensing and apoptosis (programmed cell death) also have been emphasized as key aspects of the mitochondrial theory of aging (Gonzalez-Freire & others, 2015).

The mitochondrial damage may lead to a range of disorders, including cancer, arthritis, and Alzheimer disease (Benek & others, 2016;

Mastroeni & others, 2015). However, it is not known whether the defects in mitochondria cause aging or merely accompany the aging process (Brand, 2011).

Sirtuin Theory **Sirtuins** are a family of proteins that have been linked to longevity, regulation of mitochondria functioning in energy, possible benefits of calorie restriction, stress resistance, and a lower incidence of cardiovascular disease (Covington & Bajpeyi, 2016; Giblin & Lombard, 2016; Matsushima & Sadoshima, 2015). One of the sirtuins, SIRT 1, has been connected to DNA repair and aging (Kida & Goligorsky, 2016).

mTOR Pathway Theory The **mTOR pathway** is a cellular pathway that involves the regulation of growth and metabolism. TOR stands for "target of rapamycin," and in mammals it is called mTOR. Rapamycin is a naturally derived antibiotic and immune system suppressant/modulator, first discovered in the 1960s on Easter Island. It has been commonly used and is FDA approved for preventing organ rejection and in bone-marrow transplants. Recently, proposals have been made that the mTOR pathway has a central role in the life of cells, acting as a cellular router for growth, protein production/metabolism, and stem cell functioning (Dai & others, 2016; Maiese, 2015; Nadon & others, 2016; Schreiber, O'Leary, & Kennedy, 2016). Some scientists also argue that the pathway is linked to longevity, the successful outcomes of calorie restriction, reducing cognitive decline, and plays a role in a number of diseases, including cancer, cardiovascular disease, and Alzheimer disease (Chen & others, 2016; Cheng & others, 2016). Rapamycin has not been approved as an anti-aging drug and has some serious side effects, including increased risk of infection and lymphoma, a deadly cancer.

Some critics argue that scientific support for sirtuins and the mTOR pathway as key causes of aging in humans has not been found and that research has not adequately documented the effectiveness of using drugs such as rapamycin to slow the aging process or extend the human life span (Ehninger, Neff, & Xie, 2014; Park, Mori, & Shimokawa, 2013).

Hormonal Stress Theory

Cellular clock and free radical theories attempt to explain aging at the cellular level. In contrast, **hormonal stress theory** argues that aging in the body's hormonal system can lower resistance to stress and increase the likelihood of disease. Normally, when people experience stressors, the body responds by releasing certain hormones. As people age, the hormones stimulated by stress remain at elevated levels longer than when people were younger (Simm & others, 2008). These prolonged, elevated levels of stress-related hormones are associated with increased risks for many diseases, including cardiovascular disease, cancer, diabetes, and hypertension (Steptoe & Kivimaki, 2012). Researchers are exploring stress-buffering strategies, including exercise, in an effort to find ways to attenuate some of the negative effects of stress on the aging process (Bauer & others, 2013).

Recently, a variation of hormonal stress theory has emphasized the contribution of a decline in immune system functioning with aging (Muller & Pawelec, 2015, 2016; Qin & others, 2016; Silva & others, 2016). In a recent study, the percentage of T cells (a type of white blood cell essential for immunity) decreased in older adults in their seventies, eighties, and nineties (Valiathan, Ashman, & Asthana, 2016). Aging contributes to immune system deficits that give rise to infectious diseases in older adults (Chalan & others, 2015). The extended duration of stress and diminished restorative processes in older adults may accelerate the effects of aging on immunity.

sirtuins A family of proteins that have been proposed as having important influences on longevity, mitochondrial functioning in energy, calorie restriction benefits, stress resistance, and a lower incidence of cardiovascular functioning

mTOR pathway A cellular pathway involving the regulation of growth and metabolism that has been proposed as a key aspect of longevity

hormonal stress theory The theory that aging in the body's hormonal system can lower resilience under stress and increase the likelihood of disease.

Conclusions

Which of these biological theories best explains aging? That question has not yet been answered. It likely will turn out that more than one—or perhaps all—of these biological processes contribute to aging. In a recent analysis, it was concluded that aging is a very complex process involving multiple degenerative factors, including interacting cell- and organ level

communications (de Magalhaes & Tacutu, 2016). Although there are some individual aging triggers such as telomere shortening, a full understanding of biological aging involves multiple processes operating at different biological levels.

The Aging Brain

How does the brain change during late adulthood? Does it retain plasticity? As we will see, the brain shrinks and slows but still has considerable adaptive ability.

The Shrinking, Slowing Brain

On average, the brain loses 5 to 10 percent of its weight between the ages of 20 and 90. Brain volume also decreases (Liu & others, 2016; Peng & others, 2016). A recent study found a decrease in total brain volume and volume in key brain structures such as the frontal lobes and hippocampus from 22 to 88 years of age (Sherwood & others, 2011). Also, recent analyses concluded that in healthy aging the decrease in brain volume is due mainly to shrinkage of neurons, lower numbers of synapses, reduced length and complexity of axons, and reduced tree-like branching in dendrites, but only to a minor extent attributable to neuron loss (Fjell & Walhovd, 2010; Penazzi, Bakota, & Brandt, 2016). Of course, for individuals with disorders such as Alzheimer disease, neuron loss occurs (Moore & Murphy, 2016). Further, in a recent study, global brain volume predicted mortality in a large population of stroke-free community-dwelling adults (Van Elderen & others, 2016).

Some brain areas shrink more than others with aging (Moore & Murphy, 2016). The prefrontal cortex is one area that shrinks, and recent research has linked this shrinkage with a decrease in working memory and other cognitive activities in older adults (Hoyer, 2015). The sensory regions of the brain—such as the primary visual cortex, primary motor cortex, and somatosensory cortex—are less vulnerable to the aging process (Rodrique & Kennedy, 2011). A general slowing of function in the brain and spinal cord begins in middle adulthood and accelerates in late adulthood (Rosano & others, 2012). Both physical coordination and intellectual performance are affected. For example, after age 70 many adults no longer show a knee-jerk reflex, and by age 90 most reflexes are much slower (Spence, 1989). Slowing of the brain can impair the performance of older adults on intelligence tests, especially timed tests (Lu & others, 2011).

Aging also has been linked to a decline in the production of some neurotransmitters. Reduction in acetylcholine is linked to memory loss, especially in people with Alzheimer disease (Jensen & others, 2015). Severe reductions in dopamine are involved in a reduction in motor control in Parkinson disease (Ruitenberg & others, 2015).

Historically, as in the research just discussed, much of the focus on links between brain functioning and aging has been on volume of brain structures and regions. Currently, however, increased emphasis is being given to changes in myelination and neural networks. Recent research indicates that demyelination (deterioration in the myelin sheath that encases axons, which is associated with information processing) occurs with aging in the brains of older adults (Callaghan & others, 2014; Rodrique & Kennedy, 2011).

The Adaptive Brain

The human brain has remarkable repair capability (Cai & others, 2014; Garcia-Mesa & others, 2016). Even in late adulthood, the brain loses only a portion of its ability to function, and the activities older adults engage in can still influence the brain's development (Espeland & others, 2016; Jackson & others, 2016; Moore & Murphy, 2016). For example, in an fMRI study, higher levels of aerobic fitness were linked with greater volume in the hippocampus, which translates into better memory (Erickson & others, 2011).

Can adults, even aging adults, generate new neurons? Researchers have found that *neurogenesis*, the generation of new neurons, does occur in lower mammalian species, such as mice (Kask & others, 2015). Also, research indicates that exercise and an

enriched, complex environment can generate new brain cells in rats and mice, and that stress reduces their survival rate (Garthe, Roeder, & Kempermann, 2016; Lucassen & others, 2015). For example, in a recent study, mice in an enriched environment learned more flexibly because of adult hippocampal neurogenesis (Garthe, Roeder, & Kempermann, 2016). One study revealed that coping with stress stimulated hippocampal neurogenesis in adult monkeys (Lyons & others, 2010). And researchers have discovered that if rats are cognitively challenged to learn something, new brain cells survive longer (Shors, 2009).

It also is now accepted that neurogenesis can occur in human adults (Horgusluoglu & others, 2016; Kempermann, Song, & Gage, 2015; Moore & Murphy, 2016; Wang & others, 2016). However, researchers have documented neurogenesis in only two brain regions: the hippocampus, which is involved in memory (Bowers & Jessberger, 2016; Stolp & Molnar, 2015), and the olfactory bulb, which is involved in smell (Mobley & others, 2014). It also is not known what functions these new brain cells perform, and at this point researchers have documented that they last for only several weeks (Nelson, 2008).

Researchers currently are studying factors that might inhibit and promote neurogenesis, including various drugs, stress, and exercise (Choi, Lee, & Lee, 2016; Hoeijmakers, Lucassen, & Korosi, 2015; Yang & others, 2015). They also are examining how the grafting of neural stem cells to various regions of the brain, such as the hippocampus, might increase neurogenesis (Noguchi & others, 2015). And increasing attention is being given to the possible role neurogenesis might play in neurodegenerative diseases, such as Alzheimer disease, Parkinson disease, and Huntington disease (Choi, Lee, & Lee, 2016; Foltynie, 2015; Sarlak & Vincent, 2016; Wang & Jin, 2015).

How Would You...?

As an **educator,** how would you use a biological perspective to explain changes in learning as people age?

Dendritic growth can occur in human adults, possibly even in older adults (Eliasieh, Liets, & Chalupa, 2007). Recall that dendrites are the receiving portion of the neuron. One study compared the brains of adults at various ages (Coleman, 1986). From the forties through the seventies, the growth of dendrites increased. However, in people in their nineties, dendritic growth no longer occurred.

Changes in lateralization may provide one type of adaptation in aging adults (Hong & others, 2015). Recall that lateralization is the specialization of function in one hemisphere of the brain or the other. Using neuroimaging techniques, researchers found that brain activity in the prefrontal cortex is lateralized less in older adults than in younger adults when they are engaging in cognitive tasks (Cabeza, 2002; Cabeza & Dennis, 2013; Park & Farrell, 2016; Sugiura, 2016). For example, Figure 2 shows that when younger adults are given the task of recognizing words they have previously seen, they process the information primarily in the right hemisphere; older adults are more likely to use both hemispheres (Madden & others, 1999). The decrease in lateralization in older adults might play a compensatory role in the aging brain. That is, using both hemispheres may improve the cognitive functioning of older adults.

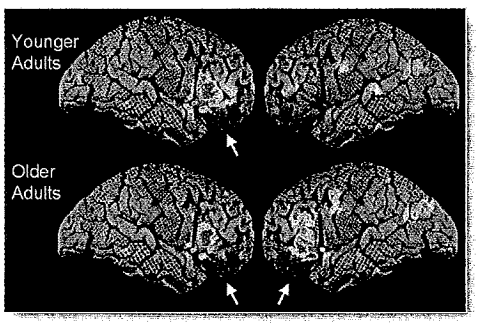


Figure 2 The Decrease in Brain Lateralization in Older Adults

Younger adults primarily used the right prefrontal region of the brain (*top left photo*) during a recall memory task, whereas older adults used both the left and right prefrontal regions (*bottom two photos*).

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The Nun Study

The Nun Study, directed by David Snowdon, is an intriguing ongoing investigation of aging in 678 nuns, many of whom are from the convent of the Sisters of Notre Dame in Mankato, Minnesota (Pakhomov & Hemmy, 2014; Snowdon, 2003; Tyas & others, 2007). They lead an intellectually challenging life, and brain researchers conclude that this contributes to their quality of life as older adults and possibly to their longevity. All of the 678 nuns agreed to participate in annual assessments of their cognitive and physical functioning. They also agreed to donate their brains for scientific research when they die, and they are the largest group of brain donors in the world. Examination

of the nuns' donated brains, as well as others', has led neuroscientists to believe that the brain has a remarkable capacity to change and grow, even in old age.





Top: Sister Marcella Zachman (*left*) finally stopped teaching at age 97. She helped ailing nuns exercise their brains by quizzing them on vocabulary or playing a card game called Skip–Bo, which she deliberately lost. Sister Mary Esther Boor (*right*), shown at 99 years of age, was a former teacher who kept alert by doing puzzles and volunteering to work the front desk. *Bottom:* A technician holds the brain of a deceased Mankato nun. The nuns donate their brains for research that explores the effects of stimulation on brain growth.
© James Balog

Physical Development

Physical decline is inevitable if we manage to live to an old age, but the timing of physical problems related to aging is not uniform. Let's examine some physical changes that occur as we age, including changes in physical appearance and movement, some of the senses, and our circulation and lungs.

Physical Appearance and Movement

In late adulthood, the changes in physical appearance that began occurring during middle age become more pronounced. Wrinkles and age spots are the most noticeable changes. We also get shorter as we get older. Both men and women become shorter in late adulthood because of bone loss in their vertebrae (Hoyer & Roodin, 2009).

Our weight usually drops after we reach 60 years of age. This likely occurs because we lose muscle, which also gives our bodies a "sagging" look (Evans, 2010). A recent study found that long-term aerobic exercise was linked with greater muscle strength in 65- to 86-year-olds (Crane, Macneil, & Tarnopolsky, 2013).

Older adults move more slowly than young adults, and this slowing occurs for many types of movement with a wide range of difficulty (Davis & others, 2013). Adequate mobility is an important aspect of maintaining an independent and active lifestyle in late adulthood (Huseth-Zosel & others, 2016; Stubbs, Schofield, & Patchay, 2016). Recent research indicates that obesity is linked to mobility limitation in older adults (Jung & others, 2016; Murphy & others, 2014).

The risk of falling in older adults increases with age and is greater for women than for men. Falls are the leading cause of injury deaths among adults who are 65 years and older (National Center for Health Statistics, 2016). Each year, approximately 200,000 adults over the age of 65 (many of them women) fracture a hip in a fall. Half of these older adults die within 12 months, frequently from pneumonia. A recent meta-analysis found that exercise reduces falls in adults 60 years of age and older (Stubbs, Brefka, & Denkinger, 2015). In one study, walking was more effective than balance training in reducing falls in older adults (Okubo & others, 2016).

Sensory Development

Seeing, hearing, and other aspects of sensory functioning are linked with our ability to perform everyday activities, and sensory functioning declines in older adults (Hochberg & others, 2012).

Vision In late adulthood, the decline in vision that began for most adults in early or middle adulthood becomes more pronounced (Polat & others, 2012). The eye does not adapt as quickly when moving from a well-lighted place to one of semidarkness. The tolerance for glare also diminishes. The area of the visual field becomes smaller, and events that occur away from the center of the visual

How Would You...?

As a **health-care professional,** how would you respond to an older adult who shows signs of impaired vision but denies, or is unaware of, the problem?

field sometimes are not detected (Scialfa & Kline, 2007). All of these changes can make night driving especially difficult (West & others, 2010).

Depth perception typically declines in late adulthood, which can make it difficult for older adults to determine how close or far away or how high or low something is (Bian & Anderson, 2008). A decline in depth perception can make steps or street curbs difficult to navigate.

Three diseases that can impair the vision of older adults are cataracts, glaucoma, and macular degeneration:

cataracts Involve a thickening of the lens of the eye that causes vision to become cloudy and distorted.

glaucoma Damage to the optic nerve because of the pressure created by a buildup of fluid in the eye.

macular degeneration A disease that involves deterioration of the macula of the retina, which corresponds to the focal center of the visual field.

- **Cataracts** involve a thickening of the lens of the eye that causes vision to become cloudy and distorted (Marra & others, 2016). By age 70, approximately 30 percent of individuals experience a partial loss of vision due to cataracts. Initially, cataracts can be treated by glasses; if they worsen, a simple surgical procedure can replace the natural lenses with artificial ones (Grewal & others, 2016).
- **Glaucoma** involves damage to the optic nerve because of the pressure created by a buildup of fluid in the eye (Kostanyan & others, 2016). Approximately 1 percent of individuals in their seventies and 10 percent of those in their nineties have glaucoma, which can be treated with eye drops. If left untreated, glaucoma can ultimately destroy a person's vision.
- **Macular degeneration** is a disease that involves deterioration of the *macula* of the retina, which corresponds to the focal center of the visual field. Individuals with macular degeneration may have relatively normal peripheral vision but be unable to see clearly what is right in front of them (Owsley & others, 2016) (see Figure 3). This condition affects 1 in 25 individuals from age 66 to 74 and 1 in 6 of those age 75 and older. There is increased interest in using stem-cell based therapy to treat macular degeneration (Hanus, Zhao, & Wang, 2016; Klassen, 2016).



Figure 3 Macular Degeneration
This simulation of the effect of macular degeneration shows how individuals with this eye disease can see their peripheral field of vision but can't clearly see what is in their central visual field.
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Hearing For hearing as for vision, it is important to determine the degree of decline in the aging adult (Wingfield & Lash, 2016). A national survey revealed that 63 percent of adults 70 years and older had a hearing loss, defined as an inability to hear sounds softer than 25 dB with their better ear (Lin & others, 2011). In this study, hearing aids were used by 40 percent of those with moderate hearing loss. Recent research has found that older adults' hearing problems are associated with less time spent out of home and in leisure activities (Mikkola & others, 2016), an increase in falls (Gopinath & others, 2016), reduction in cognitive functioning (Lin, 2011), and loneliness (Mick & Pichora-Fuller, 2016).

Smell and Taste Most older adults lose some of their sense of smell or taste, or both (Correia & others, 2016). A recent national study of community-dwelling older adults revealed that 74 percent had impaired taste and 22 percent had impaired smell (Correia & others, 2016). These losses often begin around 60 years of age (Hawkes, 2006). A majority of individuals 80 years of age and older experience a significant reduction in

How Would You...?

As an educator, how would you structure your classroom and plan class activities to accommodate the sensory decline of older adult students?



smell (Lafreniere & Mann, 2009). Researchers have found that older adults show a greater decline in their sense of smell than in their taste (Schiffman, 2007). Smell and taste decline less in healthy older adults than in their less healthy counterparts.

Touch and Pain Changes in touch and pain are also associated with aging (Kemp & others, 2014). A recent national study of community-dwelling older adults revealed that 70 percent of older adults had impaired touch (Correia & others, 2016). For most older adults, a decline in touch sensitivity is not problematic (Hoyer & Roodin, 2009).

An estimated 60 to 75 percent of older adults report at least some persistent pain (Molton & Terrill, 2014). The most frequent pain complaints of older adults involve back pain (40 percent), peripheral neuropathic pain (35 percent), and chronic joint pain (15 to 25 percent) (Denard & others, 2010). The presence of pain increases with age in older adults, and women are more likely to report having pain than are men (Tsang & others, 2008). Older adults are less sensitive to pain than are younger adults (Harkins, Price, & Martinelli, 1986). However, once older adults experience pain they may be less tolerant of it than are younger adults (Farrell, 2012).

The Circulatory System and Lungs

Cardiovascular disorders increase in late adulthood (Jansen & others, 2015; Wang, Monticone, & Lakatta, 2016). Consistent blood pressures above 120/80 should be treated to reduce the risk of heart attack, stroke, or kidney disease. Various drugs, a healthy diet, and exercise can reduce the risk of cardiovascular disease in older adults (Endes & others, 2016; Kramer, 2015; Wang, Monticone, & Lakatta, 2016). In a recent study of older adults, a faster exercise walking pace, not smoking, modest alcohol intake, and avoiding obesity were associated with a lower risk of heart failure (Del Gobbo & others, 2015).

Lung capacity drops 40 percent between the ages of 20 and 80, even without disease (Fozard, 1992). Lungs lose elasticity, the chest shrinks, and the diaphragm weakens (Lalley, 2013). The good news, though, is that older adults can improve lung functioning with diaphragm-strengthening exercises.

Sleep

Approximately 50 percent of older adults complain of having difficulty sleeping (Farajinia & others, 2014). Researchers have found that older adults' sleep is lighter and more disruptive (takes longer to fall asleep and also involves more awakenings and greater difficulty in going back to sleep) (McRae & others, 2016). Poor sleep is a risk factor for falls, obesity, lower cognitive functioning, and earlier death and is linked to a lower level of cognitive functioning (Xiao & others, 2013). Many of the sleep problems of older adults are associated with health problems (Mantua, Baran, & Spencer, 2016; McRae & others, 2016). Recent research indicates that when older adults sleep less than seven hours and more than nine hours a night, their cognitive functioning is harmed (Devore, Grodstein, & Schemhammer, 2016; Lo & others, 2016). Another recent study revealed that engaging in regular aerobic exercise improved the sleep profiles of older men (Melancon, Lorrain, & Dionne, 2015). In addition, one study of older adults indicated that walking at or above the internationally recommended level of 150 minutes per week predicted a lower likelihood of problems with sleep onset or sleep maintenance four years later (Hartescu, Morgan, & Stevinson, 2015).

Sexuality

In the absence of two circumstances—disease and the belief that old people are or should be asexual—sexuality can be lifelong (Corona & others, 2013). Aging, however, does induce some changes in human sexual performance, more so in the male than in the female (Gray & Garcia, 2012). Orgasm becomes less frequent in males with age, occurring in every second to third attempt rather than every time. More direct stimulation usually is needed to produce an erection.

Many older adults are sexually active as long as they are healthy (Thomas, Hess, & Thurston, 2015). However, in one study, sexual activity did decline through the later years of life: 73 percent of 57- to 64-year-olds, 53 percent of 65- to 74-year-olds, and 26 percent of 75- to 85-year-olds reported that they were sexually active (Lindau & others, 2007). Nonetheless, with recent advances in erectile dysfunction medications, such as Viagra, an increasing number of older men, especially the young-old, are able to have an erection (Hosny, El-Say, & Ahmed, 2016; Sheu & others, 2016). Also, recent research suggests that declining levels of serum testosterone, which is linked to erectile dysfunction, can be treated with testosterone replacement therapy to improve sexual functioning in males (Almehmadi & others, 2016; Hassan & Barkin, 2016; Mayo Clinic, 2016). However, the benefit-risk ratio of testosterone replacement therapy is uncertain for older males (Isidori & others, 2014).



What are some characteristics of sexuality in older adults? How does sexuality change as older adults go through the late adulthood period?

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Health

What types of health problems do people have in late adulthood, and what can be done to maintain or improve their health and ability to function in everyday life?

Health Problems

As we age, we are more likely to have some disease or illness (Desveaux & others, 2016). The majority of adults still alive at 80 years of age or older have some type of impairment. Chronic diseases (those with a slow onset and a long duration) are rare in early adulthood, increase in middle adulthood, and become more common in late adulthood (Hirsch & Sirois, 2016).

Arthritis is the most common chronic disorder in late adulthood, followed by hypertension. Older women have a higher incidence of arthritis, hypertension, and visual problems but a lower incidence of hearing problems than older men do.

Low income is also strongly related to health problems in late adulthood (Vart & others, 2015). Approximately three times as many poor as non-poor older adults report that chronic disorders limit their activities.

Causes of Death in Older Adults

Nearly 60 percent of U.S. adults 65 to 74 years old die of cancer or cardiovascular disease. Cancer recently replaced cardiovascular disease as the leading cause of death in U.S. middle-aged adults. However, cardiovascular disease is the leading cause of death in U.S. 65- to 74-year-olds (Centers for Disease Control and Prevention, 2015). And in the 75 to 84 and 85 and over age groups, cardiovascular disease also is the leading cause of death (Centers for Disease Control and Prevention, 2015). As individuals age through the late adult years, they become more and more likely to die from cardiovascular disease than from cancer.

Arthritis

Arthritis is an inflammation of the joints accompanied by pain, stiffness, and movement problems. This incurable disorder can affect hips, knees, ankles, fingers, and vertebrae. Individuals with arthritis often experience difficulty moving about and performing routine daily activities. Arthritis is especially prevalent in older adults (Chalan & others, 2015). Recent research documents the benefits of exercise in older adults with arthritis

arthritis Inflammation of the joints that is accompanied by pain, stiffness, and movement problems; especially common in older adults.

(White & others, 2015; Wood & others, 2016). A recent study of women found that leisure-time physical inactivity was found to be a risk factor for subsequent development of arthritis (Di Giuseppe & others, 2016). In this study, women engaging in the most vigorous category of leisure-time activities were the least likely to develop arthritis.

osteoporosis A chronic condition that involves an extensive loss of bone tissue and is the main reason many older adults walk with a marked stoop. Women are especially vulnerable to osteoporosis.

Osteoporosis

Normal aging brings some loss of bone tissue, but for some individuals loss of bone tissue becomes severe. **Osteoporosis** involves an extensive loss of bone tissue and is the main reason many older adults walk with a marked stoop (Black & Rosen, 2016; Rothman & others, 2014). Women are especially vulnerable to osteoporosis, which is the leading cause of broken bones in women (Davis & others, 2013). Approximately 80 percent of osteoporosis cases in the United States occur in females, 20 percent in males. Almost two-thirds of women over the age of 60 are affected by osteoporosis. It is more common in non-Latina White, thin, and small-framed women.

How Would You...?

As a **health-care professional,** how would you educate older adults on the range of chronic diseases that are common for this age group?



Osteoporosis is related to deficiencies in calcium, vitamin D, and estrogen, and to lack of exercise (Kemmler, Engelke, & von Stengel, 2015). To prevent osteoporosis, young and middle-aged women should eat foods rich in calcium, exercise regularly, and avoid smoking (Lupsa & Insogna, 2015; Motorwala & others, 2016). Drugs such as Fosamax can be used to reduce the risk of osteoporosis (Black & Rosen, 2016; Zhang & others, 2016).

Exercise, Nutrition, and Weight

Although we may be in the evening of our lives in late adulthood, we are not meant to live out our remaining years passively. Everything we know about older adults suggests they are healthier and happier the more active they are. Can regular exercise lead to a healthier late adulthood and increase longevity? How does eating a calorie-restricted diet and controlling weight also contribute to living longer?

Exercise

In one study, exercise literally made the difference between life and death for middle-aged and older adults (Blair, 1990). More than 10,000 men and women were divided into categories of low fitness, medium fitness, and high fitness (Blair & others, 1989). Then they were studied over a period of eight years. As shown in Figure 4, sedentary participants (low fitness) were more than twice as likely to die during the eight-year time span of the study as those who were moderately fit and more than three times as likely to die as those who were highly fit. The positive effects of being physically fit occurred for both men and women in this study. Also, a study of joggers in Copenhagen, Denmark, revealed that engaging in light or moderate jogging on a regular basis was linked to increased longevity (Schnohr & others, 2015).

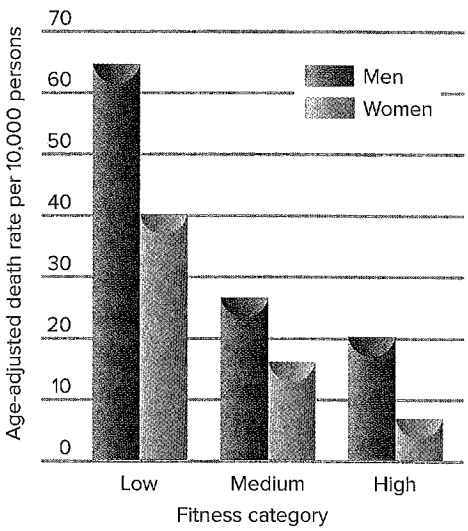


Figure 4 Physical Fitness and Mortality
In this study of middle-aged and older adults, being moderately fit or highly fit meant that individuals were less likely to die over a period of eight years than their less fit (more sedentary) counterparts (Blair & others, 1989).

Gerontologists increasingly recommend strength training in addition to aerobic activity and stretching for older adults (Harada & others, 2016; Oesen & others, 2015). Resistance exercise can preserve and possibly increase muscle mass in older adults. A recent study found that core resistance and balance training improved older adult women's balance, trunk muscle strength, leg power, and body composition better than Pilates training (Markovic & others, 2015).

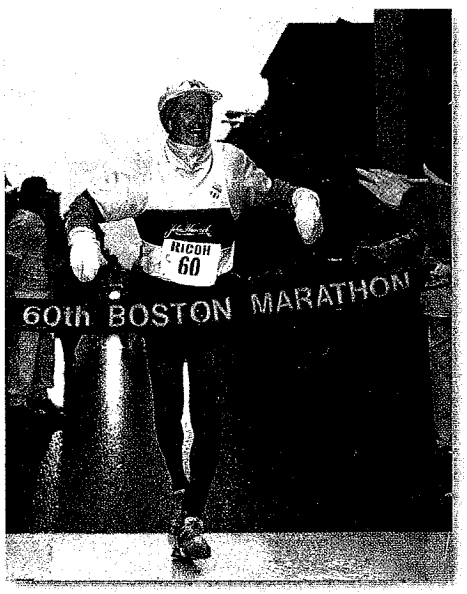
Exercise is an excellent way to maintain physical and mental health (Erickson & Liu-Ambrose, 2016; Gill & others, 2016; Raji & others, 2016; Rhyner & Watts, 2016). The current recommendations for older

adults' physical activity are 2 hours and 30 minutes of moderate-intensity aerobic activity (brisk walking, for example) per week and muscle strengthening activities on 2 or more days a week (Centers for Disease Control and Prevention, 2016). In the recent recommendations, even greater benefits can be attained with 5 hours of moderate-intensity aerobic activity per week.

Exercise helps people to live independent lives with dignity in late adulthood (Ballesteros & others, 2015; Nagamatsu & others, 2016). At age 80, 90, and even 100, exercise can help prevent older adults from falling down or even being institutionalized (Lupsa & Insogna, 2015; Witard & others, 2016). A recent study found that an exercise program reduced the number of falls in older adults with dementia (Burton & others, 2015). And a recent study of sarcopenic older adults found that those who were physically active had a 25 percent higher probability of greater longevity than their sedentary counterparts (Brown, Harhay, & Harhay, 2016).

Exercise also is linked to the prevention or delayed onset of chronic diseases, such as cardiovascular disease, type 2 diabetes, and obesity, as well as improvement in the treatment of these diseases (Endes & others, 2016; Grace & others, 2016; Roh & others, 2016). Researchers also increasingly are finding that exercise improves cellular functioning in older adults (Broskey & others, 2016). For example, researchers recently have discovered that aerobic exercise is linked to greater telomere length in older adults (Denham, O'Brien, & Charchar, 2016; Loprinzi & Loenneke, 2016).

Exercise improves older adults' brain and cognitive functioning. For example, a recent research review concluded that more physically fit and active older adults have greater prefrontal cortex and hippocampal volume, a higher level of brain connectivity, and more efficient brain activity (Erickson, Hillman, & Kramer, 2015). Older adults who exercise regularly not only show better brain functioning, they also process information more effectively than older adults who are more sedentary (Barnes, 2015; Erickson & Liu-Ambrose, 2016; Johnson & others, 2016). In the recent research review on brain functioning, the researchers also found that more physically fit and active older adults show have superior memory functioning and a higher level of executive function (Erickson, Hillman, & Kramer, 2015).



In 1991, Johnny Kelley ran his sixtieth Boston Marathon and, in 2000, he was named "Runner of the Century" by *Runner's World* magazine. At 70 years of age, Kelley was still running 50 miles a week. At that point in his life, Kelley said, "I'm afraid to stop running. I feel so good. I want to stay alive." He lived 27 more years and died at age 97 in 2004.

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Exercise also is linked to increased longevity. Energy expenditure during exercise of at least 1,000 kcal/week reduces mortality by about 30 percent, while 2,000 kcal/week reduces mortality by about 50 percent (Lee & Skerrett, 2001). One study of older adults found that total daily physical activity was linked to increased longevity across a four-year period (Buchman & others, 2012).

Nutrition and Weight

Scientists have accumulated considerable evidence that calorie restriction (CR) in laboratory animals (in most cases rats) can increase the animals' life span (Schreiber, O'Leary, & Kennedy, 2016; Xu & others, 2015). Research indicates that calorie restriction slows RNA decline during the aging process (Hou & others, 2016). Animals that are fed diets restricted in calories, although adequate in protein, vitamins, and minerals, live as much as 40 percent longer than animals that have unlimited access to food (Jolly, 2005). And chronic problems such as cardiovascular, kidney, and liver disease appear at a later age (Yan & others, 2013). Also, research indicates that CR may provide neuroprotection for an aging central nervous system (Willette & others, 2012). A recent study found that calorie restriction maintained more youthful functioning in the hippocampus, which is an important brain structure for memory (Schafer & others, 2015).

No one knows for certain how CR works to increase the life span of animals. Some scientists suggest that CR might lower the level of free radicals and reduce oxidative stress in

cells (Kalsi, 2015; Klotz & others, 2015). Others argue that CR might trigger a state of emergency called "survival mode" in which the body eliminates all unnecessary functions to focus only on staying alive (Schreiber, O'Leary, & Kennedy, 2016).

Whether similar very low-calorie diets can stretch the human life span is not known (Locher & others, 2016; Stein & others, 2012). In some instances the animals in these studies received 40 percent less calories than normal. In humans, a typical level of calorie restriction involves a 30 percent decrease, which translates to about 1,120 calories a day for the average woman and 1,540 for the average man.

Health Treatment

About 3 percent of adults age 65 and older in the United States reside in a nursing home at some point in their lives. As older adults age, however, their probability of being in a nursing home or other extended-care facility increases. Twenty-three percent of adults aged 85 and older live in nursing homes or other extended-care facilities.

The quality of nursing homes and other extended-care facilities for older adults varies enormously and is a source of national concern (Kim, 2016). More than one-third are seriously deficient. They fail federally mandated inspections because they do not meet the minimum standards for physicians, pharmacists, and various rehabilitation specialists (occupational and physical therapists). Further concerns focus on the patient's right to privacy, access to medical information, safety, and lifestyle freedom within the individual's range of mental and physical capabilities.

Because of the inadequate quality and the escalating costs of many nursing homes, many specialists in the health problems of the aged stress that home health care, elder-care centers, and preventive medicine clinics are good alternatives (Hunt, Corazzini, & Anderson, 2014; Kim, 2016). They are potentially less expensive than hospitals and nursing homes (Moon & others, 2015). They also are less likely to engender the feelings of depersonalization and dependency that occur so often in residents of institutions. Currently, there is an increased demand for, and a shortage of, home care workers because of the increasing number of older adults and their preference to stay out of nursing homes (Hewko & others, 2015).

How Would You...?

As a **health-care professional,** how would you use your understanding of development in late adulthood to advocate for improved access to quality medical care for older adults?



In a classic study, Judith Rodin and Ellen Langer (1977) found that an important factor related to health, and even survival, in a nursing home is the patient's feelings of control and self-determination. One group was encouraged to make more day-to-day choices and thus to feel they had more control over their lives. They began to decide such matters as what they ate, when their visitors could come, what movies they saw, and who could come to their rooms. Another group in the same nursing home was told by the administrator how caring the nursing home staff was and how much they wanted to help, but these residents were given no added responsibility over their lives. Eighteen months later, the residents who had been given extra responsibility were healthier, happier, and more alert and active than the residents who had not received added responsibility. Even more important was the finding that after 18 months only half as many nursing home residents in the "responsibility" group had died as in the "dependent" group (see Figure 5). Perceived control over one's environment, then, can literally be a matter of life and death.

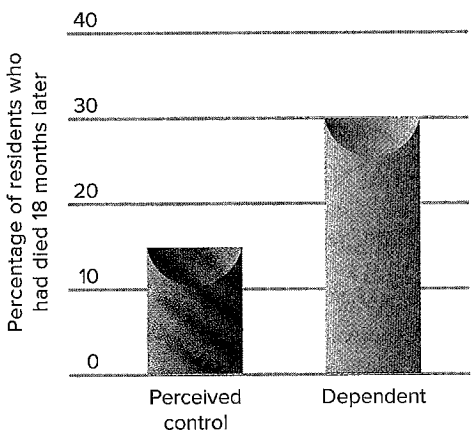


Figure 5 Perceived Control and Mortality
In the study by Rodin and Langer (1977), nursing home residents who were encouraged to feel more in control of their lives were more likely to be alive 18 months later than those who were treated as more dependent on the nursing home staff.

How Would You...?

As a **psychologist,** how would you structure the environment of a nursing home to produce maximum health and psychological benefits for the residents?



Careers in life-span development

Sarah Kagan, Geriatric Nurse

Sarah Kagan is a professor of nursing at the University of Pennsylvania School of Nursing. She provides nursing consultation to patients, their families, nurses, and physicians regarding the complex needs of older adults related to their hospitalization. She also consults on research and the management of patients who have head and neck cancers. Sarah teaches in the undergraduate nursing program, where she directs a course on "Nursing Care in the Older Adult." In 2003, she was awarded a MacArthur Fellowship for her work in the field of nursing.

Geriatric nurses like Sarah Kagan seek to prevent or intervene in the chronic or acute health problems of older adults. They may work in hospitals, nursing homes, schools of nursing, or with geriatric medical specialists or psychiatrists in a medical clinic or in private practice. Like pediatric nurses, geriatric nurses take courses in a school of nursing and obtain a degree in nursing, which takes from two to five years. They complete courses in biological sciences, nursing care, and mental health as well as supervised clinical training in geriatric settings. They also may obtain a master's or doctoral degree in their specialty.



Sarah Kagan with a patient.

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Geriatric nurses can be especially helpful in improving health treatment. To read about the work of one geriatric nurse, see *Careers in Life-Span Development.*

Cognitive Functioning

At age 89, the great pianist Arthur Rubinstein gave one of his best performances at New York's Carnegie Hall. When Pablo Casals was 95, a reporter asked him, "Mr. Casals, you are the greatest cellist who ever lived. Why do you still practice six hours a day?" Mr. Casals replied, "Because I feel like I am making progress" (Canfield & Hansen, 1995).

Multidimensionality and Multidirectionality

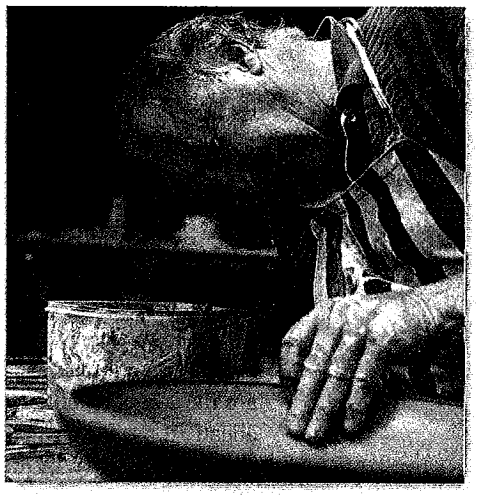
In thinking about the nature of cognitive change in adulthood, it is important to consider that cognition is a multidimensional concept (Willis & Belleville, 2016). It is also important to consider that, although some dimensions of cognition might decline as we age, others might remain stable or even improve.

Attention

Changes in attention are important aspects of cognitive aging (Deroche & others, 2016; Hoyer, 2015).

Selective attention, which consists of focusing on a specific aspect of experience that is relevant while ignoring others that are irrelevant, generally decreases in older adults (Quigley & Muller, 2014). However, on simple tasks involving a search for a feature, such as determining whether a target item is present on a computer screen, age differences are minimal when individuals are given sufficient practice. In a recent study, 10 weeks of speed of processing training improved the selective attention of older adults (O'Brien & others, 2013). And a recent study revealed that older adults who participated in 20 one-hour video game training sessions with a commercially available program (Lumosity) showed a significant reduction in distraction and increased alertness (Mayas & others, 2014). The Lumosity program sessions focus on problem solving, mental calculation, working memory, and attention.

Sustained attention is the ability to focus attention on a selected stimulus for a prolonged period of time. Researchers have found that older adults often perform as well as middle-aged and younger adults on measures of sustained attention (Berardi, Parasuraman, & Haxby, 2001). However, a recent study of older adults found that the greater the variability in their sustained attention (vigilance), the more likely they were to experience falls (O'Halloran & others, 2011).



What are some developmental changes in attention in late adulthood?

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Memory

Memory does change during aging, but not all types of memory change with age in the same way. We will begin by exploring possible changes in explicit and implicit memory.

Explicit and Implicit Memory Researchers have found that aging is linked with a decline in explicit memory (Lustig & Lin, 2016). **Explicit memory** is memory of facts and experiences that individuals consciously know and can state. Explicit memory also is sometimes called *declarative memory.* Examples of explicit memory include recounting the plot of a movie you have seen or being at a grocery store and remembering what you wanted to buy. **Implicit memory** is memory without conscious recollection; it involves skills and routine procedures, such as driving a car or typing on a computer keyboard, that you perform without having to consciously think about what you are doing. Implicit memory is less likely to be adversely affected by aging than explicit memory is (Norman, Holmin, & Bartholomew, 2011).

Episodic and Semantic Memory Episodic and semantic memory are viewed as forms of explicit memory. **Episodic memory** is the retention of information about the where and when of life's happenings. For example, what was the color of the walls in your bedroom when you were a child? What did you eat for breakfast this morning?

Younger adults have better episodic memory than older adults have (Sandrini & others, 2016; Tromp & others, 2015). Also, older adults think that they can remember long-ago events better than more recent events. However, researchers consistently have found that the older the memory is, the less accurate it is in older adults (Smith, 1996). And a recent study found that episodic memory performance predicted which individuals would develop dementia 10 years prior to the clinical diagnosis of the disease (Boraxbekk & others, 2015).

Semantic memory is a person's knowledge about the world. It includes a person's fields of expertise, general academic knowledge of the sort learned in school, and "everyday knowledge" about the meanings of words, important places, and common things. Older adults often take longer to retrieve semantic information, but usually they can ultimately retrieve it. However, the ability to retrieve very specific information (such as names) usually declines in older adults (Luo & Craik, 2008). For the most part, episodic memory declines more than semantic memory in older adults (Lacombe & others, 2015; Lustig & Lin, 2016).

Cognitive Resources: Working Memory and Perceptual Speed Two important cognitive resource mechanisms are working memory and perceptual speed (McInerney & Suhr, 2016; Salthouse, 2012, 2013). Recall that *working memory* is closely linked to short-term memory but places more emphasis on memory as a place for mental work (Baddeley, 2007, 2012). Researchers have found declines in working memory during late adulthood (Hara & Naveh-Benjamin, 2016; Kilic, Sayali, & Oztekin, 2016). A recent study revealed that working memory continued to decline from 65 to 89 years of age (Elliott & others, 2011). Explanation of the decline in working memory in older adults focuses on their less efficient

explicit memory Memory of facts and experiences that individuals consciously know and can state.

implicit memory Memory without conscious recollection; involves skills and routine procedures that are automatically performed.

episodic memory The retention of information about the where and when of life's happenings.

semantic memory A person's knowledge about the world—including a person's fields of expertise, general academic knowledge of the sort learned in school, and "everyday knowledge."

inhibition in preventing irrelevant information from entering working memory and their increased distractibility (Lustig & Linn, 2016).

Is there plasticity in the working memory of older adults? Researchers have found that older adults' working memory can be improved through training (Cantarella & others, 2016). For example, in a recent study strategy training improved the working memory of older adults (Bailey, Dunlosky, & Hertzog, 2014). Also, an experimental study revealed that moderate exercise resulted in faster reaction time on a working memory task in older adults (Hogan, Mata, & Carstensen, 2013). Thus, there appears to be some plasticity in the working memory of older adults.

Perceptual speed is another cognitive resource that has been studied by researchers on aging. Perceptual speed is the amount of time it takes to perform simple perceptual-motor tasks such as deciding whether pairs of two-digit or two-letter strings are the same, or how long it takes someone to step on the brakes when the car directly ahead stops. Perceptual speed shows considerable decline in late adulthood, and it is strongly linked with decline in working memory (Ross & others, 2016; Salthouse, 2013). Also, in a 20-year longitudinal study of 42- to 97-year-olds, greater declines in processing speed were linked to increased mortality risk (Aichele, Rabbitt, & Ghisletta, 2015).

Executive Function

We discussed executive function in a number of chapters earlier in the text. Recall that *executive function* is an umbrella-like concept that consists of a number of higher-level cognitive processes linked to the development of the brain's prefrontal cortex. Executive function involves managing one's thoughts to engage in goal-directed behavior and to exercise self-control (Reuter-Lorenz, Festini, & Jantz, 2016).

How does executive function change in late adulthood? Earlier in this chapter, you read that the prefrontal cortex is one area of the brain that shrinks with aging, and recent research has linked this shrinkage with a decrease in working memory and other cognitive activities in older adults (Lustig & Lin, 2016; Reuter-Lorenz, Festini, & Jantz, 2016). Older adults also are less effective at engaging in cognitive control than when they were younger (Campbell & others, 2012). For example, in terms of cognitive flexibility, older adults don't perform as well as younger adults at switching back and forth between tasks or mental sets (Luszcz, 2011). And in terms of cognitive inhibition, older adults are less effective than younger adults at inhibiting dominant or automatic responses (Reuter-Lorenz, Festini, & Jantz, 2016).

Although in general aspects of executive function decline in late adulthood, there is considerable variability in executive function among older adults. For example, some older adults have a better working memory and are more cognitively flexible than other older adults (Peltz, Gratton, & Fabiani, 2011). And there is increasing research evidence that aerobic exercise improves executive function in older adults (Eggenberger & others, 2015). For example, a recent study found that more physically fit older adults were more cognitively flexible than their less physically fit counterparts (Berryman & others, 2013).

Executive function increasingly is thought to be involved not only in cognitive performance but also in health, emotion regulation, adaptation to life's challenges, motivation, and social functioning. In a recent study, executive function but not memory predicted a higher risk of coronary heart disease and stroke three years later in older adults (Rostamian & others, 2015). Another recent study found that executive function predicted improvement in self-rated health in community-dwelling older adults (McHugh & Lawlor, 2016). And in yet another recent study, executive dysfunction was a strong predictor of having a stroke in cognitively normal aging adults (Oveisgharan & Hachinski, 2015).

Wisdom

Does wisdom, like good wine, improve with age? What is this thing we call "wisdom"? **Wisdom** is expert knowledge about the practical aspects of life that permits excellent judgment about important matters. This

wisdom Expert knowledge about the practical aspects of life that permits excellent judgment about important matters.

practical knowledge involves exceptional insight into human development and interactions, good judgment, and an understanding of how to cope with difficult life problems. Thus, wisdom, more than standard conceptions of intelligence, focuses on life's pragmatic concerns and human conditions (Ferrari & Weststrate, 2013).

In regard to wisdom, Paul Baltes and his colleagues (2006) have reached the following conclusions: (1) *High levels of wisdom are rare.* Few people, including older adults, attain a high level of wisdom. That only a small percentage of adults show wisdom supports the contention that it requires experience, practice, or complex skills. (2) *Factors other than age are critical for wisdom to develop to a high level.* For example, certain life experiences, such as being trained and working in a field involving difficult life problems and having wisdom-enhancing mentors, contribute to higher levels of wisdom. Also, people higher in wisdom have values that are more likely to consider the welfare of others than their own happiness. (3) *Personality-related factors, such as openness to experience, generativity, and creativity, are better predictors of wisdom than cognitive factors such as intelligence.*

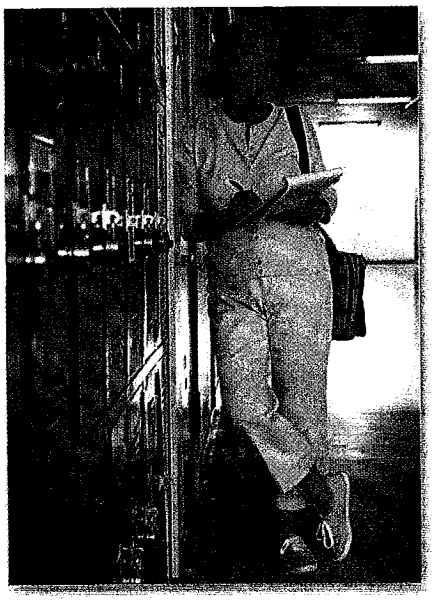
Education, Work, and Health

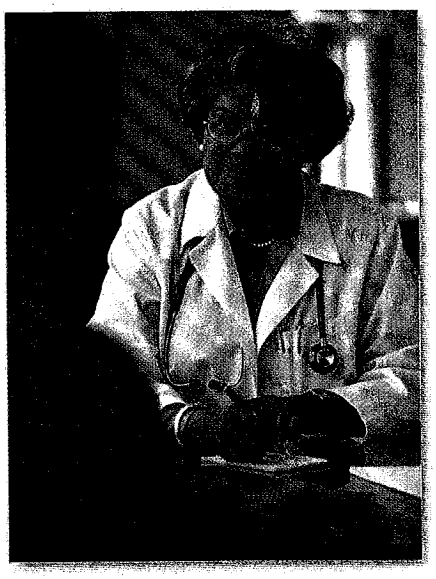
Education, work, and health are three important influences on the cognitive functioning of older adults. They are also three of the most important factors involved in understanding why cohort effects need to be taken into account in studying the cognitive functioning of older adults. Indeed, cohort effects are very important considerations in the study of cognitive aging (Schaie, 2013, 2016). A recent study found that older adults assessed in 2013–2014 engaged in a higher level of abstract reasoning than their counterparts who were assessed two decades earlier (Gerstorf & others, 2015).

Education Successive generations in America's twentieth century were better educated, and this trend continues in the twenty-first century (Schaie, 2013, 2016). Educational experiences are positively correlated with scores on intelligence tests and information-processing tasks, such as memory exercises (Steffener & others, 2014). Also, a recent study found that older adults with a higher level of education had better cognitive functioning (Rapp & others, 2013).

Work Successive generations have also had work experiences that included a stronger emphasis on cognitively oriented labor. Our great-grandfathers and grandfathers were more likely to be manual laborers than were our fathers, who are more likely to be involved in cognitively oriented occupations.

Researchers have found that when older adults engage in complex working tasks and challenging daily work activities their cognitive functioning shows less age-related decrease (Wang & Shi, 2016). For example, in one study, substantive complex work was linked with higher intellectual functioning in older adults (Schooler, Mulatu, & Oates, 1999). Further, a recent study found that working in an occupation with a high level of mental demands was linked to higher levels of cognitive functioning before retirement and a slower rate of cognitive decline after retirement (Fisher & others, 2014).

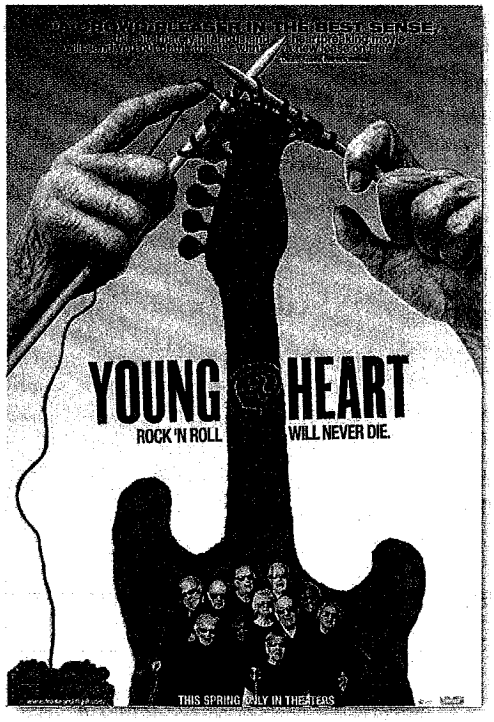






How are education, work, and health linked to cognitive functioning in older adults?

(Top) © Silverstock/Getty Images RF; (middle) © Blend Images/Getty Images RF; (bottom) © Tom Grill/Corbis RF



Members of the Young@Heart chorus have an average age of 80. Young@Heart became a hit documentary in 2008. The documentary displays the singing talents, energy, and optimism of a remarkable group of older adults, who clearly are on the "use it" side of "use it or lose it."

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Health Successive generations have also been healthier in late adulthood as more effective treatments for a variety of illnesses (such as hypertension) have been developed. Many of these illnesses, such as stroke and heart disease, have a negative impact on intellectual performance (Chuang & others, 2014; Hagenaars & others, 2016; Kherada, Heimowitz, & Rosendorff, 2015). Researchers also have found age-related cognitive decline in adults with mood disorders such as depression (Knight, Rastegar, & Kim, 2016; Mackin & others, 2014). Thus, some of the decline in intellectual performance found for older adults is likely due to health-related factors rather than to age per se (Korten & others, 2014).

K. Warner Schaie (1994) concluded that although some diseases—such as hypertension and diabetes—are linked to cognitive drop-offs, they do not directly cause mental decline. Rather, the lifestyles of the individuals with the diseases might be the culprits. For example, poor eating habits, inactivity, and stress are related to both physical and mental decline (Kraft, 2012). For example, a recent study of older adults found that a higher level of stress was linked to an accelerated decline of cognitive functioning (Aggarwal & others, 2014). And a number of research studies have found that exercise is linked to improved cognitive functioning in older adults (Gill & others, 2016; Leon & others, 2015). And in a recent research review, Exergaming (video games that involve exercising) was linked to improved cognitive function in older adults (Ogawa, You, & Leveille, 2016).

Use It or Lose It

Changes in cognitive activity patterns might result in disuse and consequent atrophy of cognitive skills (de Frias & Dixon, 2014; Park & Farrell, 2016). This concept is captured in the phrase "Use it or lose it." The mental activities that are likely to benefit the maintenance of cognitive skills in older adults include activities such as reading books, doing crossword puzzles, and going to lectures and concerts. In one study, reading daily was linked to reduced mortality in men in their seventies (Jacobs & others, 2008). In another study, 75- to 85-year-olds were assessed for an average of five years (Hall & others, 2009). At the beginning of the research, the older adults indicated how often they participated in six activities on a daily basis: reading, writing, doing crossword puzzles, playing cards or board games, having group discussions, and playing music. For each additional activity the older adult engaged in, the onset of rapid memory loss was delayed by 0.18 year. For older adults who participated in 11 activities per week compared with their counterparts who engaged in only 4 activities per week, the point at which accelerated memory decline occurred was delayed by 1.29 years. And in a recent analysis of older adults over a 12-year period, those who reduced their cognitive lifestyle activities (such as using a computer or playing bridge) subsequently showed declines in verbal speed, episodic memory, and semantic memory (Small & others, 2012). These declines in cognitive functioning were linked to subsequent lower engagement in social activities.

Training Cognitive Skills

If older adults are losing cognitive skills, can these skills be regained through training? An increasing number of research studies indicate that they can be restored to a degree (Cantarella & others, 2016; Mayas & others, 2014; Reuter-Lorenz, Festini, & Jantz, 2016; Willis & Belleville, 2016).

Consider a recent study of 60- to 90-year-olds which found that sustained engagement in cognitively demanding, novel activities improved the older adults' episodic memory (Park & others, 2014). To produce this result, the older adults spent an average of 16.5 hours a week for three months learning how to quilt or use digital photography. Consider also a recent study of 60- to 90-year-olds in which iPad training 15 hours a week for 3 months improved their episodic memory and processing speed relative to engaging in social or non-challenging activities (Chan & others, 2015).

Two key conclusions can be derived from research in this area: (1) training can improve the cognitive skills of many older adults, but (2) there is some loss in plasticity in late adulthood, especially in those who are 85 and older (Baltes, Lindenberger, & Staudinger, 2006).

How Would You...?

As a **psychologist,** how would you design activities and interventions to elicit and maintain cognitive vitality in older adults?



Recent meta-examinations of four longitudinal observational studies (Long Beach Longitudinal Study; Origins of Variance in the Oldest-old [Octo-Twin] Study in Sweden; Seattle Longitudinal Study; and Victoria Longitudinal Study in Canada) of older adults' naturalistic cognitive activities found that changes in cognitive activity predicted cognitive outcomes as long as two decades later (Brown & others, 2012; Lindwall & others, 2012; Mitchell & others, 2012; Rebok & others, 2014). However, the concept that engaging in cognitive activity at an earlier point in development would improve older adults' ability to later withstand cognitive decline was not supported. On a positive note, when older adults continued to increase their engagement in cognitive and physical activities, they were better able to maintain their cognitive functioning in late adulthood.

The Stanford Center for Longevity (2011) and together the Stanford Center for Longevity and the Max Planck Institute for Human Development (2014) reported information based on a consensus of leading scientists in the field of aging on how successfully the cognitive skills of older adults can be improved. One of their concerns is the misinformation given to the public touting products to improve the functioning of the mind for which there is no scientific evidence. Nutritional supplements have been advertised as "magic bullets" to slow the decline of mental functioning and improve the mental ability of older adults. Some of the claims are reasonable but not scientifically tested, while others are unrealistic and implausible (Willis & Bellevue, 2016).

A research review of dietary supplements and cognitive aging did indicate that ginkgo biloba was linked with improvements in some aspects of attention in older adults and that omega-3 polyunsaturated fatty acids (fish oil) was related to reduced risk of age-related cognitive decline (Gorby, Brownawell, & Falk, 2010). In this research review, there was no evidence of cognitive improvements in aging adults who took supplements containing ginseng and glucose. Also, a recent experimental study with 50- to 75-year-old females found that those who took fish oil for 26 weeks had improved executive function and beneficial effects on a number of areas of brain functioning compared with their female counterparts who took a placebo pill (Witte & others, 2014). In another recent study, fish oil supplement use was linked to higher cognitive scores and less atrophy in one or more brain regions (Daiello & others, 2015). Overall, though, research has not provided consistent plausible evidence that dietary supplements can accomplish major cognitive goals in aging adults over a number of years.

However, some software-based cognitive training games have been found to improve older adults' cognitive functioning (Charness & Boot, 2016; Lampit & others, 2015). For example, a recent study of 60- to 85-year-olds found that a multitasking video game that simulates day-to-day driving experiences (NeuroRacer) improved cognitive control skills, such as sustained attention and working memory, immediately after training on the video game and six months later (Anguera & others, 2013). In another recent study, computerized cognitive training slowed the decline in older adults' overall memory performance, an outcome that was linked to enhanced connectivity between the hippocampus and prefrontal cortex (Suo & others, 2016). Nonetheless, it is possible that the training games may improve cognitive skills in a laboratory setting but not generalize to gains in the real world.

In sum, some improvements in the cognitive vitality of older adults can be accomplished through some types of cognitive and fitness training (Erickson & Liu-Ambrose,

2016; Prakash & others, 2015; Rebok & others, 2014; Reuter-Lorenz, Festini, & Jantz, 2016; Willis & Belleville, 2016). However, benefits have not been observed in all studies (Salthouse, 2013). An important finding in the recent meta-analysis of four longitudinal studies was that older adults were better able to maintain their cognitive functioning over a prolonged period of time when increasing their engagement in cognitive and physical activities (Rebok & others, 2014). Further research is needed to determine more precisely which cognitive improvements occur in older adults as a result of training (Salthouse, 2013).

Cognitive Neuroscience and Aging

On several occasions in this chapter, we have noted that certain regions of the brain are involved in links between aging and cognitive functioning. In this section, we further explore the brain's role in aging and cognitive functioning. The field of *cognitive neuroscience* has emerged as the major discipline that studies links between brain activity and cognitive functioning (Ferreira & others, 2015; Lustig & Lin, 2016; Park & Farrell, 2016; Reuter-Lorenz, Festini, & Jantz, 2016). This field especially relies on brain-imaging techniques, such as fMRI, PET, and DTI (diffusion tensor imaging) to reveal the areas of the brain that are activated when individuals engage in certain cognitive activities (Coxon & others, 2016; Fjell & others, 2016). For example, as an older adult is asked to encode and then retrieve verbal materials or images of scenes, the older adult's brain activity will be monitored by an fMRI brain scan.

Changes in the brain can influence cognitive functioning, and changes in cognitive functioning can influence the brain. For example, aging of the brain's prefrontal cortex may produce a decline in working memory (Reuter-Lorenz, Festini, & Jantz, 2016). And, when older adults do not regularly use their working memory (recall the section "Use It or Lose It"), neural connections in the prefrontal lobe may atrophy. Further, cognitive interventions that activate older adults' working memory may increase these neural connections.

Although in its infancy as a field, the cognitive neuroscience of aging is beginning to uncover some important links between aging, the brain, and cognitive functioning (Lustig & Lin, 2016; Park & Farrell, 2016). These include the following:

- Neural circuits in specific regions of the brain's prefrontal cortex decline, and this decline is linked to poorer performance by older adults on tasks involving complex reasoning, working memory, and episodic memory (Grady & others, 2006; Reuter-Lorenz, Festini, & Jantz, 2016). (See Figure 6.)
- Recall from earlier in the chapter that older adults are more likely than younger adults to use both hemispheres of the brain to compensate for age-related declines in attention, memory, and language (Davis & others, 2012; Dennis & Cabeza, 2008; Reuter-Lorenz, Festini, & Jantz, 2016). Two neuroimaging studies revealed that better memory performance in older adults was linked to higher levels of activity in both hemispheres of the brain during information processing (Angel & others, 2011; Manenti, Cotelli, & Miniussi, 2011).
- Functioning of the hippocampus declines but to a lesser degree than the functioning of the frontal lobes in older adults (Antonenko & Floel, 2014). In K. Warner Schaie's (2013) recent research,



Figure 6 The Prefrontal Cortex
Advances in neuroimaging are allowing researchers to make significant progress in connecting changes in the brain with cognitive development. Shown here is an fMRI of the brain's prefrontal cortex. *What links have been found between the prefrontal cortex, aging, and cognitive development?*
© Dr. Sam Gilbert, Institute of Cognitive Neuroscience, UK

individuals whose memory and executive function declined in middle age had more hippocampal atrophy in late adulthood, but those whose memory and executive function improved in middle age did not show a decline in hippocampal functioning in late adulthood.

- Patterns of neural decline with aging are more noticeable for retrieval than for encoding (Gutchess & others, 2005).
- Compared with younger adults, older adults often show greater activity in the frontal and parietal lobes of the brain on simple tasks, but as attentional demands increase, older adults display less effective functioning in the frontal and parietal lobes of the brain that involve cognitive control (Campbell & others, 2012).
- Cortical thickness in the frontoparietal network predicts executive function in older adults (Schmidt & others, 2016).
- Younger adults have better connectivity between brain regions than older adults (Archer & others, 2016; Li & others, 2015).
- An increasing number of cognitive and fitness training studies include brain imaging techniques such as fMRI to assess the results of such training on brain functioning (Erickson & Liu-Ambrose, 2016; Erickson, Hillman, & Kramer, 2015). In one study, older adults who walked one hour a day three days a week for six months showed increased volume in the frontal and temporal lobes of the brain (Colcombe & others, 2006).

Work and Retirement

What percentage of older adults continue to work? How productive are they? Who adjusts best to retirement? These are some of the questions we will examine in this section.

Work

In 2000, 23 percent of U.S. 65- to 69-year-olds were in the work force; in 2015, this percentage had jumped to 32 percent (Short, 2015). For 70- to 74-year-olds, in 2000, 13 percent were in the workforce, but this percentage had increased to 19 percent in 2015. The increases were higher for women than men. For example, the labor force participation for 75-and-over women has risen 78 percent since 2000, while this participation in the work force for 75-and-over men has increased 37 percent (Short, 2015). These increases likely are mainly driven by the need to have adequate money to meet living expenses in old age (Cahill, Giandrea, & Quinn, 2016). The U.S. Labor Department projects that by 2020, 35 percent of men and 28 percent of women ages 65 to 74 will be in the work force (Hayutin, Beals, & Borges, 2013).

Since the mid-1990s, a significant shift has occurred in the percentage of older adults working part-time or full-time (U.S. Bureau of Labor Statistics, 2008). After 1995, of the adults 65 and older in the workforce, those engaging in full-time work rose substantially and those working part-time decreased considerably. This significant rise in full-time employment likely reflects the increasing number of older adults who realize that they may not have adequate money to fund their retirement (Rix, 2011). One survey revealed that 47 percent of Americans 50 years and older now expect to retire later than they previously envisioned (Associated Press–NORC Center for Public Affairs Research, 2013). Seventy-eight percent of the workers cited financial reasons, with many responding that they had less money available for retirement than they had before the recent recession.

Older workers have lower rates of absenteeism, fewer accidents, and increased job satisfaction in comparison with their younger counterparts (Warr, 2004). This means that older workers can be of considerable value to a company, above and beyond their cognitive competence. Changes in federal law now allow individuals over the age of 65 to continue working in most jobs.

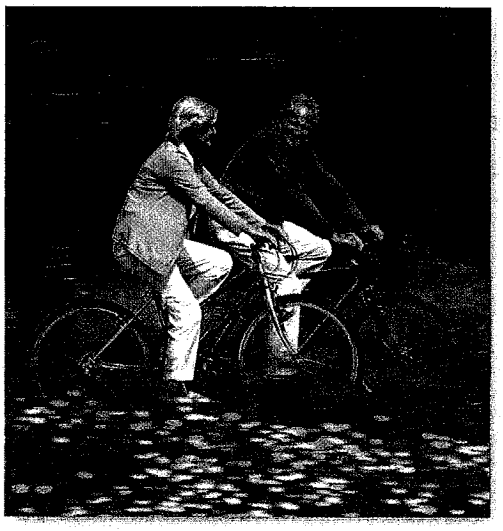
An increasing number of middle-aged and older adults are embarking on a second or a third career. In some cases, this is an entirely different type of work or a

continuation of previous work but at a reduced level. Many older adults also participate in unpaid work as volunteers or as active participants in a voluntary association. These options afford older adults opportunities for productive activity, social interaction, and a positive identity.

Several recent studies have found that older adults who continue to work have better physical profiles that those who retire. For example, a recent study found that physical functioning declined faster in retirement than in full-time work for employees 65 years of age and older, with the difference not explained by absence of chronic diseases and lifestyle risks (Stenholm & others, 2014). Another study revealed that retirement increased the risk of having a heart attack in older adults (Olesen & others, 2014).

Adjustment to Retirement

In the past, when most people reached an accepted retirement age, usually in their sixties, retirement meant a one-way exit from full-time work to full-time leisure (Higo & Williamson, 2009; Wang & Shi, 2016). Increasingly, individuals are delaying retirement and moving into and out of work (Kojola & Moen, 2016). Currently, there is no single dominant pattern to retirement but rather a diverse mix of pathways involving occupational identities, finances, health, and expectations and perceptions of retirement (Kojola & Moen, 2016). Leading expert Phyllis Moen (2007) described how today, when people reach their sixties, the life path they follow is less clear: (1) some individuals don't retire from their careers, (2) some retire from their career work and then take up a new and different job, (3) some retire from career jobs but do volunteer work, (4) some retire from a post-retirement job and go on to yet another job, (5) some move in and out of the workforce, so they never really have a "career" job from which they retire, (6) some individuals who are in poor health move to a disability status and eventually into retirement, and (7) some who are laid off define it as "retirement."



What are some keys to adjusting effectively in retirement?

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How Would You...?

As a psychologist, how would you assist older adults in making appropriate adjustments and preparations for a psychologically satisfying retirement?

Older adults who adjust best to retirement are healthy, have adequate income, are active, are educated, have an extended social network including both friends and family, and usually were satisfied with their lives before they retired (Damman, Henkens, & Kalmijn, 2014). Older adults who have inadequate income and are in poor health, and who must adjust to other stress that occurs at the same time as retirement, such as the death of a spouse, have the most difficult time adjusting to retirement (Reichstadt & others, 2007).

Mental Health

Although a substantial portion of the population can now look forward to a longer life, that life may be hampered by a mental disorder in old age (Barry & Byers, 2016)—a troubling prospect to individuals and their families and costly to society. Mental disorders make individuals increasingly dependent on the help and care of others. The cost of disorders such as dementia in older adults is estimated at more than $40 billion per year in the United States. More important, though, is the loss of human potential and the suffering involved. Although mental disorders in older adults are a major concern, however, older adults do not have a higher overall incidence of mental disorders than younger adults do (Busse & Blazer, 1996).

Dementia and Alzheimer Disease

dementia A global term for any neurological disorder in which the primary symptoms involve a deterioration of mental functioning.

Alzheimer disease A progressive, irreversible brain disorder characterized by a gradual deterioration of memory, reasoning, language, and eventually physical function.

Among the most debilitating of mental disorders in older adults are the dementias. In recent years, extensive attention has been focused on the most common dementia, Alzheimer disease.

Dementia

Dementia is a global term for any neurological disorder in which the primary symptoms involve a deterioration of mental functioning. Individuals with dementia often lose the ability to care for themselves and may become unable to recognize familiar surroundings and people—including family members (Teri, McKenzie, & Coulter, 2016). It is estimated that 23 percent of women and 17 percent of men 85 years and older are at risk for developing dementia (Alzheimer's Association, 2014). However, these estimates may be high because of the Alzheimer's Association's lobbying efforts to increase funding for research and treatment facilities. Dementia is a broad category, and it is important that every effort is made to narrow the older adult's disorder and determine a specific cause of the deteriorating mental functioning (Hagenaars & others, 2016; Velayudhan & others, 2014).

Alzheimer Disease

One form of dementia is **Alzheimer disease**—a progressive, irreversible brain disorder that is characterized by a gradual deterioration of memory, reasoning, language, and eventually, physical function. In 2012, an estimated 5.4 million adults in the United States had Alzheimer disease, and it is projected that 10 million baby boomers will develop Alzheimer disease (Alzheimer's Association, 2014). Figure 7 shows the estimated risks for developing Alzheimer disease at different ages for women and men (Alzheimer's Association, 2010). Women are more likely to develop the disease because they live longer than men, increasing the number of years during which they can develop it. Alzheimer disease triples the health-care costs of Americans 65 years of age and older (Alzheimer's Association, 2014).

Causes and Risk Factors Once destruction of brain tissue occurs from Alzheimer disease, it is unlikely that treatment of the disease will reverse the damage, at least based on the state of research now and in the foreseeable future (Teri, McKenzie, & Coulter, 2016). Alzheimer disease involves a deficiency in the brain messenger chemical *acetylcholine,* which plays an important role in memory (Godyn & others, 2016; Thomsen & others, 2016). Also, as Alzheimer disease progresses, the brain shrinks and deteriorates (see Figure 8). This deterioration is characterized by the formation of *amyloid plaques* (dense deposits of protein that accumulate in the blood vessels) and *neurofibrillary tangles* (twisted fibers that build up in neurons) (Ringman & others, 2016). Neurofibrillary tangles consist mainly of a protein called *tau* (Simic & others, 2016; Song & others, 2015). Currently, there is considerable research interest in the roles that amyloid and tau play in Alzheimer disease (Castrillo & Oliver, 2016; Ossenkoppele & others, 2016; Park & Farrell, 2016).

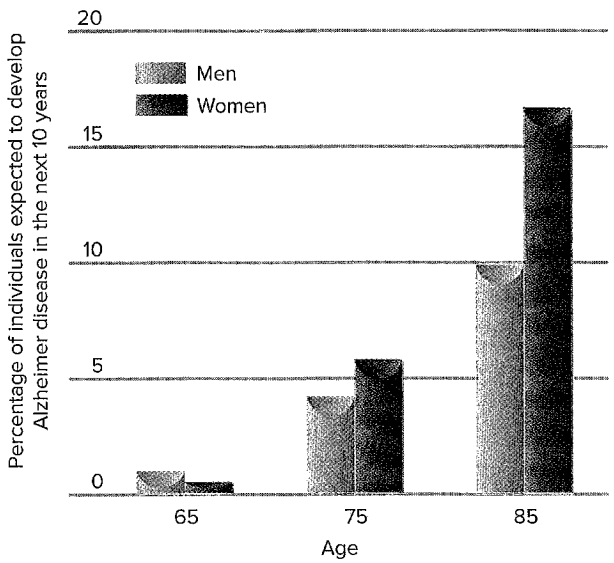


Figure 7 Estimated Risks for Developing Alzheimer Disease at Different Ages for Women and Men

Until recently, neuroimaging of plaques and tangles had not been developed. However, new neuroimaging techniques have been developed that can detect these key indicators of Alzheimer disease in the brain (Park & Farrell, 2016; Villemagne & others, 2015). This imaging breakthrough is providing scientists with an improved opportunity to identify the

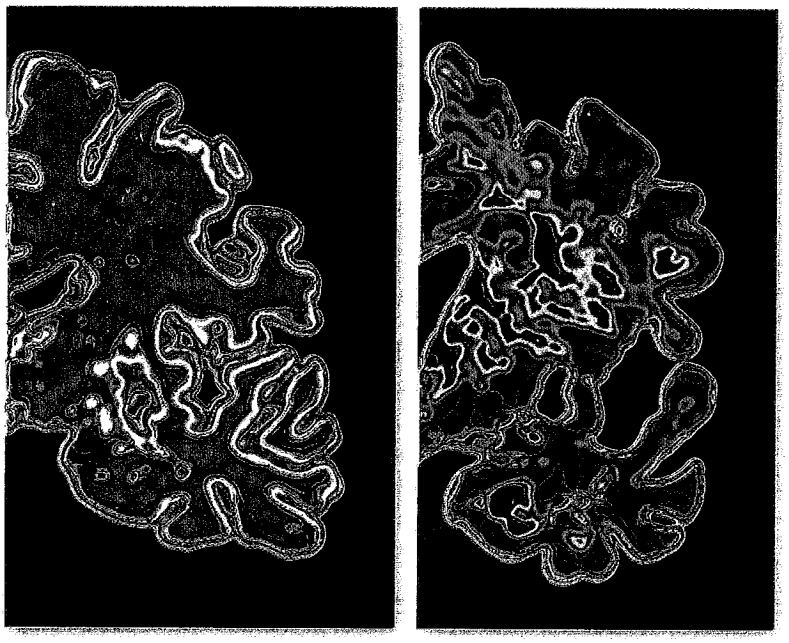


Figure 8 Two Brains: Normal Aging and Alzheimer Disease
The photograph on the left shows a slice of a normal aging brain, while the photograph on the right shows a slice of a brain ravaged by Alzheimer disease. Notice the deterioration and shrinking in the Alzheimer disease brain.
© Alfred Pasieka/Science Source

transition from healthy cognitive functioning to the earliest indication of Alzheimer disease (Chiotis & others, 2016; Park & Farrell, 2016).

There is increasing interest in the role that oxidative stress might play in Alzheimer disease (Conway & Lee, 2015; Kamat & others, 2016). Oxidative stress occurs when the body fails to defend itself against free-radical attacks and oxidation (Serini & Calviello, 2016). Recall from earlier in the chapter that free-radical theory is a major theory of aging.

Although scientists are not certain what causes Alzheimer disease, age is an important risk factor and genes also are likely to play an important role (Hu, Lin, & Chen, 2015; Park & Farrell, 2016). The number of individuals with Alzheimer disease doubles for every five years after the age of 65. A gene called *apolipoprotein E* (*ApoE*) is linked to an increasing presence of plaques and tangles in the brain. Special attention has focused on an allele (an alternative form of a gene) labeled ApoE4 that is a strong risk factor for Alzheimer disease (Das & Gursky, 2015; Theendakara & others, 2016). More than 60 percent of individuals with Alzheimer disease have at least one ApoE4 allele (Riedel, Thompson, & Brinton, 2016). In K. Warner Schaie's (2013) recent research, individuals who had the ApoE4 allele showed more cognitive decline beginning in middle age. A recent study found that the ApoE4 gene creates a cascade of molecular signaling that causes blood vessels to become more porous, allowing toxic substances to leak into the brain and damage neurons (Bell & others, 2012).

Despite links between the presence of the ApoE4 gene and Alzheimer disease, less than 50 percent of individuals who carry the ApoE4 gene develop dementia in old age. Advances as a result of the Human Genome Project have recently resulted in identification of other genes that are risk factors for Alzheimer disease, although they are not as strongly linked to the disease as the ApoE4 gene is (Harrison & Bookheimer, 2016; Mun & others, 2016).

Although individuals with a family history of Alzheimer disease are at greater risk, the disease is complex and likely to be caused by a number of factors, including lifestyles (Arenaza-Urquijo, Wirth, & Chetelat, 2015; Carnevale & others, 2016). For many years, scientists have known that a healthy diet, exercise, and weight control can lower the risk of cardiovascular disease. Now, they are finding that these healthy lifestyle factors may lower the risk of Alzheimer disease as well (Mendez-Sanz, de la Torre-Diez, & Lopez-Coronado, 2016). Recently, a number of cardiac risk factors have been implicated in Alzheimer disease—obesity, smoking, arteriosclerosis, high cholesterol, lipids, and permanent atrial fibrillation (Baumgart & others, 2015; Giudetti & others, 2016; Saito & Ihara, 2016). One of the best strategies for intervening in the lives of people who are at risk for Alzheimer disease is to improve their cardiac functioning through diet, drugs, and exercise (Di Marco & others, 2015; Isla, Vazquez-Cuevas, & Pena-Ortega, 2016).

A recent meta-analysis of modifiable risk factors in Alzheimer disease found that some medical exposures (estrogen, statins, and nonsteroidal anti-inflammatory drugs) and some dietary factors (folate, vitamin E/C, and coffee) were linked to a reduced incidence of Alzheimer disease (Xu & others, 2015). Also in this meta-analysis, some preexisting diseases (arteriosclerosis and hypertension) as well as depression increased

the risk of developing Alzheimer disease. Further, cognitive activity and low-to-moderate alcohol use decreased the risk of developing Alzheimer disease.

Mild Cognitive Impairment *Mild cognitive impairment (MCI)* represents a transitional state between the cognitive changes of normal aging and very early Alzheimer disease and other dementias (David & others, 2016; Forrester & others, 2016). MCI is increasingly recognized as a risk factor for Alzheimer disease. Estimates indicate that as many as 10 to 20 percent of individuals age 65 and older have MCI (Alzheimer's Association, 2014). Some individuals with MCI do not go on to develop Alzheimer disease, but MCI is a risk factor for Alzheimer disease. A recent study revealed that individuals with mild cognitive impairment who developed Alzheimer disease had at least one copy of the ApoE4 gene (Alegret & others, 2014). In this study, the extent of memory impairment was the key factor that was linked to the speed of decline from mild cognitive impairment to Alzheimer disease. Distinguishing between individuals who merely have age-associated declines in memory and those with MCI is difficult, as is predicting which individuals with MCI will subsequently develop Alzheimer disease (Bruce & others, 2016; O'Caoimh, Timmons, & Molloy, 2016).

How Would You...?

As a health-care professional, how would you respond to an older adult who is concerned that her declining short-term memory is an early symptom of dementia?



Drug Treatment of Alzheimer Disease Several drugs called cholinerase inhibitors have been approved by the U.S. Food and Drug Administration to treat Alzheimer disease. They are designed to improve memory and other cognitive functions by increasing the level of acetylcholine in the brain (Godyn & others, 2016; Reale & others, 2014). Keep in mind, though, that the drugs used to treat Alzheimer disease only slow the downward progression of the disease; they do not treat its cause (Stella & others, 2015). These drugs slow the worsening of Alzheimer symptoms for approximately 6 to 12 months for about 50 percent of the individuals who take them (Alzheimer's Association, 2014). Also, no drugs have yet been approved by the Federal Drug Administration for the treatment of MCI (Alzheimer's Association, 2014).

Caring for Individuals with Alzheimer Disease A special concern is caring for Alzheimer patients (Kamiya & others, 2014; Lethin & others, 2016). Health-care professionals believe that the family can be an important support system for the Alzheimer patient, but this support can have costs for family members, who can become emotionally and physically drained by the extensive care required for a person with Alzheimer disease (Ornstein & others, 2014; Svendsboe & others, 2016). A recent study confirmed that family caregivers' health-related quality of life in the first three years after they began caring for a family member with Alzheimer disease deteriorated more than that of their age and gender counterparts who were not caring for an Alzheimer patient (Valimaki & others, 2016). A recent study compared family members' perceptions of caring for someone with Alzheimer disease, cancer, or schizophrenia (Papastavrou & others, 2012). In this study, the highest perceived burden was reported for Alzheimer disease.

Respite care (services that provide temporary relief to those who are caring for individuals with disabilities, illnesses, or the elderly) has been developed to help people who have to meet the day-to-day needs of Alzheimer patients. This type of care provides an important break from the burden of providing chronic care (de la Cuesta-Benjumea, 2011).

Parkinson Disease

Another type of dementia is **Parkinson disease,** a chronic, progressive disorder characterized by muscle tremors, slowing of movement, and partial facial paralysis. Parkinson disease is triggered by degeneration of dopamine-producing neurons in the brain (Hassan & others, 2016). Dopamine is a neurotransmitter that is necessary for normal brain functioning. Why these neurons degenerate is not known.

The main treatment for Parkinson disease involves administering drugs that enhance the effect of dopamine (dopamine agonists) in the disease's earlier stages and later administering the drug L-dopa, which is

Parkinson disease A chronic, progressive disease characterized by muscle tremors, slowing of movement, and partial facial paralysis.

converted by the brain into dopamine (Hernandez, Redgrave, & Obeso, 2015; Simms, Huettner, & Kortagere, 2016). However, it is difficult to determine the correct level of dosage of L-dopa, and the medication loses its efficacy over time (Nomoto & others, 2009). Another treatment for advanced Parkinson disease is deep brain stimulation (DBS), which involves implantation of electrodes within the brain (Cui & others, 2016). The electrodes are then stimulated by a pacemaker-like device. Stem cell transplantation and gene therapy offer hope for treating Parkinson disease (Lindvall, 2016).

Summary

Longevity, Biological Aging, and Physical Development

- Life expectancy has increased dramatically, but life span has not. In the United States, the number of people living to age 100 or older is increasing.
- Biological theories of aging include evolutionary theory, cellular clock theory, free-radical theory, mitochondrial theory, sirtuin theory, the mTOR pathway theory, and hormonal stress theory.
- The aging brain retains considerable plasticity and adaptability.
- Among physical changes that accompany aging are slower movement and the appearance of wrinkled skin and age spots on the skin. There are also declines in perceptual abilities, cardiovascular functioning, and lung capacity. Many older adults' sleep difficulties are linked to health problems.
- Although sexual activity declines in late adulthood, many individuals continue to be sexually active as long as they are healthy.

Health

- The probability of disease or illness increases with age. Chronic disorders, such as arthritis and osteoporosis, become more common in late adulthood. Cancer and cardiovascular disease are the leading causes of death in late adulthood.
- The physical benefits of exercise have been clearly demonstrated in older adults. Leaner adults, especially women, live longer, healthier lives.
- The quality of nursing homes varies enormously. Alternatives include home health care, elder-care centers, and preventive medicine clinics.

Cognitive Functioning

- Although older adults are not as adept as middle-aged and younger adults at complicated tasks that involve selective and divided attention, they perform just as well on measures of sustained attention. Some aspects of memory, such as episodic memory, decline in older adults. Components of executive function—such as cognitive control and working memory—decline in late adulthood, although there is individual variation in older adults' executive function. Wisdom has been theorized to increase in older adults, but researchers have not consistently documented this increase.
- Older adults who engage in cognitive activities, especially challenging ones, have higher cognitive functioning than those who don't use their cognitive skills.
- Cognitive and fitness training can improve some cognitive skills of older adults, but there is some loss of plasticity in late adulthood.
- There is considerable interest in the cognitive neuroscience of aging. A consistent finding is a decline in the functioning of the prefrontal cortex in late adulthood, which is linked to poorer performance in complex reasoning and aspects of memory.

Work and Retirement

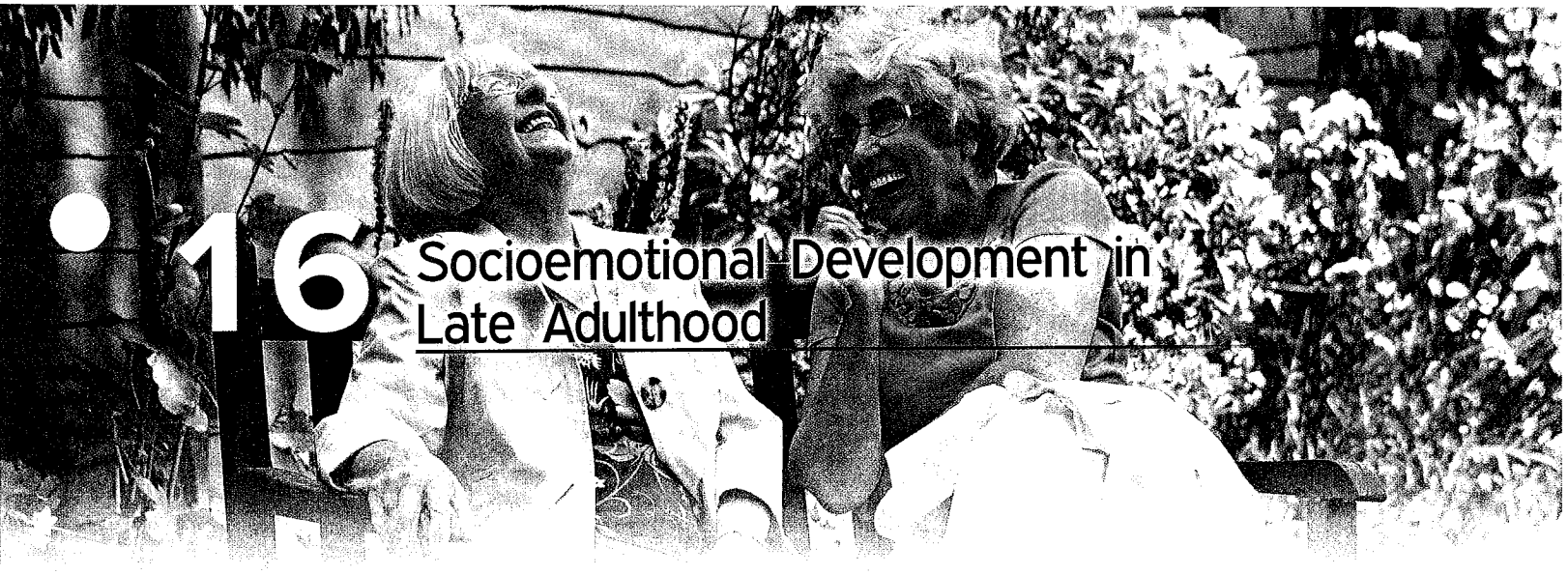
- Increasing numbers of older adults engage in part-time work or volunteer work and continue being productive throughout late adulthood.
- Healthy, economically stable, educated, satisfied individuals with an extended social network adjust best to retirement.

Mental Health

- Individuals with dementias, such as Alzheimer disease, often lose the ability to care for themselves. Alzheimer disease is by far the most common dementia.
- Parkinson disease is a chronic, progressive disease characterized by muscle tremors, slowing of movement, and facial tremors.

Key Terms

Alzheimer disease
arthritis
cataracts
cellular clock theory
dementia
episodic memory
evolutionary theory of aging
explicit memory
free-radical theory
glaucoma
hormonal stress theory
implicit memory
life expectancy
life span
macular degeneration
mitochondrial theory
mTOR pathway
osteoporosis
Parkinson disease
semantic memory
sirtuins
wisdom



16 Socioemotional Development in Late Adulthood

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CHAPTER OUTLINE

THEORIES OF SOCIOEMOTIONAL DEVELOPMENT
Erikson's Theory
Activity Theory
Socioemotional Selectivity Theory
Selective Optimization with Compensation Theory

PERSONALITY AND SOCIETY
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FAMILIES AND SOCIAL RELATIONSHIPS
Lifestyle Diversity
Attachment
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Friendship
Social Support and Social Integration
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ETHNICITY, GENDER, AND CULTURE
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Culture

SUCCESSFUL AGING

Stories of Life-Span Development: Bob Cousy, Adapting to Life as an Older Adult

Bob Cousy was a star player on Boston Celtics teams that won numerous National Basketball Association championships. In recognition of his athletic accomplishments, Cousy was honored by ESPN as one of the top 100 athletes of the twentieth century. After he retired from basketball, he became a college basketball coach and then into his seventies was a broadcaster of Boston Celtics basketball games. Now in his eighties, Cousy has retired from broadcasting but continues to play golf and tennis on a regular basis. He has enjoyed a number of positive social relationships, including his marriage, children and grandchildren, and many friends. In 2013, after 63 years of marriage, Cousy said a last goodbye to his wife, who had dementia and died. After she developed dementia, he cared for her in their home on a daily basis as she slowly succumbed to the deterioration of her mind and body. Since her death, when he goes to bed each night, he tells her he loves her (Williamson, 2013).

As is the case with many famous people, Cousy's awards reveal little about his personal life and contributions. In addition to his extensive provision of care for his wife in her last years, two other examples illustrate his humanitarian efforts to help others (McClellan, 2004). First, when Cousy played for the Boston Celtics, his African





Bob Cousy, as a Boston Celtics star when he was a young adult (*left*) and as an older adult (*right*). *What are some changes he has made in his life as an older adult?*

(Left) © Hy Peskin/Sports Illustrated/Getty Images (right) © Jesse D. Garrabrant/NBAE/Getty Images

American teammate, Chuck Cooper, was refused a hotel room on a road trip because of his race. Cousy expressed anger to his coach about the situation and then accompanied an appreciative Cooper on a train back to Boston. Second, the Bob Cousy Humanitarian Fund "honors individuals who have given their lives to using the game of basketball as a medium to help others" (p. 4). The Humanitarian Fund reflects Cousy's motivation to care for others, be appreciative and give something back, and make the world less self-centered.

Bob Cousy's active, involved life as an older adult reflects some of the themes of socioemotional development in older adults, including the important role that being active plays in life satisfaction, how people adapt to changing skills, and the positive role of close relationships with friends and family in an emotionally fulfilling life. Our coverage of socioemotional development in late adulthood describes a number of theories about the socioemotional lives of older adults; the older adult's personality and roles in society; the importance of family ties and social relationships; the social contexts of ethnicity, gender, and culture; and the increasing attention on elements of successful aging. ■

Theories of Socioemotional Development

In this section, we explore four main theories of socioemotional development that focus on late adulthood: Erikson's theory, activity theory, socioemotional selectivity theory, and selective optimization with compensation theory.

Erikson's Theory

Earlier we described Erik Erikson's (1968) eight stages of the human life span and, as we explored different periods of development, we examined the stages in more detail. **Integrity versus despair** is Erikson's eighth and final stage of development, which individuals experience during late adulthood. This stage involves reflecting on the past and either piecing together a positive review or concluding that one's life has not been well spent. Through many different routes, the older adult may have developed a positive outlook in each of the preceding periods. If so, retrospective glances and reminiscences will reveal a picture of a life well spent, and the older adult will be satisfied (integrity). But if the older adult resolved one or more of the earlier stages in a negative way (being socially isolated in early adulthood or stagnating in middle adulthood, for example), retrospective glances about the total worth of his or her life might be negative (despair).

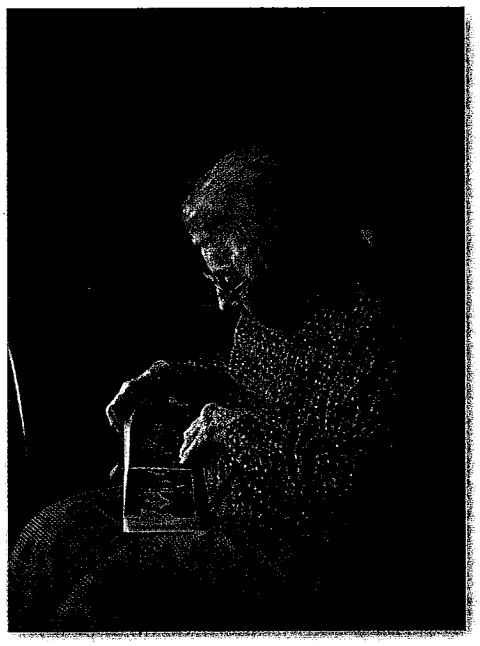
Life review is prominent in this final stage. It involves looking back at one's life experiences and evaluating, interpreting, and often reinterpreting them (Ros & others, 2016; Thorgrimsdottir & Bjornsdottir, 2016). Distinguished aging researcher Robert Butler (2007) argues that the life review is set in motion by looking forward to death. Sometimes the life review proceeds quietly; at other times it is intense, requiring considerable work to achieve some sense of personality integration. The life review may be observed initially in stray and insignificant thoughts about oneself and

integrity versus despair Erikson's eighth and final stage of development, which individuals experience in late adulthood. This involves reflecting on the past and either piecing together a positive review or concluding that one's life has not been well spent.

one's life history. These thoughts may continue to emerge in brief intermittent spurts or become essentially continuous.

One aspect of life review involves identifying and reflecting on not only the positive aspects of one's life but also regrets as part of developing a mature wisdom and self-understanding (Korte & others, 2014; Randall, 2013). The hope is that by examining both the positive aspects and what an individual has regretted doing, a more accurate vision of the complexity of one's life and possibly increased life satisfaction will be attained (King & Hicks, 2007).

Although thinking about regrets can be helpful as part of a life review, research indicates that older adults should not dwell on regrets, especially since opportunities to undo regrettable actions decline with age (Suri & Gross, 2012). One study revealed that an important factor in the outlook of older adults who showed a higher level of emotion regulation and successful aging was reduced responsiveness to regrets (Brassen & others, 2012).



What characterizes a life review in late adulthood?
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In working with older clients, some clinicians use *reminiscence therapy*, which involves discussing past activities and experiences with another individual or group (Allen & others, 2016; Djukanovic, Carlsson, & Peterson, 2016). Therapy may include the use of photographs, familiar items, and video/audio recordings. Reminiscence therapy can improve the mood of older adults, including those with dementia (Subramaniam & Woods, 2012). In a recent study with older adults who had dementia, reminiscence therapy reduced their depressive symptoms and improved their self-acceptance and positive relations with others (Gonzalez & others, 2015). Further, in a version of reminiscence therapy, *attachment-focused* reminiscence therapy reduced depressive symptoms, perceived stress, and emergency room visits in older African Americans (Sabir & others, 2016).



How Would You...?

As a **psychologist,** how would you explain to an older adult the benefits of engaging in a life review?

Activity Theory

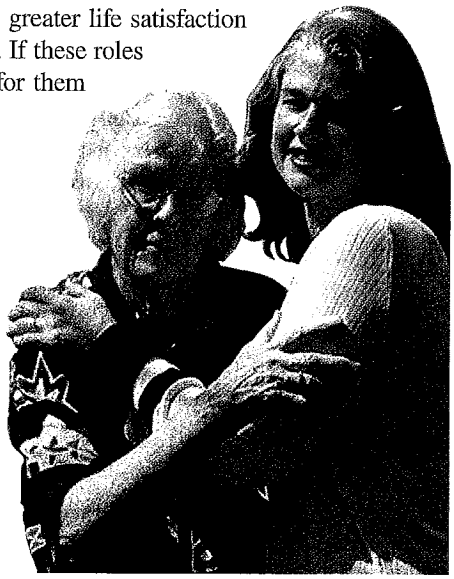
Activity theory states that the more active and involved older adults are, the more likely they are to be satisfied with their lives. Researchers have found that when older adults are active, energetic, and productive, they age more successfully and are happier than they are if they disengage from society (Bielak & others, 2014; Jones & others, 2016; Neugarten, Havighurst, & Tobin, 1968; Soares-Miranda & others, 2016). A recent study found that older adults who increased their leisure-time activity levels were three times more likely to have a slower progression to having a functional disability (Chen & others, 2016). Also, a study of Canadian older adults revealed that those who were more physically active had higher life satisfaction and greater social interaction than their physically inactive counterparts (Azagba & Sharaf, 2014). Another study in which individuals kept daily diaries of their activities found that middle-aged and older adults who were more physically active were more satisfied with their lives than their less physically active counterparts (Maher & others, 2015). On days when the aging adults were physically active they reported higher life satisfaction than on the days when they were not active.



Should adults stay active or become more disengaged as they become older? Explain.
© Chuck Savage/Getty Images

activity theory Theory that the more active and involved older adults are, the more likely they are to be satisfied with their lives.

Activity theory suggests that many individuals will achieve greater life satisfaction if they continue their middle-adulthood roles into late adulthood. If these roles are stripped from them (as in early retirement), it is important for them to find substitute roles that keep them active and involved.



Laura Carstensen (*right*), in a caring relationship with an older woman. Her theory of socioemotional selectivity is gaining recognition as an explanation for changes in social networks as people age.

© Dr. Laura Carstensen

Socioemotional Selectivity Theory

Socioemotional selectivity theory states that older adults become more selective about their social networks. Because they place a high value on emotional satisfaction, older adults spend more time with familiar individuals with whom they have had rewarding relationships. Developed by Laura Carstensen (1998, 2006, 2008, 2010, 2014, 2015; Carstensen & others, 2015), this theory argues that older adults deliberately withdraw from social contact with individuals peripheral to their lives while they maintain or increase contact with close friends and family members with whom they have had enjoyable relationships. This selective narrowing of social interaction maximizes positive emotional experiences and minimizes emotional risks as individuals become older.

Socioemotional selectivity theory challenges the stereotype that the majority of older adults are in emotional despair because of their social isolation (Carstensen, 2014, 2015; Carstensen & others, 2015). Rather, older adults consciously choose to decrease the total number of their social contacts in favor of spending increased time in emotionally rewarding moments with friends and family. That is, they systematically prune their social networks so that available social partners satisfy their emotional needs (Carstensen & others, 2015; Sims, Hogan, & Carstensen, 2015). Not surprising, older adults have far smaller social networks than younger adults do (Carstensen & Fried, 2012). In a recent study of individuals from 18 to 94 years of age, as they grew older they had fewer peripheral social contacts but retained close relationships with people who provided them with emotional support (English & Carstensen, 2014).

However, in a recent large-scale examination of healthy living in different age groups by the Stanford Center on Longevity called the Sightlines Project, social engagement with individuals and communities appeared to be weaker today than it was 15 years ago for 55- to 64-year-olds (Parker, 2016). Many of these individuals, who are about to reach retirement age, had weaker relationships with spouses, partners, family, friends, and neighbors than their counterparts of 15 years ago.

Socioemotional selectivity theory also focuses on the types of goals that individuals are motivated to achieve (Sims, Hogan, & Carstensen, 2015). Two important classes of goals are (1) knowledge-related and (2) emotion-related. The trajectory of motivation for knowledge-related goals starts relatively high in the early years of life, peaks in adolescence and early adulthood, and then declines in middle and late adulthood. The emotion-related trajectory is high during infancy and early childhood, declines from middle childhood through early adulthood, and increases in middle and late adulthood.

In general, compared with younger adults, the feelings of older adults mellow. Emotional life is on a more even keel, with fewer highs and lows. It may be that although older adults have less extreme joy, they have more contentment, especially when they are connected in positive ways with friends and family. Older adults react less strongly to negative circumstances, are better at ignoring irrelevant negative information, and remember more positive than negative information (Mather, 2012).

A study revealed that positive emotion increased and negative emotion (except for sadness) decreased from 50 years of age through the mid-eighties

socioemotional selectivity theory The theory that older adults become more selective about their social networks. Because they place a high value on emotional satisfaction, older adults often prefer to spend time with familiar individuals with whom they have had rewarding relationships.

How Would You...?

As a **health-care professional,** how would you assess whether an older adult's limited social contacts signal unhealthy social isolation or healthy socioemotional selectivity?

(Stone & others, 2010). A pronounced decline in anger occurred from the early twenties and sadness was essentially unchanged from the early twenties through the mid-eighties. Older adults reported experiencing more positive emotions than younger adults did. Other research also indicates that happier people live longer (Frey, 2011). In sum, the emotional life of older adults is more positive than stereotypes suggest (Sims, Hogan, & Carstensen, 2015).

selective optimization with compensation theory The theory that successful aging involves three main factors: selection, optimization, and compensation.

Selective Optimization with Compensation Theory

Selective optimization with compensation theory states that successful aging is linked with three main factors: selection, optimization, and compensation (SOC). The theory describes how people can produce new resources and allocate them effectively to the tasks they want to master (Baltes, Lindenberger, & Staudinger, 2006; Freund & Hennecke, 2015; Freund, Nikitin, & Riediger, 2013). *Selection* is based on the concept that older adults have a reduced capacity and loss of functioning, which require a reduction in performance in most life domains. *Optimization* suggests that it is possible to maintain performance in some areas through continued practice and the use of new technologies. *Compensation* becomes relevant when life tasks require a level of capacity beyond the current level of the older adult's performance potential. In a recent study of 22- to 94-year-olds, middle-aged adults had the highest daily use of SOC, although older adults also showed high SOC use if they had a high level of cognitive resources (Robinson, Rickenbach, & Lachman, 2016). Older adults especially need to compensate in circumstances involving high mental or physical demands, such as when thinking about and memorizing new material in a very short period of time, reacting quickly when driving a car, or running fast. When older adults develop an illness, the need for compensation is obvious.

In the view of Paul Baltes and his colleagues (2006), the selection of domains and life priorities is an important aspect of development. Life goals and personal life investments likely vary across the life course for most people. For many individuals, it is not just the sheer attainment of goals, but rather the attainment of *meaningful* goals, that makes life satisfying. In one cross-sectional study, the personal life investments of 25- to 105-year-olds were assessed (Staudinger, 1996) (see Figure 1). From

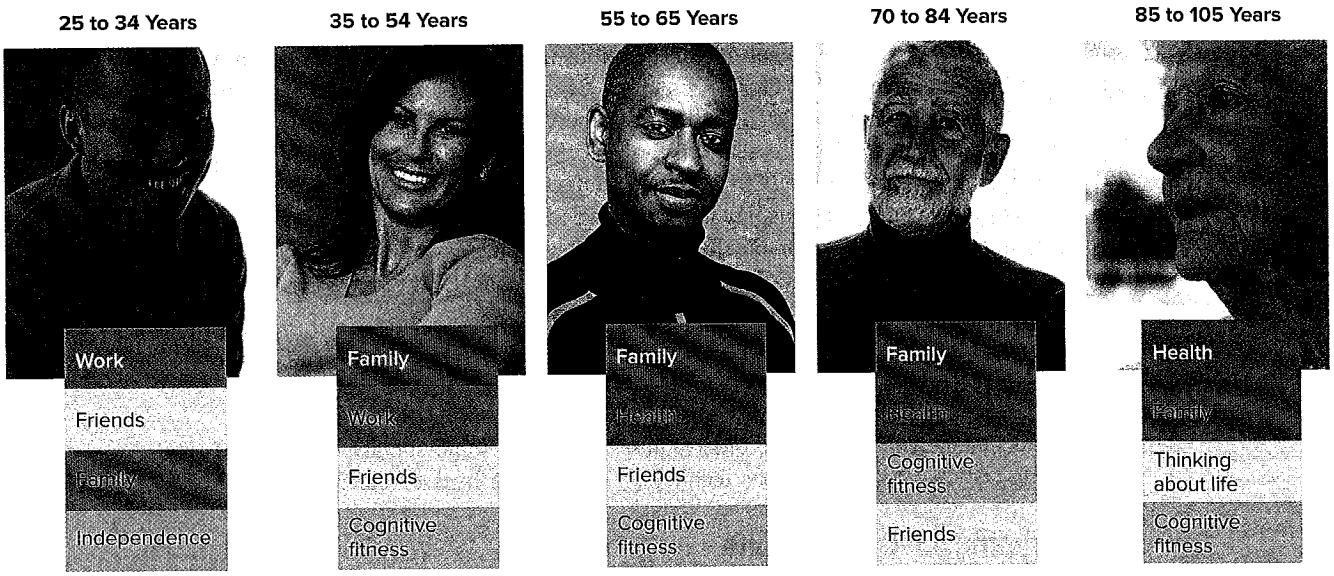


Figure 1 Degree of Personal Life Investment at Different Points in Life
Shown here are the top four domains of personal life investment at different points in life. The highest degree of investment is listed at the top (for example, work was the highest personal investment from 25 to 34 years of age, family from 35 to 84, and health from 85 to 105).

Left to right © Ryan McVay/Getty Images RF; © image100/PunchStock RF; © Image Source/Getty Images RF; © Corbis RF; © Image Source/Getty Images RF

25 to 34 years of age, participants said that they personally invested more time in work, friends, family, and independence, in that order. From 35 to 54 and 55 to 65 years of age, family became more important than friends in terms of their personal investment. Little changed in the rank ordering of persons 70 to 84 years old, but for participants 85 to 105 years old, health became the most important personal investment. Thinking about life showed up for the first time on the most important list for those who were 85 to 105 years old.

Personality and Society

Is personality linked to mortality in older adults? How are older adults perceived and treated by society?

Personality

In the Socioemotional Development in Middle Adulthood chapter, we described the Big Five factors of personality. (Recall that the first letter of each factor spells OCEAN.) Several of the Big Five factors of personality continue to change in late adulthood (Donnellan, Hill, & Roberts, 2015; Hill & Roberts, 2016; Jackson & Roberts, 2016; Roberts, Donnellan, & Hill, 2013). For example, in one study, older adults were more conscientious and agreeable than middle-aged and younger adults (Allemand, Zimprich, & Hendriks, 2008). Another study examined developmental changes in the components of conscientiousness (Jackson & others, 2009). In this study, the transition into late adulthood was characterized by increases in the following aspects of conscientiousness: impulse control, reliability, and conventionality. In another study, perceived social support predicted increased conscientiousness in older adults (Hill & others, 2014). And in another study, more severe depression in older adults was associated with higher neuroticism and lower extraversion and conscientiousness (Koorevaar & others, 2013).

Some personality traits are associated with the mortality of older adults (Donnellan, Hill, & Roberts, 2015; Hill & Roberts, 2016; Roberts, Donnellan, & Hill, 2013). A longitudinal study of more than 1,200 individuals across seven decades revealed that a higher score on the Big Five personality factor of conscientiousness predicted a lower risk of earlier death from childhood through late adulthood (Martin, Friedman, & Schwartz, 2007). A higher level of conscientiousness has been linked to living a longer life than the other four factors (Donnellan, Hill, & Roberts, 2015; Hill & others, 2011; Jackson & Roberts, 2016; Wilson & others, 2015).

Affect and outlook on life are also linked to mortality in older adults (Carstensen, 2014, 2015; Carstensen & others, 2015). Older adults characterized by negative affect don't live as long as those who display more positive affect, and optimistic older adults who have a positive outlook on life live longer than their pessimistic and negative counterparts (Mosing & others, 2012; Reed & Carstensen, 2015).

Older Adults in Society

Does society negatively stereotype older adults? What are some social policy issues in an aging society? What role does technology play in the lives of older adults?

Stereotyping of Older Adults

Social participation by older adults is often discouraged by **ageism,** which is prejudice against others because of their age, especially prejudice against older adults (Allen, 2016; Lawler & others, 2014; Sims, 2016). They are often perceived as incapable of thinking clearly, learning new

ageism Prejudice against people because of their age, especially prejudice against older adults.

How Would You...?

As a **human development and family studies professional,** how would you design a public awareness campaign to reduce ageism?



things, enjoying sex, contributing to the community, or holding responsible jobs. Many older adults face painful discrimination and might be too polite and timid to attack it. Because of their age, older adults might not be hired for new jobs or might be eased out of old ones; they might be shunned socially; and they might be edged out of their family life.

Ageism is widespread (Band-Winterstein, 2015). One study found that men were more likely to negatively stereotype older adults than were women (Rupp, Vodanovich, & Crede, 2005). The most frequent form of ageism is disrespect for older adults, followed by assumptions about ailments or frailty caused by age (Palmore, 2004).

Policy Issues in an Aging Society

The aging society and older persons' status in this society raise policy issues about the well-being of older adults (George & Farrell, 2016; Moon, 2016; Quesnel-Vallée, Willson, & Reiter-Campeau, 2016). These include the status of the economy and income, provision of health care, and eldercare, each of which we consider in turn.

Status of the Economy and Income Many older adults are concerned about their ability to have enough money to live a good life as older adults (Cahill, Giandrea, & Quinn, 2016; Tse & others, 2014). An important issue is whether our economy can bear the burden of so many older persons, who by reason of their age alone are usually consumers rather than producers. Especially troublesome is the low rate of savings among U.S. adults, which has contributed to the financial problems of older adults in the recent economic downturn (Williamson & Beland, 2016). Surveys indicate that Americans' confidence in their ability to retire comfortably has reached all-time lows in recent years (Helman, Copeland, & VanDerhei, 2012).

Of special concern are older adults who are poor (George & Farrell, 2016; Quesnell-Vallée, Willson, & Reiter-Campeau, 2016). A recent study found that cognitive processing speed was slower in older adults living in poverty (Zhang & others, 2015). Researchers also have found that poverty in late adulthood is linked to an increase in physical and mental health problems (George & Farrell, 2016). Also, one study revealed that low SES increases the risk of earlier death in older adults (Krueger & Chang, 2008).

Census data suggest that the overall number of older people living in poverty has declined since the 1960s, but in 2013, 9.5 percent of older adults in the United States still were living in poverty (Gabe, 2015). In 2013, U.S. women 65 years and older (12 percent; up from 10.5 percent in 2010) were much more likely to live in poverty than their male counterparts (7 percent; up from 6.2 percent in 2010) (Cubanski, Casillas, & Damice, 2015). Nineteen percent of single, divorced, or widowed women 65 years and older lived in poverty. There is a special concern about poverty among older women and considerable discussion about the role of Social Security in providing a broad economic safety net for them (Cahill, Giandrea, & Quinn, 2016; Moon, 2016).

Poverty rates among older adults who belong to ethnic minorities are much higher than the rate for non-Latino Whites. In 2013, 20 percent of Latino White older adults and 18 percent of African American older adults lived in poverty, compared with 7 percent of non-Latino Whites (Cubanski, Casillas, & Damice, 2015).

Health Care An aging society also brings with it various problems involving health care (Gaugler, 2016; Moon, 2016), including escalating costs (Hudson, 2016). Approximately one-third of total health-care expenses in the United States involve the care of adults 65 and over, who comprise only 12 percent of the population. Medicare is the program that provides health-care insurance to adults over 65 under the Social Security system (Moon, 2016; Trivedi, 2016; Trivedi & others, 2016). Until the Affordable Care Act was enacted, the United States was the only developed country that did not have a national health care system.

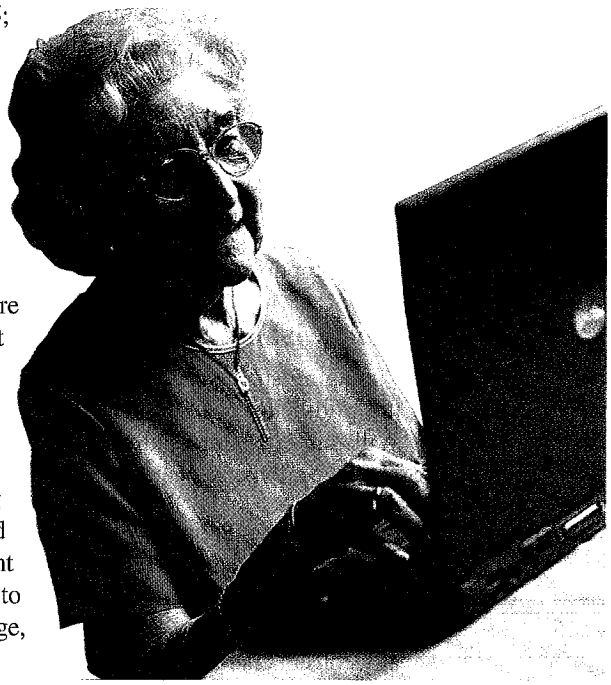
How Would You...?



As a **health-care professional,** how would you recommend addressing the medical community's emphasis on "cure" rather than "care" when treating chronic illness in older adults?

Technology The Internet plays an increasingly important role in providing access to information and communication for adults as well as youth (Charness & Boot, 2016;

Cook & others, 2015; Shahrokni & others, 2015; Willis & Belleville, 2016). A 2013 national survey conducted by the Pew Research Center found that 59 percent of U.S. older adults reported that they use the Internet (in 2000, only 13 percent of older adults said they use the Internet) (Smith, 2014). Two distinct groups of older adult Internet users were identified: (1) those who are younger, more highly educated, and more affluent; and (2) those who are older, less affluent, and who have significant health or disability challenges. Also in this recent survey, once older adults begin using the Internet, it becomes an integral part of their daily lives. Among those 65 years and older who use the Internet, 71 percent report going online every day or almost every day (compared with 88 percent of 18- to 29-year-olds, 84 percent of 30- to 49-year-olds, and 79 percent of 50- to 64-year-olds). At approximately 75 years of age, Internet use drops off considerably.



Are older adults keeping up with changes in technology?
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One study found that frequent computer use was linked to higher performance on cognitive tasks in older adults (Tun & Lachman, 2010). Another study revealed that older adults' increased use of the Internet was associated with greater ease in meeting new people, feeling less isolated, and feeling more connected with friends and family (Cotten, Anderson, & McCullough, 2013). A longitudinal study also revealed that Internet use by older adults was associated with a reduction of one-third in their likelihood of being depressed (Cotten & others, 2014). And in a recent study of older adults, having an iPad increased their family ties and sense of having a greater overall connection to society (Delello & McWhorter, 2016). As with children and younger adults, cautions about the accuracy of information on the Internet—especially in areas such as health care—should always be kept in mind (Miller & Bell, 2012).

Families and Social Relationships

Are the close relationships of older adults different from those of younger adults? What are the lifestyles of older adults like? What characterizes the relationships of older adult parents and their adult children? What do friendships and social networks contribute to the lives of older adults? How might older adults' altruism and volunteerism contribute to positive outcomes?

Lifestyle Diversity

The lifestyles of older adults are changing. Formerly, the later years of life were likely to consist of marriage for men and widowhood for women. With demographic shifts toward marital dissolution characterized by divorce, one-third of adults can now expect to marry, divorce, and remarry during their lifetime.

Married Older Adults

In 2014, 58.6 percent of U.S. adults over 65 years of age were married (U.S. Census Bureau, 2015). Older men were far more likely to be married than older women. In 2014, 24.7 percent of U.S. adults over 65 years of age were widowed (U.S. Census Bureau, 2015). There were more than four times as many widows as widowers.

Individuals who are in a marriage or a partnership in late adulthood are usually happier, feel less distressed, and live longer than those who are single (Piazza & Charles, 2012). The following studies support the view that positive marital relationships are linked to a number of positive outcomes for older adults:

- Marital satisfaction helped to insulate older adults' happiness from the effects of daily fluctuations in perceived health (Waldinger & Schulz, 2010).
- More frequent negative (but not positive) marital experiences were linked to a slower decline in older adults' cognitive abilities over time (Xu, Thomas, & Umberson, 2016).
- Compared with other sources of social support, spousal support was more strongly linked to an important biomarker of cellular aging, telomere length (Barger & Cribbet, 2016).
- A longitudinal study of adults 75 years of age and older revealed that individuals who were married were less likely to die during a seven-year time span (Rasulo, Christensen, & Tomassini, 2005).
- Marital satisfaction in older adults was linked to whether an individual was depressed or not (Walker & others, 2013).
- For both married and cohabiting couples, negative relationship quality predicted a higher level of blood pressure when both members of the couple reported having negative relationship quality (Birditt & others, 2016).



What are some adaptations that many married older adults need to make?

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In late adulthood, married individuals are more likely to find themselves having to care for a sick partner with a limiting health condition (Blieszner & Roberto, 2012a, b; Suitor, Gilligan, & Pillemer, 2016). The stress of caring for a spouse who has a chronic disease can place demands on intimacy.

Divorced and Remarried Older Adults

An increasing number of older adults are divorced (Suitor, Gilligan, & Pillemer, 2016). In 2012, 14 percent of women and 12 percent of men 65 years and older in the United States were divorced or separated (U.S. Census Bureau, 2012). Many of these individuals were divorced or separated before they entered late adulthood. The majority of divorced older adults are women, due to their greater longevity, and men are more likely to remarry, thus removing themselves from the pool of divorced older adults (Peek, 2009). Divorce is far less common among older adults than younger adults, likely reflecting cohort effects rather than age effects since divorce was somewhat rare when current cohorts of older adults were young (Peek, 2009).

There are social, financial, and physical consequences of divorce for older adults (Butrica & Smith, 2012). Divorce can weaken kinship ties when it occurs in later life, especially in the case of older men. Divorced older women are less likely to have adequate financial resources than married older women, and divorce is linked to higher rates of health problems in older adults (Bennett, 2006).



How Would You...?

As a **psychologist,** how would you assist older adults in coping with the unique challenges faced by divorcées at this age?

Rising divorce rates, increased longevity, and better health have led to an increase in remarriage by older adults (Ganong & Coleman, 2006; Koren & others, 2016). What happens when an older adult wants to remarry or does remarry? Researchers have found that some older adults perceive negative social pressure about their decision to remarry (McKain, 1972). These negative sanctions range from raised eyebrows to rejection by adult children (Ganong & Coleman, 2006). However, the majority of adult children support the decision of their older adult parents to remarry.

Adult children can be personally affected by remarriage between older adults. Researchers have found that remarried parents and stepparents provide less support to adult stepchildren than do parents in first marriages (White, 1994).

Cohabiting Older Adults

An increasing number of older adults cohabit (Wu, Schimmele, & Quellet, 2015). In 2010, 3 percent of older adults were cohabiting (U.S. Census Bureau, 2012), which is expected to increase as the large cohort of baby boomers become 65 years of age and older and bring their historically more nontraditional values about love, sex, and relationships to late adulthood. In many cases, the cohabiting is more for companionship than for love. In other cases, such as when one partner faces the potential need for expensive care, a couple may decide to maintain their assets separately and thus not marry. One study found that older adults who cohabited had a more positive, stable relationship than younger adults who cohabited, although cohabiting older adults were less likely to have plans to marry their partner than younger ones were (King & Scott, 2005). Other research also has revealed that middle-aged and older adult cohabiting men and women reported higher levels of depression than their married counterparts (Brown, Bulanda, & Lee, 2005). And one study indicated that cohabiting older adults were less likely to receive partner care than married older adults were (Noel-Miller, 2011).

Attachment

There has been far less research on how attachment affects aging adults than on attachment in children, adolescents, and young adults. A recent research review on attachment in older adults reached the following conclusions (Van Assche & others, 2013):

- Older adults have fewer attachment relationships than younger adults (Cicirelli, 2010).
- With increasing age, attachment anxiety decreases (Chopik, Edelstein, & Fraley, 2013).
- In late adulthood, attachment security is associated with greater psychological and physical well-being than attachment anxiety (Bodner & Cohen-Fridel, 2010).
- Insecure attachment is linked to more perceived negative caregiver burden in caring for patients with Alzheimer disease (Karantzas, Evans, & Foddy, 2010).

A recent large-scale study examined attachment anxiety and avoidance in individuals from 18 to 70 years of age (Chopik, Edelstein, & Fraley, 2013). Attachment anxiety was highest among adults in their mid-twenties and lowest among middle-aged and older adults. Developmental changes in avoidant attachment were not as strong as in anxious attachment, although anxious attachment was highest for middle-aged adults and lowest for young adults and older adults. Also, partnered adults showed lower levels of attachment anxiety and avoidance than single adults.

Older Adult Parents and Their Adult Children

Approximately 80 percent of older adults have living children, many of whom are middle-aged. About 10 percent of older adults have children who are 65 years or older. Adult children are an important part of the aging parent's social network. Older adults with children have more contacts with relatives than do those without children.

Increasingly, diversity characterizes older adult parents and their adult children (Antonucci & others, 2016; Fingerman, Sechrist, & Birditt, 2013). Divorce, cohabitation, and nonmarital childbearing are more common in the history of older adults today than in the past.

Gender plays an important role in relationships involving older adult parents and their children (Antonucci & others, 2016). Adult daughters are more likely than adult sons to be involved in the lives of aging parents. For example, adult daughters are three times more likely than adult sons to give parents assistance with daily living activities (Dwyer & Coward, 1991).

A valuable task that adult children can perform is to coordinate and monitor services for an aging parent (or other relative) who becomes disabled (Jones & others, 2011). This might involve locating a nursing home and monitoring its quality, procuring medical services, arranging public service assistance, and handling finances. In some cases, adult children provide direct assistance with daily living, including such activities as eating, bathing, and dressing. Even less severely impaired older adults may need help with shopping, housework, transportation, home maintenance, and bill paying.

Also, some researchers have found that relationships between aging parents and their children are usually characterized by ambivalence (Antonucci & others, 2016). And in another recent study of 40- to 60-year-old middle-aged adults, they reported that their relationships with their children were more important than those with their parents but that their relationships with their children were more negative than with their parents (Birditt & others, 2015).

Friendship

In early adulthood, friendship networks expand as new social connections are made away from home. In late adulthood, new friendships are less likely to be forged, although some adults do seek out new friendships, especially following the death of a spouse (Zettel-Watson & Rook, 2009). Aging expert Laura Carstensen (2006) concluded that people choose close friends over new friends as they grow older. And as long as they have several close people in their network, they seem content, says Carstensen.

How Would You...?



As a human development and family studies professional, how would you characterize the importance of friendships for older adults?

A recent study found that activities with friends increased positive affect and life satisfaction in older adults (Huxhold, Miche, & Schuz, 2014). In another study of married older adults, women were more depressed than men if they did not have a best friend, and women who did have a friend reported lower levels of depression (Antonucci, Lansford, & Akiyama, 2001). Similarly, women who did not have a best friend were less satisfied with life than women who did have a best friend. And a longitudinal study of adults 75 years of age and older revealed that individuals who maintained close ties with friends were less likely to die across a seven-year age span (Rasulo, Christensen, & Tomassini, 2005). These findings were stronger for women than men.

Social Support and Social Integration

Social support and social integration play important roles in the physical and mental health of older adults (Antonucci & others, 2016; Jeon & Lubben, 2016; Lee, Kahana, & Kahana, 2016; Windsor & others, 2016). In the *social convoy* model of social relations, individuals go through life embedded in a personal network of individuals to whom they give, and from whom they receive, social support (Antonucci & others, 2016). Social support can help individuals of all ages cope more effectively with life's challenges. For older adults, social support is related to their physical health, mental health, and life satisfaction (Lee, Kahana, & Kahana, 2016). For example, a recent study found that a higher level of social support was associated with older adults' increased life satisfaction (Dumitrache, Rubio, & Rubio-Herrera, 2016). Social support also decreases the probability that an older adult will be institutionalized and is associated with a lower incidence of depression (Heard & others, 2011). Further, one study revealed that older adults who experienced a higher level of social support showed later cognitive decline than their counterparts with a lower level of social support (Dickinson & others, 2011). In a recent analysis, it was concluded that 80 percent of the supportive care for older adults with some form of limitation was provided by family members or other informal caregivers, which places an enormous burden on the caregiver (Antonucci & others, 2016; Sherman, Webster, & Antonucci, 2016).

Social integration also plays an important role in the lives of many older adults (Antonucci & others, 2016; Li & Zhang, 2015). Remember from our earlier discussion

of socioemotional selectivity theory that many older adults choose to have fewer peripheral social contacts and more emotionally positive contacts with friends and family (Carstensen & others, 2011). Thus, a decrease in the overall social activity of many older adults may reflect their greater interest in spending more time in the small circle of friends and family members where they are less likely to have negative emotional experiences. And a recent study found that increased use of the Internet by older adults was associated with making it easier for them to meet new people, feeling less isolated, and feeling more connected with friends and family (Cotten, Anderson, & McCullough, 2013).

Older adults tend to report being less lonely than younger adults and less lonely than would be expected based on their circumstances (Schnittker, 2007). This likely reflects their more selective social networks and greater acceptance of loneliness in their lives (Koropeckyj-Cox, 2009). In one study, the most consistent factor that predicted loneliness in older adults at 70, 78, and 85 years of age was not being married (Stessman & others, 2014). For 60- to 80-year-olds, the partner's death was a stronger indicator of loneliness for men than for women (Nicolaisen & Thorsen, 2014).

Recently, researchers also have explored the extent to which loneliness and social isolation are linked to various outcomes in elderly adults (Skingley, 2013). Both loneliness and social isolation are associated with increased health problems and mortality (Luo & others, 2012). Also, a study of elderly adults revealed that both loneliness and social isolation were associated with decreases in cognitive functioning four years later (Shankar & others, 2013). However, another study found that social isolation was a better predictor of mortality than loneliness (Steptoe & others, 2013).

Altruism and Volunteerism

Are older adults more altruistic than younger adults? In a recent investigation, older adults' strategies were more likely to be aimed at contributing to the public good while younger adults' strategies were more likely to focus on optimizing personal financial gain (Freund & Blanchard-Fields, 2014). Also, a recent national survey found that 24.1 percent of U.S. adults 65 years and older engaged in volunteering in 2013 (U.S. Bureau of Labor Statistics, 2013). In this survey, the highest percentage of volunteering occurred between 35 and 44 years of age (30.6 percent).



Ninety-eight-year-old volunteer Iva Broadus plays cards with 10-year-old DeAngela Williams in Dallas, Texas. Iva was recognized as the oldest volunteer in the Big Sister program in the United States. Iva says that card-playing helps to keep her memory and thinking skills sharp and can help DeAngela's as well.

© Dallas Morning News, photographer Jim Mahoney

A common perception is that older adults need to be given help rather than give help themselves. However, a recent study found that older adults perceived their well-being as better when they provided social support to others than when they received it, except when social support was provided by a spouse or sibling (Thomas, 2010). And a 12-year longitudinal study revealed that older adults who had persistently low or declining feelings of usefulness to others had an increased risk of earlier death (Gruenewald & others, 2009). Further, researchers recently have found that when older adults engage in altruistic behavior and volunteering, they benefit from these activities (Antonucci & others, 2016; Burr, Han, & Tavares, 2016). In one analysis, rates of volunteering did not decline significantly until the mid-seventies, and older adults contributed more hours than younger volunteers (Morrow-Howell, 2010). Older adults are also more likely than any other age group to volunteer more than 100 hours annually (Burr, 2009).

Volunteering is associated with a number of positive outcomes (Kim & Konrath, 2016; Klinedinst & Resnick, 2014). For example, a study of 2,000 older adults in Japan revealed that those who gave more assistance to others had better physical health than their counterparts who gave less assistance (Dulin & others, 2012; Krause & others, 1999). Among the reasons for the positive outcomes of volunteering are its provision of constructive activities

and productive roles, social integration, and enhanced meaningfulness. Further, in a recent study exploring four indices (volunteering, informally helping others through a modest time commitment, attending religious services, and going to social group meetings), the strongest predictor of lower risk for cardiovascular disease and living longer was volunteering (Han & others, 2016). In a recent meta-analysis, older adults who engaged in organizational volunteering had a lower mortality risk than those who did not (Okun, Yeung, & Brown, 2013).

How Would You...?



As an **educator,** how would you persuade the school board to sponsor a volunteer program to bring older adults into the school system to work with elementary students?

Ethnicity, Gender, and Culture

How is ethnicity linked to aging? Do gender roles change in late adulthood? What are some of the social aspects of aging in different cultures?

Ethnicity

Ethnic minority older adults, especially African Americans and Latinos, are overrepresented in poverty statistics (Antonucci & others, 2016; Jackson, Govia, & Sellers, 2011). Comparative information about African Americans, Latinos, and non-Latino Whites indicates a possible double jeopardy for elderly ethnic minority individuals, facing problems related to *both* ageism and racism (Allen, 2016; Nadimpalli & others, 2015). They also are more likely to have a history of less education, longer periods of unemployment, worse housing conditions, and shorter life expectancies (Treas & Gubernskaya, 2016). In recent analyses, non-Latino White men and women with 16 years or more of schooling had a life expectancy that was 14 years higher than that of African Americans with fewer than 12 years of education (Antonucci & others, 2016; Olshansky & others, 2012).

Despite the stress and discrimination older ethnic minority individuals face, many of these older adults have developed coping mechanisms that allow them to survive in the dominant non-Latino White world. Extension of family networks helps older minority group individuals cope with the bare essentials of living and gives them a sense of being loved. Churches in African American and Latino communities provide avenues for meaningful social participation, feelings of power, and a sense of internal satisfaction (Hill & others, 2005). To read about one individual who is providing help for aging minorities, see *Careers in Life-Span Development.*

Careers in life-span development

Norma Thomas, Social Work Professor and Administrator

Dr. Norma Thomas has worked for more than three decades in the field of aging. She obtained her undergraduate degree in social work from Pennsylvania State University and her doctoral degree in social work from the University of Pennsylvania. Thomas' activities are varied. Earlier in her career when she was a social work practitioner, she provided services to older adults of color in an effort to improve their lives. She currently is a professor and academic administrator at Widener University in Chester, Pennsylvania, a fellow of the Institute of Aging at the University of Pennsylvania, and the chief executive officer and co-founder of the Center on Ethnic and Minority Aging (CEMA). CEMA was formed to provide research, consultation, training, and services to benefit aging individuals of color, their families, and their communities. Thomas has created numerous community service events that benefit older adults of color, especially African Americans and Latinos. She has also been a consultant to various national, regional, and state agencies in her effort to improve the lives of aging adults of color.



Norma Thomas.
© Dr. Norma Thomas

Gender

Many older women face the burden of both ageism and sexism (Angel, Mudrazija, & Benson, 2016) and also racism for female ethnic minorities (Hinze, Lin, & Andersson, 2012). The poverty rate for older adult females is almost double that of older adult males.



Cultures vary in the prestige they give to older adults. In the Navajo culture, older adults are especially treated with respect because of their wisdom and extensive life experiences. *What are some other factors that are linked with respect for older adults in a culture?*

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Culture

Six factors are most likely to predict high status for older adults in a culture (Sangree, 1989):

- Older persons have valuable knowledge.
- Older persons control key family/community resources.
- Older persons are permitted to engage in useful and valued functions as long as possible.
- Age-related role changes involve greater responsibility, authority, and advisory capacity.
- The extended family is a common family arrangement in the culture, and the older person is integrated into the extended family.
- In general, respect for older adults is greater in collectivistic cultures (such as China and Japan) than in individualistic cultures (such as the United States). However, some researchers are finding that this collectivistic/individualistic difference in respect for older adults is not as strong as it used to be and that, in some cases, older adults in individualistic cultures receive considerable respect (Antonucci, Vandewater, & Lansford, 2000).

Successful Aging

As we have discussed aging, it should be apparent that there are large individual differences in the patterns of change for older adults. The most common pattern is *normal aging*, which characterizes most individuals (Schaie, 2016). Their psychological functioning often peaks in early midlife, plateaus until the late fifties to early sixties, then modestly declines through the early eighties, although marked decline often occurs prior to death. Another pattern involves *pathological aging*, which characterizes individuals who in late adulthood show greater than average decline. These individuals may have mild cognitive impairment in early old age, develop Alzheimer disease later, or have chronic disease that impairs their daily functioning. A third pattern of change in old age is *successful aging*, which characterizes individuals whose physical, cognitive, and socioemotional development is maintained longer than for most individuals and declines later than for most people.

For too long successful aging has been ignored (Carstensen, 2015, 2016; Carstensen, Smith, & Jaworski, 2015; Rowe & Kahn, 2015; Whitley, Popham, & Benzeval, 2016). Throughout this book, we have called attention to the positive aspects of aging. With a proper diet, an active lifestyle, mental stimulation and flexibility, positive coping skills, good social relationships and support, and the absence of disease, many abilities can be maintained or in some cases even improved as we get older (Antonucci & others, 2016; Erickson & Liu-Ambrose, 2016). Even when individuals develop a disease, improvements in medicine and lifestyle modifications mean that increasing numbers of older adults can continue to lead active, constructive lives. A recent Canadian study found that the predicted self-rated probability of aging successfully was 41 percent for those 65 to 74, 33 percent for

those 75 to 84, and 22 percent for those 85+ years of age (Meng & D'Arcy, 2014). In this study, being younger, married, a regular drinker, in better health (self-perceived), and satisfied with life were associated with successful aging. Presence of disease was linked to a significant decline in successful aging. A recent study found that having multiple chronic diseases was linked to a lower level of successful aging (Hsu, 2015).

Being active and engaged are especially important for successful aging (Morrow-Howell & Greenfield, 2016). Older adults who exercise regularly, attend meetings, participate in church activities, and go on trips are more satisfied with their lives than their counterparts who disengage from society (Berchicci & others, 2014). Older adults who engage in challenging cognitive activities are more likely to retain their cognitive skills for a longer period of time (Willis & Belleville, 2016). Older adults who are emotionally selective, optimize their choices, and compensate effectively for losses increase their chances of aging successfully (Carstensen, 2015, 2016). Also, a recent study of 90- to 91-year-olds found that living circumstances, especially owning one's own home and living there as long as possible; independence in various aspects of life; good health; and a good death were described as important themes of successful aging (Nosraty & others, 2015). In this study, social and cognitive aspects were thought to be more important than physical health.

Successful aging also involves perceived control over the environment (Lachman, Agrigoroaei, & Hahn, 2016). In the chapter on physical and cognitive development in late adulthood, we described how perceived control over the environment had a positive effect on nursing home residents' health and longevity. In recent years, the term *self-efficacy* has often been used to describe perceived control over the environment and the ability to produce positive outcomes (Bandura, 2010, 2012, 2015). Researchers have found that many older adults are quite effective in maintaining a sense of control and have a positive view of themselves (Park, Elavsky, & Koo, 2014). For example, a study of centenarians found that many were very happy and that self-efficacy and an optimistic attitude were linked to their happiness (Jopp & Rott, 2006). And one study revealed that maximizing psychological resources (self-efficacy and optimism) was linked to a higher quality of life for older adults (Bowling & Lliffe, 2011). Examining the positive aspects of aging is an important trend in life-span development that is likely to benefit future generations of older adults (Reed & Carstensen, 2015, 2016). And a very important agenda is to continue to improve our understanding of how people can live longer, healthier, more productive and satisfying lives (Carstensen, 2015, 2016; Rowe & Kahn, 2015).

In the "Introduction" chapter, we described Laura Carstensen's (2015) perspective on the challenges and opportunities involved in the dramatic increase in life expectancy that has been occurring and continues to occur. In her view, the remarkable increase in the number of people living to an old age has occurred in such a short time that science, technology, and behavioral adaptations have not kept pace. She proposes that the challenge is to change a world constructed mainly for young people to a world that is more compatible and supportive for the increasing number of people living to 100 and older.

In further commentary, Carstensen (2015, p. 70) remarked that doing so would be no small feat:

> . . . parks, transportation systems, staircases, and even hospitals presume that the users have both strength and stamina; suburbs across the country are built for two parents and their young children, not single people, multiple generations or elderly people who are not able to drive. Our education system serves the needs of young children and young adults and offers little more than recreation for experienced people.
>
> Indeed, the very conception of work as a full-time endeavor ending in the early sixties is ill suited for long lives. Arguably the most troubling is that we fret about ways the older people lack the qualities of younger people rather than exploit a growing new resource right before our eyes: citizens who have deep expertise, emotional balance, and the motivation to make a difference.

Summary

Theories of Socioemotional Development

- Erikson's eighth stage of development is called integrity versus despair. Life review is an important theme during this stage.
- Older adults who are active are more likely to be satisfied with their lives.
- Older adults are more selective about their social networks than are younger adults. Older adults also experience more positive emotions and less negative emotions than younger adults.
- Successful aging involves selection, optimization, and compensation.

Personality and Society

- Some of the Big Five factors of personality, such as conscientiousness, extraversion, and openness, are linked to well-being and mortality in older adults.
- Ageism, which is prejudice against others because of their age, is widespread. Social policy issues in an aging society include the status of the economy and income, as well as provision of health care. Older adults are the fastest-growing segment of Internet users.

Families and Social Relationships

- Married older adults are often happier than single older adults. Divorce and remarriage present challenges to older adults. An increasing number of older adults cohabit.
- Older adults have fewer attachment relationships than younger adults; attachment anxiety decreases with increasing age; attachment security is linked to psychological and physical well-being in older adults.
- Approximately 80 percent of older adults have adult children who are an important part of their social network.
- Older adults tend to choose long-term friends over new friends.
- Social support is linked to improved physical and mental health in older adults. Older adults who participate in more organizations live longer than their counterparts who have low participation rates.
- Altruism and volunteering are associated with positive benefits for older adults.

Ethnicity, Gender, and Culture

- Aging minorities in the United States face the double burden of ageism and racism.
- Many women face the burden of both ageism and gender.
- Factors that predict high status for the elderly across cultures range from value placed on their accumulated knowledge to integration into the extended family.

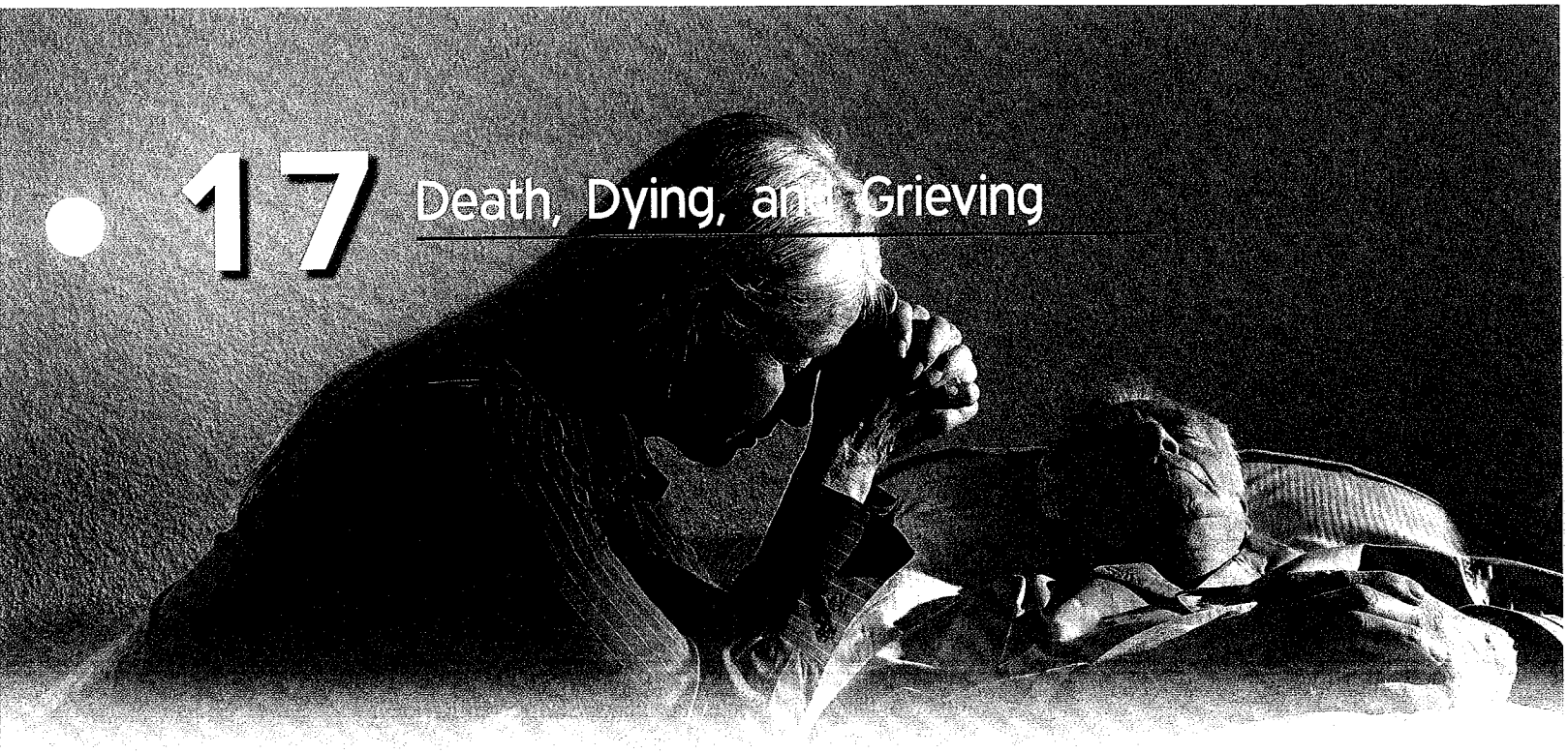
Successful Aging

- Three patterns of aging are normal, pathological, and successful. Increasingly, the positive aspects of older adulthood are being studied. Factors that are linked with successful aging include an active lifestyle, positive coping skills, good social relationships and support, and the absence of disease.

Key Terms

activity theory
ageism
integrity versus despair
selective optimization with compensation theory
socioemotional selectivity theory

17 Death, Dying, and Grieving



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CHAPTER OUTLINE

DEFINING DEATH AND LIFE/DEATH ISSUES
Determining Death
Decisions Regarding Life, Death, and Health Care

DEATH AND SOCIOHISTORICAL, CULTURAL CONTEXTS
Changing Historical Circumstances
Death in Different Cultures

FACING ONE'S OWN DEATH
Kübler-Ross' Stages of Dying
Perceived Control and Denial

COPING WITH THE DEATH OF SOMEONE ELSE
Communicating with a Dying Person
Grieving
Making Sense of the World
Losing a Life Partner
Forms of Mourning

Stories of Life-Span Development: Paige Farley-Hackel and Ruth McCourt, 9/11/2001

Paige Farley-Hackel and her best friend Ruth McCourt teamed up to take McCourt's 4-year-old daughter, Juliana, to Disneyland. They were originally booked on the same flight from Boston to Los Angeles, but McCourt decided to use her frequent flyer miles and go on a different airplane. Both their flights exploded 17 minutes apart after terrorists hijacked them, then rammed them into the twin towers of the World Trade Center in New York City on 9/11/2001.

Forty-six-year-old Farley-Hackel was a writer, motivational speaker, and spiritual counselor who lived in Newton, Massachusetts. She was looking forward to the airing of the first few episodes of her new radio program, *Spiritually Speaking,* and wanted to eventually be on *The Oprah Winfrey Show,* said her husband, Allan Hackel. Following 9/11, Oprah televised a memorial tribute to Farley-Hackel, McCourt, and Juliana.

Forty-five-year-old Ruth McCourt was a homemaker from New London, Connecticut, who met Farley-Hackel at a day spa she used to own in Boston. McCourt gave up the business when she got married, but the friendship between the two women lasted. They often traveled together and shared their passion for reading, cooking, and learning.

In this chapter, we explore many aspects of death and dying. Among the questions that we will ask are: How can death be defined? How is death viewed in other cultures? How do people face their own death? How do people cope with the death of someone they love? ■

Defining Death and Life/Death Issues

Is there one point in the process of dying that is *the* point at which death takes place, or is death a more gradual process? What are some decisions individuals can make about life, death, and health care?



What are some issues in determining death?

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Determining Death

Twenty-five years ago, determining whether someone was dead was simpler than it is today. The end of certain biological functions—such as breathing and blood pressure—and the rigidity of the body (rigor mortis) were considered to be clear signs of death. Defining death has become more complex (Barron, 2015; Greer & others, 2016; Markert & others, 2016; Pabisiak, 2016).

Brain death is a neurological definition of death which states that a person is brain dead when all electrical activity of the brain has ceased for a specified period of time. A flat EEG (electroencephalogram) recording for a specified period of time is one criterion of brain death. The higher portions of the brain often die sooner than the lower portions. Because the brain's lower portions monitor heartbeat and respiration, individuals whose higher brain areas have died may continue to breathe and have a heartbeat (MacDougall & others, 2014). The definition of brain death currently followed by most physicians includes the death of both the higher cortical functions and the lower brain stem functions (Sung & Greer, 2011).

Some medical experts argue that the criteria for death should include only higher cortical functioning. If the cortical death definition were adopted, then physicians could claim a person is dead who has no cortical functioning, even if the lower brain stem is functioning. Supporters of the cortical death policy argue that the functions we associate with being human, such as intelligence and personality, are located in the higher cortical part of the brain. They believe that when these functions are lost, the "human being" is no longer alive.

How Would You...?

As a **health-care professional,** how would you explain "brain death" to the family of an individual who has suffered a severe head injury in an automobile accident?



Decisions Regarding Life, Death, and Health Care

In cases of catastrophic illness or accidents, patients might not be able to respond adequately to participate in decisions about their medical care. To prepare for this situation, some individuals make choices earlier.

Advance Care Planning

Advance care planning refers to the process of patients thinking about and communicating their preferences regarding end-of-life care (Anderson, 2015; Garmertsfelder & others, 2016; Koss & Baker, 2016). For many patients in a coma, it is not clear what their wishes regarding termination of treatment might be if they still were conscious. A recent study found that advance care planning decreased life-sustaining treatment, increased hospice use, and decreased hospital use (Brinkman-Stoppelenburg, Rietjens, & van der Heide, 2014). Recognizing that some terminally ill patients might prefer to die rather than linger in a painful or vegetative state, the organization "Choice in Dying" created the

brain death A neurological definition of death. A person is brain dead when all electrical activity of the brain has ceased for a specified period of time. A flat EEG recording is one criterion of brain death.

living will, a legal document that reflects the patient's advance care planning. A recent study of older adults found that advance care planning was associated with improved quality of care at the end of life, including less in-hospital death and greater use of hospice care (Bischoff & others, 2013).

Physicians' concerns over malpractice suits and the efforts of people who support the living will concept have produced natural death legislation. Laws in all 50 states now accept an *advance directive,* such as a living will (Mitchell & Dale, 2015; Olsen, 2016). An advance directive states such preferences as whether life-sustaining procedures should or should not be used to prolong the life of an individual when death is imminent. An advance directive must be signed while the individual still is able to think clearly (Lum, Sudore, & Bekelman, 2015; Shin & others, 2016). A study of end-of-life planning revealed that only 15 percent of patients 18 years of age and older had a living will (Clements, 2009). Almost 90 percent of the patients reported that it was important to discuss health-care wishes with their family, but only 60 percent of them had done so. A recent research review concluded that physicians have a positive attitude toward advance directives (Coleman, 2013).

euthanasia The act of painlessly ending the lives of persons who are suffering from incurable diseases or severe disabilities; sometimes called "mercy killing."

passive euthanasia Withholding available treatments, such as life-sustaining devices, and allowing the person to die.

active euthanasia Death induced deliberately, as by injecting a lethal dose of a drug.



How Would You...?

As a **social worker,** how would you explain to individuals the advantages of engaging in advance care planning?

Available or being considered in 34 states, Physician Orders for Life-Sustaining Treatment (POLST) is a more specific document that involves the health-care professional and the patient or surrogate in stating the wishes of the patient (Ibrahim & others, 2016; Sadeghi & others, 2016). POLST translates treatment preferences into medical orders such as those involving cardiopulmonary resuscitation, extent of treatment, and artificial nutrition via a tube (Mirachi & others, 2015; Scotti, 2016).

Euthanasia

Euthanasia ("easy death") is the act of painlessly ending the lives of individuals who are suffering from an incurable disease or severe disability (Macleod, 2015; Pope & Okinski, 2016; Radbruch & others, 2016). Sometimes euthanasia is called "mercy killing." Distinctions are made between two types of euthanasia: passive and active. **Passive euthanasia** occurs when a person is allowed to die by withholding available treatment, such as withdrawing a life-sustaining device. For example, this might involve turning off a respirator or a heart-lung machine.

Active euthanasia occurs when death is deliberately induced, as when a lethal dose of a drug is injected.

Technological advances in life-support devices raise the issue of quality of life (Bloodworth, Bloodworth, & Ely, 2015). Nowhere was this more apparent than in the highly publicized case of Terri Schiavo, who suffered severe brain damage related to cardiac arrest and a lack of oxygen to the brain. She went into a coma and spent 15 years in a vegetative state. Across the 15 years, the question of whether passive euthanasia should be implemented, or whether she should be kept in the vegetative state with the hope that her condition might change for the better, was debated between family members and eventually at a number of levels in the judicial system. At one point toward the end of her life, a judge ordered that her feeding tube be removed. However, subsequent appeals led to its reinsertion twice. The feeding tube was removed a third and final time on March 18, 2005, and she died 13 days later from passive euthanasia.



Terri Schiavo (*right*) shown with her mother. *What issues did the Terri Schiavo case raise?*

© Handout Courtesy of the Schiavo Family/Corbis

Should individuals like Terri Schiavo be kept alive in a vegetative state? The trend is toward acceptance of passive euthanasia in the case of terminally ill patients (Seay, 2011). However, one study revealed that family members were reluctant to have their



How Would You...?

As a **psychologist**, how would you counsel the family of a brain-dead patient on the topic of euthanasia when there is no living will or advance directive for guidance?

relatives disconnected from a ventilator but rather wanted an escalation of treatment for them (Sviri & others, 2009). In this study, most of the individuals said that in similar circumstances they would not want to be chronically ventilated or resuscitated.

The most widely publicized cases of active euthanasia involve "assisted suicide." Michigan physician Jack Kevorkian assisted terminally ill patients in ending their lives. After a series of trials, Kevorkian was convicted of second-degree murder and served eight years in prison. He was released from prison at age 79 for good behavior in 2007 and promised not to participate in any further assisted suicides. Kevorkian died at the age of 83.

Assisted suicide is legal in Canada, Switzerland, Colombia, The Netherlands, Belgium, and Luxembourg. The U.S. government has no official policy on assisted suicide and leaves the decision up to each of the states. Currently, six states allow assisted suicide—Oregon, Washington, Montana, Vermont, New Mexico, and California. The physician gives the patient an overdose of muscle relaxants or sedatives, which causes a coma and then death. In states where assisted suicide is illegal, the crime is typically considered manslaughter or a felony.

A recent research review also revealed that the percentage of physician-assisted deaths ranged from 0.1 to 0.2 percent in the United States and Luxembourg to 1.8 to 2.9 percent in the Netherlands (Steck & others, 2013). In this review, the percentage of assisted suicide cases reported to authorities has increased in recent years and the individuals who die through assisted suicide are most likely to be males from 60 to 75 years of age.

Why is euthanasia so controversial? Those in favor of euthanasia argue that death should be calm and dignified, not full of agony, pain, and prolonged suffering. Those against euthanasia stress that it is a criminal act of murder in most states in the United States and in most other countries. Many religious individuals, especially Christians, say that taking a life for any reason is against God's will and is an act of murder.

Needed: Better Care for Dying Individuals

Too often, death in America is lonely, prolonged, and painful. Scientific advances sometimes have made dying harder by delaying the inevitable. Also, even though painkillers are available, too many people experience severe pain during their last days and months of life (Meng & others, 2013). A recent study found that 61 percent of dying patients were in pain in the last year of life and that nearly one-third had symptoms of depression and confusion prior to death (Singer & others, 2015).

Care providers are increasingly interested in helping individuals experience a "good death" (Bauchner & Fontanarosa, 2016; Carr & Luth, 2016; Meffert & others, 2015) that involves physical comfort, support from loved ones, acceptance, and appropriate medical care. For some individuals, a good death involves accepting one's impending death and not feeling like a burden to others. Three frequent themes identified in articles on a good death involve (1) preference for dying process (94 percent of reports), (2) pain-free status (81 percent), and (3) emotional well-being (64 percent) (Meier & others, 2016).

Hospice is a program committed to making the end of life as free from pain, anxiety, and depression as possible (Balk, 2016; Odejide, 2016; Ong & others, 2016). Traditionally, a hospital's goals has been to cure illness and prolong life; in contrast, hospice care emphasizes **palliative care,** which involves reducing pain and suffering and helping individuals die with dignity (Cox & Curtis, 2016; Hudson & others, 2016; Moore, 2015). However, U.S. hospitals recently have rapidly expanded their provision of palliative care. More than 85 percent of mid- to large-size U.S. hospitals have a palliative care team (Morrison, 2013). Hospice-care professionals work together to treat the dying person's symptoms, make the individual as comfortable as possible, show interest in the person and the person's family, and help everyone involved cope with death (Levy & others, 2016;

hospice A program committed to making the end of life as free from pain, anxiety, and depression as possible. The goals of hospice care contrast with those of a hospital, which are to cure disease and prolong life.

palliative care Emphasized in hospice care; involves reducing pain and suffering and helping individuals die with dignity.

Careers in life-span development

Kathy McLaughlin, Home Hospice Nurse

Kathy McLaughlin is a home hospice nurse in Alexandria, Virginia. She provides care for individuals with terminal cancer, Alzheimer disease, and other diseases. There currently is a shortage of home hospice nurses in the United States.

Kathy says that she has seen too many people dying in pain, away from home, hooked up to needless machines. In her work as a home hospice nurse, she comments, "I know I'm making a difference. I just feel privileged to get the chance to meet this person who is not going to be around much longer. I want to enjoy the moment with this person. And I want them to enjoy the moment. They have great stories. They are better than novels" (McLaughlin, 2003, p. 1).



Kathy McLaughlin with her hospice patient.
© The Family of Mary Monteiro

Hospice nurses like Kathy McLaughlin care for terminally ill patients and seek to make their remaining days of life as pain-free and comfortable as possible. They typically spend several hours a day in the terminally ill patient's home, serving not just as a medical caregiver but also as an emotional caregiver. Hospice nurses usually coordinate the patient's care through an advising physician.

Hospice nurses must be registered nurses (RNs) and also be certified for hospice work. Educational requirements are an undergraduate degree in nursing; some hospice nurses also have graduate degrees in nursing. Certification as a hospice nurse requires a current license as an RN, a minimum of two years of experience as an RN in hospice-nursing settings, and passing an exam administered by the National Board for the Certification of Hospice Nurses.

West & others, 2016). Today more hospice programs are home-based, a blend of institutional and home care designed to humanize the end-of-life experience for the dying person. To read about the work of a home hospice nurse, see *Careers in Life-Span Development.*

How Would You...?



As a human development and family studies professional, how would you advocate for a terminally ill person's desire for hospice care?

Death and Sociohistorical, Cultural Contexts

Today in the United States, the deaths of older adults account for approximately two-thirds of the 2 million deaths that occur each year. Thus, what we know about death, dying, and grieving mainly is based on information about older adults. Youthful death is far less common. When, where, and how people die have changed historically in the United States. Also, attitudes toward death vary across cultures.

Changing Historical Circumstances

We have already described one of the historical changes involving death—the increasing complexity of determining when someone is truly dead. Another involves the age group in which death most often strikes. Two hundred years ago, almost one of every two children died before the age of 10, and one parent died before children grew up. Today, death occurs most often among older adults. In the United States, life expectancy has increased from 47 years for a person born in 1900 to 79 years for someone born today (U.S. Census Bureau, 2015). In 1900, most people died at home, cared for by their family. As our population has aged and become more mobile, growing numbers of older adults die apart from their families. More than 80 percent of all U.S. deaths occur in institutions or hospitals. The care of a dying older person has shifted away from the family and minimized our exposure to death and its painful surroundings.



Figure 1 A Ritual Associated with Death
Family memorial day at the national cemetery in Seoul, South Korea.
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Death in Different Cultures

Cultural variations characterize the experience of death and attitudes about death (Bruce, 2007; Miller, 2016). Individuals are more conscious of death in times of war, famine, and plague. Most societies throughout history have had philosophical or religious beliefs about death, and most societies have a ritual that deals with death (see Figure 1). Death may be seen as a punishment for one's sins, an act of atonement, or a judgment of a just God. For some, death means loneliness; for others, death is a quest for happiness. For still others, death represents redemption, a relief from the trials and tribulations of the earthly world. Some embrace death and welcome it; others abhor and fear it. Death may be seen as the fitting end to a fulfilled life. From this perspective, how we depart from earth is influenced by how we have lived.

In most societies, death is not viewed as the end of existence—although the biological body has died, the spirit is believed to live on (Hedayat, 2006). This religious perspective is favored by most Americans as well. Cultural variations in attitudes toward death include belief in reincarnation, which is an important aspect of the Hindu and Buddhist religions. In the Gond culture of India, death is believed to be caused by magic and demons.

In many ways, we in the United States are death avoiders and death deniers (Norouzieh, 2005). This denial can take many forms: the tendency of the funeral industry to gloss over death and fashion lifelike qualities in the dead; the persistent search for a "fountain of youth"; the rejection and isolation of the aged, who may remind us of death; and the medical community's emphasis on prolonging biological life rather than on diminishing human suffering.

Facing One's Own Death

Most dying individuals want an opportunity to make some decisions regarding their own life and death (Kastenbaum, 2012). Some individuals want to complete unfinished business; they want time to resolve problems and conflicts and to put their affairs in order (Emanuel, Bennett, & Richardson, 2007). As individuals face death, a majority prefer to be at home when they are near death. A Canadian study found that 71 percent wanted to be at home when they die, 15 percent preferred to be in a hospice/palliative care facility, 7 percent wanted to be in a hospital, and only 2 percent preferred to be in a nursing home (Wilson & others, 2013).

Kübler-Ross' Stages of Dying

Elisabeth Kübler-Ross (1969) divided the behavior and thinking of dying persons into five stages: denial and isolation, anger, bargaining, depression, and acceptance.

Denial and isolation is Kübler-Ross' first stage of dying, in which the person denies that death is really going to take place. The person may say, "No, it can't be me. It's not possible." This is a common reaction to terminal illness. However, denial is usually only a temporary defense. It is eventually replaced with increased awareness when the person is confronted with such matters as financial considerations, unfinished business, and worry about surviving family members.

Anger is the second stage of dying, in which the dying person recognizes that denial can no longer be maintained. Denial often gives way to anger, resentment, rage, and envy. The dying person's question is "Why me?" At this point, the person becomes increasingly difficult to care for as anger may become displaced and projected onto physicians,

denial and isolation Kübler-Ross' first stage of dying, in which the dying person denies that she or he is really going to die.

anger Kübler-Ross' second stage of dying, in which the dying person's denial often gives way to anger, resentment, rage, and envy.



How Would You...?

As a **psychologist**, how would you prepare a dying individual for the emotional and psychological stages they may go through as they approach death?

nurses, family members, and even God. The realization of loss is great, and those who symbolize life, energy, and competent functioning are especially salient targets of the dying person's resentment and jealousy.

Bargaining is the third stage of dying, in which the person develops the hope that death can somehow be postponed or delayed. Some persons enter into a bargaining or negotiation—often with God—as they try to delay their death. Psychologically, the person is saying, "Yes, me, but . . ." In exchange for a few more days, the person promises to lead a reformed life dedicated to God or to the service of others.

Depression is the fourth stage of dying, in which the dying person comes to accept the certainty of death. A period of depression or preparatory grief may appear. The dying person may become silent, refuse visitors, and spend much of the time crying or grieving. This behavior is normal and is an effort to disconnect the self from love objects. Attempts to cheer up the dying person at this stage should be discouraged, says Kübler-Ross, because the dying person has a need to contemplate impending death.

Acceptance is the fifth stage of dying, in which the person develops a sense of peace, an acceptance of his or her fate, and in many cases, a desire to be left alone. Feelings and physical pain may be virtually absent. Kübler-Ross describes this stage as the end of the dying struggle, the final resting stage before death. Figure 2 is a summary of Kübler-Ross' dying stages.

According to Robert Kastenbaum (2009, 2012), there are some problems with Kübler-Ross' approach. For example, the existence of the five-stage sequence has not been demonstrated by either Kübler-Ross or independent research. Also, the stage interpretation neglected the patients' situations, including relationship support, specific effects of illness, family obligations, and the institutional climate in which they were interviewed. However, Kübler-Ross' pioneering efforts were important in calling attention to those who are attempting to cope with life-threatening illnesses. She did much to encourage attention to the quality of life for dying persons and their families.

bargaining Kübler-Ross' third stage of dying, in which the dying person develops the hope that death can somehow be postponed.

depression Kübler-Ross' fourth stage of dying, in which the dying person comes to accept the certainty of her or his death. A period of depression or preparatory grief may appear.

acceptance Kübler-Ross' fifth stage of dying, in which the dying person develops a sense of peace, an acceptance of her or his fate, and in many cases, a desire to be left alone.

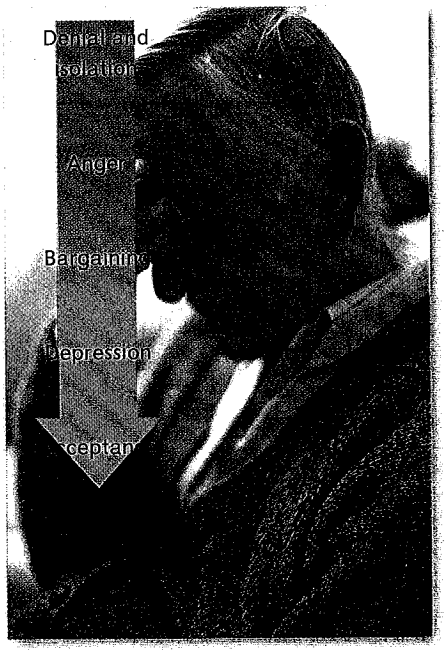


Figure 2 Kübler-Ross' Stages of Dying According to Elisabeth Kübler-Ross, we go through five stages of dying: denial and isolation, anger, bargaining, depression, and acceptance. *Does everyone go through these stages, or go through them in the same order?* Explain.

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Perceived Control and Denial

Perceived control may work as an adaptive strategy for some older adults who face death. When individuals are led to believe they can influence and control events—such as prolonging their lives—they may become more alert and cheerful. Giving nursing home residents options for control improved their attitudes and increased their longevity (Rodin & Langer, 1977).



How Would You...?

As a **human development and family studies professional**, how would you advise family members to empower dying loved ones to feel they have more control over the end of their lives?

Denial also may be a fruitful way for some individuals to approach death. It can be adaptive or maladaptive (Cottrell & Duggleby, 2016). Denial can be used to avoid the destructive impact of shock by delaying the necessity of dealing with one's death. Denial can insulate the individual from having to cope with intense feelings of anger and hurt; however, if denial keeps us from having a life-saving operation, it clearly is maladaptive. Denial is neither good nor bad; its adaptive qualities need to be evaluated on an individual basis.

Coping with the Death of Someone Else

Loss can come in many forms in our lives—divorce, a pet's death, loss of a job, loss of a limb—but no loss is greater than that which comes through the death of someone we love and care for—a parent, sibling, spouse, relative, or friend. In the ratings of life's stresses that require the most adjustment, death of a spouse is given the highest number. How should we communicate with a dying individual? How does grieving help us cope with the death of someone we love? How do we make sense of the world when a loved one has passed away? How are people affected by losing a life partner? And what are some forms of mourning and funeral rites?

Communicating with a Dying Person

Most psychologists believe that dying individuals should know they are dying and significant others know that their loved one is dying, so they can interact and communicate with each other on the basis of this mutual knowledge (Banja, 2005). What are some of the advantages of this open awareness for the dying individual? First, dying individuals can close their lives in accord with their own ideas about proper dying. Second, they may be able to complete some plans and projects, make arrangements for survivors, and participate in decisions about a funeral and burial. Third, dying individuals have the opportunity to reminisce, to converse with others who have been important to them, and to end life conscious of what life has been like. And fourth, dying individuals have more understanding of what is happening within their bodies and what the medical staff is doing for them (Kalish, 1981).



What are some good strategies for communicating with a dying person?

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In addition, some experts believe that conversation should not focus on mental pathology or preparation for death but instead on strengths of the individual and preparation for the remainder of life. Because external accomplishments are not possible, communication should be directed more at internal growth. Important support for a dying individual may come not only from mental health professionals but also from nurses, physicians, a spouse, or intimate friends (DeSpelder & Strickland, 2005). Effective strategies for communicating with a dying person include the following:

1. Establish your presence, be at the same eye level; don't be afraid to touch the dying person—dying individuals are often starved for human touch.
2. Eliminate distractions—for example, ask if it is okay to turn off the TV. Realize that excessive small talk can be a distraction.
3. Dying individuals who are very frail often have little energy. If the dying person you are visiting is very frail, you may want to keep your visit short.
4. Don't insist that the dying person feel acceptance about death if the dying person wants to deny the reality of the situation; on the other hand, don't insist on denial if the dying individual indicates acceptance.
5. Allow the dying person to express guilt or anger; encourage the expression of feelings.
6. Ask the person what the expected outcome for the illness is. Discuss alternatives and unfinished business.
7. Sometimes dying individuals have limited access to other people. Ask the dying person if there is anyone he or she would like to see that you can contact.
8. Encourage the dying individual to reminisce, especially if you have memories in common.

9. Talk with the individual when she or he wishes to talk. If this is impossible, make an appointment for a later time, and keep it.
10. Express your regard for the dying individual. Don't be afraid to express love, and don't be afraid to say good-bye.

Grieving

Grief is a complex emotional state that is an evolving process with multiple dimensions. Our exploration of grief focuses on dimensions of grieving and how coping may vary with the type of death.

Dimensions of Grieving

Grief is the emotional numbness, disbelief, separation anxiety, despair, sadness, and loneliness that accompany the loss of someone we love. An important dimension of grief is pining for the lost person. Pining or yearning reflects an intermittent, recurrent wish or need to recover the lost person. Another important dimension of grief is separation anxiety, which not only includes pining and preoccupation with thoughts of the deceased person but also focuses on places and things associated with the deceased, as well as crying or sighing (Maccallum & others, 2015). Grief may also involve despair and sadness, which include a sense of hopelessness and defeat, depressive symptoms, apathy, loss of meaning for activities that used to involve the person who is gone, and growing desolation (Thomas & others, 2014; Waller & others, 2016). A recent study found that older adults who were bereaved had more dysregulated cortisol patterns, indicative of the intensity of their stress (Holland & others, 2014). And a recent study found that college students who lost someone close to them in campus shootings and had experienced severe posttraumatic stress symptoms four months after the shootings were more likely to have severe grief one year after the shootings (Smith & others, 2015).

These feelings occur repeatedly shortly after a loss. As time passes, pining and protest over the loss tend to diminish, although episodes of depression and apathy may remain or increase. The sense of separation anxiety and loss may continue to the end of one's life, but most of us emerge from grief's tears, turning our attention once again to productive tasks and regaining a more positive view of life (Mendes, 2016).

The grieving process is more like a roller-coaster ride than an orderly progression of stages with clear-cut time frames. The ups and downs of grief often involve rapidly changing emotions, meeting the challenges of learning new skills, detecting personal weaknesses and limitations, creating new patterns of behavior, and forming new friendships and relationships. For most individuals, grief becomes more manageable over time, with fewer abrupt highs and lows. But many grieving spouses report that even though time has brought some healing, they have never gotten over their loss. They have just learned to live with it.



How Would You...?

As a **social worker,** how would you respond to bereaved clients who ask, "What is normal grieving?" as they attempt to cope with the death of a loved one?

However, even six months after their loss, some individuals have difficulty moving on with their life. They feel numb or detached, believe their life is empty without the deceased, and feel that the future has no meaning. This type of grief reaction has been referred to as *prolonged or complicated grief* (Glickman, Shear, & Wall, 2016; Holland & others, 2016; Prigerson & Maciejewski, 2014). Approximately 7 to 10 percent of bereaved individuals have this prolonged or complicated grief (Maccalum & Bryant, 2013). This prolonged grief has been labeled **complicated grief or prolonged grief disorder.** Complicated grief usually has negative consequences for physical and mental health (Li & Prigerson, 2016; Shear, 2015; Tay & others, 2016). In a recent study of individuals diagnosed with complicated grief, 40 percent reported at least one full or limited-symptom grief-related panic attack in the past week (Bui & others, 2015). A person who loses someone on whom he or she was emotionally dependent is often at greatest risk for developing prolonged grief.

grief The emotional numbness, disbelief, separation anxiety, despair, sadness, and loneliness that accompany the loss of someone we love.

complicated grief or prolonged grief disorder Grief that involves enduring despair and is still unresolved over an extended period of time.

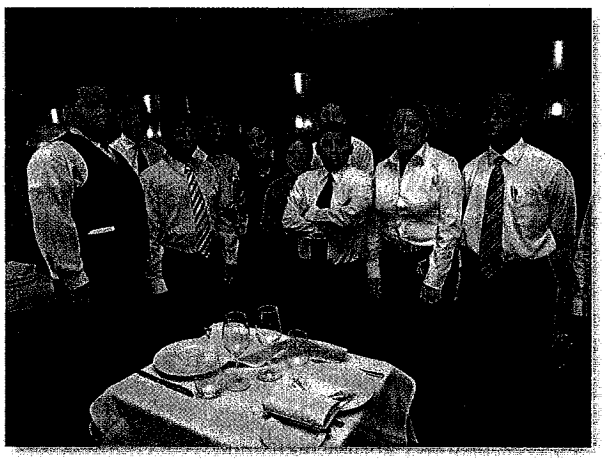
Another type of grief is *disenfranchised grief,* which describes an individual's grief over a deceased person that is a socially ambiguous loss that can't be openly mourned or supported (Cavuoti, 2015; Yu & others, 2016). Examples of disenfranchised grief include a relationship that isn't socially recognized such as an ex-spouse, a hidden loss such as an abortion, and circumstances of the death that are stigmatized such as death because of AIDS. Disenfranchised grief may intensify an individual's grief because it cannot be publicly acknowledged. This type of grief may be hidden or repressed for many years, only to be reawakened by later deaths.

Coping and Type of Death

The impact of death on surviving individuals is strongly influenced by the circumstances under which the death occurs. Deaths that are sudden, untimely, violent, or traumatic are likely to have more intense and prolonged effects on surviving individuals and make the coping process more difficult for them (Maercker & Lalor, 2012). Such deaths often are accompanied by post-traumatic stress disorder (PTSD) symptoms, such as intrusive thoughts, flashbacks, nightmares, sleep disturbances, or problems in concentrating (Nakajima & others, 2012). The death of a child can be especially devastating and extremely difficult for parents (Caeymaex & others, 2013; Stevenson & others, 2016).

Making Sense of the World

One beneficial aspect of grieving is that it stimulates many individuals to try to make sense of their world (Balon & Morreale, 2016; Kalanithi, 2016; Meert & others, 2015; Park, 2012, 2013). A common occurrence is to go over again and again all of the events that led up to the death. In the days and weeks after the death, the closest family members share memories with each other, sometimes reminiscing about family experiences. In a recent study, meaning-making following a child's death was examined (Meert & others, 2015). From 8 to 20 weeks following the child's death, the child's intensive care physician conducted a bereavement meeting with 53 parents of 35 children who had died. Four meaning-making processes were identified in the meetings: (1) sense making (seeking biomedical explanations for the death, revisiting parents' prior decisions and roles, and assigning blame); (2) benefit finding (exploring possible positive consequences of the death such as ways to help others, providing feedback to the hospital, and making donations); (3) continuing bonds (reminiscing about the child, sharing photographs, and holding community events to honor the child); and (4) identity reconstruction (changes in the parents' sense of self, including changes in relationships, work, and home).



These restaurant workers, who lost their jobs on 9/11/2001, made a bittersweet return with Colors, their own New York restaurant that is named for the many nationalities and ethnic groups among its owners. World-famous restaurant Windows on the World was destroyed and 73 workers killed when the Twin Towers were demolished by terrorists. The former Windows survivors at the new venture planned to split 60 percent of the profits between themselves and to donate the rest to a fund to open other cooperative restaurants.
© Thomas Hinton/Splash News/Newscom

When a death is caused by an accident or a disaster, the effort to make sense of it is pursued more vigorously. As added pieces of news come trickling in, they are integrated into the puzzle. The bereaved want to put the death into a perspective that they can understand—divine intervention, a curse from a neighboring tribe, a logical sequence of cause and effect, or whatever it may be. A study of more than 1,000 college students found that making sense was an important factor in their grieving of a violent loss by accident, homicide, or suicide (Currier, Holland, & Neimeyer, 2006).

Losing a Life Partner

In 2014 in the United States, 11 percent of men and 35 percent of women age 65 and older were widowed (Administration on Aging, 2014). Those

left behind after the death of an intimate partner often suffer profound grief and may endure financial loss, loneliness, increased physical illness, and psychological disorders, including depression (Beam & others, 2016; Lee, 2014; Zhou & Hearst, 2016). In one study, becoming widowed was associated with a 48 percent increase in risk of mortality (Sullivan & Fenelon, 2014). Mortality risk increased for men if their wives' deaths were not expected but for women the unexpected death of a husband mattered less in terms of their mortality risk. In another study, Mexican American older adults experienced a significant increase in depressive symptoms during the transition to widowhood (Monserud & Markides, 2016). Frequent church attendance was a protective factor against increases in depressive symptoms.

How surviving spouses cope varies considerably (Caserta & others, 2014; Hasmanova Marhankova, 2016). Becoming widowed is likely to be especially difficult when individuals have been happily married for a number of decades. In such circumstances, losing your spouse, who may also be your best friend and with whom you have lived a deeply connected life, can be extremely emotional and difficult to cope with. A six-year longitudinal study of individuals aged 80 and older found that the loss of a spouse, especially in men, was related to a lower level of life satisfaction over time (Berg & others, 2009). Another study revealed that widowed persons who did not expect to be reunited with their loved ones in the afterlife reported more depression, anger, and intrusive thoughts at 6 and 18 months after their loss (Carr & Sharp, 2014).

Many widows are lonely. The poorer and less educated they are, the lonelier they tend to be. The bereaved are also at increased risk for many health problems (Ha & Ingersoll-Dayton, 2011). For either widows or widowers, social support helps them adjust to the death of a spouse (Antonucci & others, 2016). The Widow-to-Widow program, begun in the 1960s, provides support for newly widowed women. Volunteer widows reach out to other widows, introducing them to others who may have similar problems, leading group discussions, and organizing social activities. The program has been adopted by the American Association of Retired Persons and disseminated throughout the United States as the Widowed Persons Service. The model has since been adopted by numerous community organizations to provide support for those going through a difficult transition.



How Would You...?

As a **social worker,** how would you help a widow or widower to connect with a support group to deal with the death of a loved one?

Forms of Mourning

One decision facing the bereaved is what to do with the body. In the United States in 2013, 45 percent of deaths were followed by cremation—a significant increase from 14 percent in 1985 and 27 percent in 2000 (Cremation Association of North America, 2015). Cremation is more popular in the Pacific region of the United States and less popular in the South. It is more popular in Canada than in the United States and most popular of all in Japan and other Asian countries.

The funeral industry has been a target of controversy in recent years. Funeral directors and their supporters argue that the funeral provides a form of closure to the relationship with the deceased, especially when there is an open casket. Their critics claim that funeral directors are just trying to make money and that embalming is grotesque. One way to avoid being exploited during bereavement is to purchase funeral arrangements in advance.

The family and the community have important roles in mourning in some cultures. One of



A funeral procession of horse-drawn buggies on their way to the burial of five young Amish girls who were murdered in October 2006. A remarkable aspect of their mourning involved the outpouring of support and forgiveness they gave to the widow of the murderer.

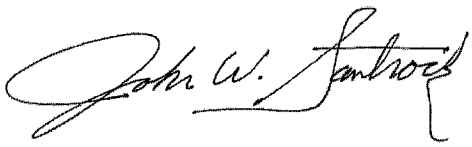
© Glenn Fawcett/Baltimore Sun/MCT/Getty Images

those cultures is the Amish, a conservative group with approximately 80,000 members in the United States, Ontario, and several small settlements in South and Central America. The Amish live in a family-oriented society in which family and community support are essential for survival. At the time of death, close neighbors assume the responsibility of notifying others of the death. The Amish community handles virtually all aspects of the funeral.

The funeral service is held in a barn in warmer months and in a house during colder months. Calm acceptance of death, influenced by a deep religious faith, is an integral part of the Amish culture. Following the funeral, a high level of support is given to the bereaved family for at least a year. Visits to the family, special scrapbooks and handmade items for the family, new work projects started for the widow, and quilting days that combine fellowship and productivity are among the supports given to the bereaved family.

We have arrived at the end of this edition. Our study of the human life span has been long and complex. You have read about many physical, cognitive, and socioemotional changes that take place from conception through death. This is a good time to reflect on what you have learned. Which theories, studies, and ideas were especially interesting to you? What did you learn about your own development?

I hope this edition and course have been a window to the life span of the human species and a window to your own personal journey in life. I wish you all the best in the remaining years of your journey through the human life span.



Summary

Defining Death and Life/Death Issues

- Most physicians today agree that the higher and lower portions of the brain must stop functioning in order for an individual to be considered *brain dead.*
- Decisions regarding life, death, and health care can involve a number of circumstances and issues, and individuals can use a living will to make these choices while they can still think clearly. Hospice care emphasizes reducing pain and suffering rather than prolonging life.

Death and Sociohistorical, Cultural Contexts

- Over the years, the circumstances of when, where, and why people die have changed. Throughout history, most societies have had philosophical or religious beliefs about death, and most societies have rituals that deal with death.
- The United States has been described as a death-denying and death-avoiding culture.

Facing One's Own Death

- Kübler-Ross proposed five stages of facing death, and although her view has been criticized, her efforts were important in calling attention to the experience of coping with life-threatening illness.
- Perceived control over events and denial may work together as an adaptive orientation for a dying individual.

Coping with the Death of Someone Else

- Most psychologists recommend an open communication system with someone who is dying and their significant others.
- Grief is multidimensional and in some cases may last for years. Complicated grief or prolonged grief disorder and disenfranchised grief are especially challenging.
- The grieving process may stimulate individuals to strive to make sense out of the world.
- Usually the most difficult loss is the death of a spouse. The bereaved are at increased risk for health problems.
- Forms of mourning vary across cultures.

Key Terms

acceptance
active euthanasia
anger
bargaining
brain death
complicated grief or prolonged grief disorder
denial and isolation
depression
euthanasia
grief
hospice
palliative care
passive euthanasia

Glossary

A

A-not-B error This term is used to describe the tendency of infants to reach where an object was located earlier rather than where the object was last hidden.

acceptance Kübler-Ross' fifth stage of dying, in which the dying person develops a sense of peace, an acceptance of her or his fate, and in many cases, a desire to be left alone.

accommodation Piagetian concept of adjusting schemes to fit new information and experiences.

active euthanasia Death induced deliberately, as by injecting a lethal dose of a drug.

activity theory Theory that the more active and involved older adults are, the more likely they are to be satisfied with their lives.

adolescent egocentrism The heightened self-consciousness of adolescents.

adoption study A study in which investigators seek to discover whether, in behavior and psychological characteristics, adopted children are more like their adoptive parents, who provided a home environment, or more like their biological parents, who contributed their heredity. Another form of the adoption study compares adoptive and biological siblings.

aerobic exercise Sustained exercise (such as jogging, swimming, or cycling) that stimulates heart and lung activity.

affectionate love In this type of love, also called companionate love, an individual desires to have the other person near and has a deep, caring affection for the other person.

ageism Prejudice against people because of their age, especially prejudice against older adults.

Alzheimer disease A progressive, irreversible brain disorder characterized by a gradual deterioration of memory, reasoning, language, and eventually physical function.

amygdala The region of the brain that is the seat of emotions.

androgyny The presence of positive masculine and feminine characteristics in the same individual.

anger Kübler-Ross' second stage of dying, in which the dying person's denial often gives way to anger, resentment, rage, and envy.

anger cry A cry similar to the basic cry, with more excess air forced through the vocal cords.

animism The belief that inanimate objects have lifelike qualities and are capable of action.

anorexia nervosa An eating disorder that involves the relentless pursuit of thinness through starvation.

anxious attachment style An attachment style that describes adults who demand closeness, are less trusting, and are more emotional, jealous, and possessive.

Apgar Scale A widely used assessment of the newborn's health at 1 and 5 minutes after birth.

arthritis Inflammation of the joints that is accompanied by pain, stiffness, and movement problems; especially common in older adults.

assimilation Piagetian concept of using existing schemes to deal with new information or experiences.

attachment A close emotional bond between two people.

attention The focusing of mental resources on select information.

attention deficit hyperactivity disorder (ADHD) A disability in which children consistently show one or more of the following characteristics: (1) inattention, (2) hyperactivity, and (3) impulsivity.

authoritarian parenting A restrictive, punitive style in which parents exhort the child to follow their directions and to respect work and effort. The authoritarian parent places firm limits and controls on the child and allows little verbal exchange. Authoritarian parenting is associated with children's social incompetence.

authoritative parenting A parenting style in which parents encourage their children to be independent but still place limits and controls on their actions. Extensive verbal give-and-take is allowed, and parents are warm and nurturant toward the child. Authoritative parenting is associated with children's social competence.

autism spectrum disorders (ASD) Also called pervasive developmental disorders, they range from the severe disorder labeled autistic disorder to the milder disorder called Asperger syndrome. These disorders are characterized by problems in social interaction, verbal and nonverbal communication, and repetitive behaviors.

autonomous morality The second stage of moral development in Piaget's theory, displayed by older children (about 10 years of age and older). The child becomes aware that rules and laws are created by people and that in judging an action, one should consider the actor's intentions as well as the consequences.

average children Children who receive an average number of both positive and negative nominations from their peers.

avoidant attachment style An attachment style that describes adults who are hesitant about getting involved in romantic relationships and once they are in a relationship tend to distance themselves from their partner.

B

bargaining Kübler-Ross' third stage of dying, in which the dying person develops the hope that death can somehow be postponed.

basic cry A rhythmic pattern usually consisting of a cry, a briefer silence, a shorter inspiratory whistle that is higher-pitched than the main cry, and a brief rest before the next cry.

behavior genetics The field that seeks to discover the influence of heredity and environment on individual differences in human traits and development.

behavioral and social cognitive theories Theories holding that development can be described in terms of the behaviors learned through interactions with the environment.

Big Five factors of personality Emotional stability (neuroticism), extraversion, openness to experience, agreeableness, and conscientiousness.

biological processes Changes in an individual's physical nature.

brain death A neurological definition of death. A person is brain dead when all electrical activity of the brain has ceased for a specified period of time. A flat EEG recording is one criterion of brain death.

Bronfenbrenner's ecological theory Bronfenbrenner's environmental systems theory, which focuses on five environmental systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem.

bulimia nervosa An eating disorder in which the individual consistently follows a binge-and-purge pattern.

C

care perspective The moral perspective of Carol Gilligan, which views people in terms of their connectedness with others and emphasizes interpersonal

communication, relationships with others, and concern for others.

case study An in-depth examination of an individual.

cataracts Involve a thickening of the lens of the eye that causes vision to become cloudy and distorted.

cellular clock theory Leonard Hayflick's theory that the maximum number of times human cells can divide is about 75 to 80. As we age, our cells become increasingly less capable of dividing.

centration The focusing of attention on one characteristic to the exclusion of all others.

cephalocaudal pattern The sequence in which the earliest growth always occurs at the top—the head—with physical growth in size, weight, and feature differentiation gradually working from top to bottom.

child-centered kindergarten Education that involves the whole child by considering both the child's physical, cognitive, and socioemotional development and the child's needs, interests, and learning styles.

child-directed speech Also called parentese, language spoken in a higher pitch, slower tempo, and exaggerated intonation than normal with simple words and sentences.

chromosomes Threadlike structures made up of deoxyribonucleic acid, or DNA.

climacteric The midlife transition in which fertility declines.

clique A small group that ranges from 2 to about 12 individuals, averaging about 5 or 6 individuals, and often consists of adolescents who engage in similar activities.

cognitive processes Changes in an individual's thought, intelligence, and language.

cohort effects Effects that are due to a subject's time of birth or generation but not age.

commitment Marcia's term for the part of identity development in which adolescents show a personal investment in forming an identity.

complicated grief or prolonged grief disorder Grief that involves enduring despair and is still unresolved over an extended period of time.

concepts Cognitive groupings of similar objects, events, people, or ideas.

conservation In Piaget's theory, awareness that altering an object's or a substance's appearance does not change its basic properties.

constructive play Play that combines sensorimotor and repetitive activity with symbolic representation of ideas. Constructive play occurs when children engage in self-regulated creation or construction of a product or a problem solution.

constructivist approach A learner-centered approach that emphasizes the importance of individuals actively constructing their knowledge and understanding with guidance from the teacher.

contemporary life-events approach An approach emphasizing that how a life event influences the individual's development depends not only on the life event itself but also on mediating factors, the individual's adaptation to the life event, the life-stage context, and the sociohistorical context.

context The setting in which development occurs, which is influenced by historical, economic, social, and cultural factors.

continuity-discontinuity issue The debate about the extent to which development involves gradual, cumulative change (continuity) or distinct stages (discontinuity).

controversial children Children who are frequently nominated both as someone's best friend and as being disliked.

conventional reasoning The second, or intermediate, level in Kohlberg's theory of moral development. At this level, individuals abide by certain standards, but they are the standards of others, such as parents or the laws of society.

convergent thinking The type of thinking that produces one correct answer and is typically assessed by standardized intelligence tests.

core knowledge approach States that infants are born with domain-specific innate knowledge systems.

corpus callosum The location where nerve fibers connect the brain's left and right hemispheres.

correlation coefficient A number based on statistical analysis that is used to describe the degree of association between two variables.

correlational research A type of research that focuses on describing the strength of the relation between two or more events or characteristics.

creative thinking The ability to think in novel and unusual ways and to come up with unique solutions to problems.

crisis Marcia's term for a period of identity development during which the adolescent is exploring alternatives.

critical thinking Thinking reflectively and productively, as well as evaluating the evidence.

cross-cultural studies Comparisons of one culture with one or more other cultures. These provide information about the degree to which children's development is similar, or universal, across cultures, and to the degree to which it is culture-specific.

cross-sectional approach A research strategy in which individuals of different ages are compared at one time.

crowd A larger group structure than a clique, a crowd is usually formed based on reputation, and members may or may not spend much time together.

crystallized intelligence Accumulated information and verbal skills, which increase in middle age, according to Horn.

cultural-familial intellectual disability Intellectual disability in which there is no evidence of organic brain damage, but the individual's IQ generally is between 50 and 70.

culture The behavior patterns, beliefs, and all other products of a group that are passed on from generation to generation.

culture-fair tests Tests of intelligence that are designed to be free of cultural bias.

cumulative personality model The principle that with time and age, people become more adept at interacting with their environment in ways that promote stability of personality.

D

deferred imitation Imitation that occurs after a delay of hours or days.

dementia A global term for any neurological disorder in which the primary symptoms involve a deterioration of mental functioning.

denial and isolation Kübler-Ross' first stage of dying, in which the dying person denies that she or he is really going to die.

depression Kübler-Ross' fourth stage of dying, in which the dying person comes to accept the certainty of her or his death. A period of depression or preparatory grief may appear.

descriptive research Type of research that aims to observe and record behavior.

development The pattern of movement or change that starts at conception and continues through the life span.

developmental cascade model Involves connections across domains over time that influence developmental pathways and outcomes.

developmentally appropriate practice (DAP) Education that focuses on the typical developmental patterns of children (age appropriateness) and the uniqueness of each child (individual appropriateness).

difficult child A child who tends to react negatively and cry frequently, who engages in irregular daily routines, and who is slow to accept new experiences.

direct instruction approach A structured, teacher-centered approach that is characterized by teacher direction and control, high teacher expectations for students' progress, maximum time spent by students on learning tasks, and efforts by the teacher to keep negative affect to a minimum.

dishabituation Recovery of a habituated response after a change in stimulation.

divergent thinking Thinking that produces many answers to the same question and is characteristic of creativity.

DNA A complex molecule with a double helix shape that contains genetic information.

domain theory of moral development Theory that identifies different domains of social knowledge and reasoning, including moral, social conventional, and personal domains. These domains arise from children's and adolescents' attempts to understand and deal with different forms of social experience.

Down syndrome A chromosomally transmitted form of intellectual disability, caused by the presence of an extra copy of chromosome 21.

dynamic systems theory The perspective on motor development that seeks to explain how motor behaviors are assembled for perceiving and acting.

E

easy child A child who is generally in a positive mood, who quickly establishes regular routines in infancy, and who adapts easily to new experiences.

eclectic theoretical orientation An approach that selects and uses whatever is considered the best in many theories.

ecological view The view that perception functions to bring organisms in contact with the environment and to increase adaptation.

egocentrism The inability to distinguish between one's own perspective and someone else's (salient feature of the first substage of preoperational thought).

elaboration An important strategy that involves engaging in more extensive processing of information.

embryonic period The period of prenatal development that occurs two to eight weeks after conception. During the embryonic period, the rate of cell differentiation intensifies, support systems for the cells form, and organs appear.

emerging adulthood The transition from adolescence to adulthood (approximately 18 to 25 years of age), which involves experimentation and exploration.

emotion Feeling, or affect, that occurs when a person is in a state or interaction that is important to them. Emotion is characterized by behavior that reflects (expresses) the pleasantness or unpleasantness of the state a person is in or the transactions being experienced.

empty nest syndrome A term used to indicate a decrease in marital satisfaction after children leave home.

epigenetic view Emphasizes that development is the result of an ongoing, bidirectional interchange between heredity and environment.

episodic memory The retention of information about the where and when of life's happenings.

equilibration A mechanism that Piaget proposed to explain how children shift from one stage of thought to the next.

Erikson's theory A psychoanalytic theory in which eight stages of psychosocial development unfold throughout the life span. Each stage consists of a unique developmental task that confronts individuals with a crisis that must be faced.

ethnic identity An enduring, basic aspect of the self that includes a sense of membership in an ethnic group and the attitudes and feelings related to that membership.

ethnicity A range of characteristics rooted in cultural heritage, including nationality, race, religion, and language.

ethology An approach stressing that behavior is strongly influenced by biology, tied to evolution, and characterized by critical or sensitive periods.

euthanasia The act of painlessly ending the lives of persons who are suffering from incurable diseases or severe disabilities; sometimes called "mercy killing."

evolutionary psychology Emphasizes the importance of adaptation, reproduction, and "survival of the fittest" in shaping behavior.

evolutionary theory of aging The view that natural selection has not eliminated many harmful conditions and nonadaptive characteristics in older adults.

executive attention Involves planning actions, allocating attention to goals, detecting and compensating for errors, monitoring progress on tasks, and dealing with novel or difficult circumstances.

executive function An umbrella-like concept that consists of a number of higher-level cognitive processes linked to the development of the brain's prefrontal cortex. Executive function involves managing one's thoughts to engage in goal-directed behavior and to use self-control.

experiment A carefully regulated procedure in which one or more of the factors believed to influence the behavior being studied is manipulated and all other factors are held constant. Experimental research permits the determination of cause.

explicit memory Memory of facts and experiences that individuals consciously know and can state.

F

fast mapping A process that helps to explain how young children learn the connection between a word and its referent so quickly.

fetal alcohol spectrum disorders (FASD) A cluster of abnormalities that appears in the offspring of mothers who drink alcohol heavily during pregnancy.

fetal period The prenatal period of development that begins two months after conception and usually lasts for seven months.

fight-or-flight The view that when men experience stress, they are more likely to become aggressive, withdraw from social contact, or drink alcohol.

fine motor skills Motor skills that involve more finely tuned movements, such as finger dexterity.

fluid intelligence The ability to reason abstractly, which steadily declines from middle adulthood on, according to Horn.

free-radical theory A theory of aging proposing that people age because normal cell metabolism produces unstable oxygen molecules known as free radicals. These molecules ricochet around inside cells, damaging DNA and other cellular structures.

fuzzy trace theory States that memory is best understood by considering two types of memory representations: (1) verbatim memory trace and (2) gist. In this theory, older children's better memory is attributed to the fuzzy traces created by extracting the gist of information.

G

games Activities engaged in for pleasure that include rules and often involve competition between two or more individuals.

gender The characteristics of people as females and males.

gender identity The sense of being male or female, which most children acquire by the time they are 3 years old.

gender roles Sets of expectations that prescribe how females or males should think, act, and feel.

gender schema theory The theory that gender typing emerges as children gradually develop gender schemas of what is gender-appropriate and gender-inappropriate in their culture.

gender stereotypes Broad categories that reflect society's impressions and beliefs about females and males.

gene × environment (G × E) interaction The interaction of a specified measured variation in DNA and a specific measured aspect of the environment.

generativity Adults' desire to leave legacies of themselves to the next generation; the positive side of Erikson's generativity versus stagnation middle adulthood stage.

genes Units of hereditary information composed of DNA. Genes direct cells to reproduce themselves and manufacture the proteins that maintain life.

genotype A person's genetic heritage; the actual genetic material.

germinal period The period of prenatal development that takes place during the first two weeks after conception. It includes the creation of the zygote, continued cell division, and the attachment of the zygote to the uterine wall.

gifted Having above-average intelligence (an IQ of 130 or higher) and/or superior talent for something.

glaucoma Damage to the optic nerve because of the pressure created by a buildup of fluid in the eye.

gonads The sex glands—the testes in males and the ovaries in females.

goodness of fit Refers to the match between a child's temperament and the environmental demands with which the child must cope.

grief The emotional numbness, disbelief, separation anxiety, despair, sadness, and loneliness that accompany the loss of someone we love.

gross motor skills Motor skills that involve large-muscle activities, such as walking.

H

habituation Decreased responsiveness to a stimulus after repeated presentations of the stimulus.

heteronomous morality Kohlberg's first stage in preconventional reasoning, in which moral thinking is tied to punishment.

heteronomous morality The first stage of moral development in Piaget's theory, occurring from approximately 4 to 7 years of age. Justice and rules are conceived of as unchangeable properties of the world, beyond the control of people.

hormonal stress theory The theory that aging in the body's hormonal system can lower resilience under stress and increase the likelihood of disease.

hormones Powerful chemical substances secreted by the endocrine glands and carried through the body by the bloodstream.

hospice A program committed to making the end of life as free from pain, anxiety, and depression as possible. The goals of hospice care contrast with those of a hospital, which are to cure disease and prolong life.

hypothalamus A structure in the higher portion of the brain that monitors eating and sex.

hypotheses Assertions or predictions, often derived from theories, that can be tested.

hypothetical-deductive reasoning Piaget's formal operational concept that adolescents have the cognitive ability to develop hypotheses, or best guesses, about ways to solve problems.

I

identity achievement Marcia's term for adolescents who have undergone a crisis and have made a commitment.

identity diffusion Marcia's term for adolescents who have not yet experienced a crisis (explored meaningful alternatives) or made any commitments.

identity foreclosure Marcia's term for adolescents who have made a commitment but have not experienced a crisis.

identity moratorium Marcia's term for adolescents who are in the midst of a crisis, but their commitments are either absent or vaguely defined.

imaginary audience Involves adolescents' belief that others are as interested in them as they themselves are; attention-getting behavior motivated by a desire to be noticed, visible, and "on stage."

immanent justice The expectation that, if a rule is broken, punishment will be meted out immediately.

implicit memory Memory without conscious recollection; involves skills and routine procedures that are automatically performed.

inclusion Educating a child who requires special education full-time in the regular classroom.

individualism, instrumental purpose, and exchange The second Kohlberg stage of moral development. At this stage, individuals pursue their own interests but also let others do the same.

individualized education plan (IEP) A written statement that spells out a program tailored to a child with a disability.

indulgent parenting A style of parenting in which parents are highly involved with their children but place few demands or controls on them. Indulgent parenting is associated with children's social incompetence, especially a lack of self-control.

infinite generativity The ability to produce an endless number of meaningful sentences using a finite set of words and rules.

information-processing theory A theory emphasizing that individuals manipulate information, monitor it, and strategize about it. The processes of memory and thinking are central.

insecure avoidant babies Babies that show insecurity by avoiding their mothers.

insecure disorganized babies Babies that show insecurity by being disorganized and disoriented.

insecure resistant babies Babies that often cling to the caregiver, then resist her by fighting against the closeness, perhaps by kicking or pushing away.

integrity versus despair Erikson's eighth and final stage of development, which individuals experience in late adulthood. This involves reflecting on the past and either piecing together a positive review or concluding that one's life has not been well spent.

intellectual disability A condition of limited mental ability in which an individual has a low IQ, usually below 70 on a traditional test of intelligence, and has difficulty adapting to the demands of everyday life.

intelligence Problem-solving skills and the ability to learn from, and adapt to, the experiences of everyday life.

intelligence quotient (IQ) A person's mental age divided by chronological age and multiplied by 100.

intermodal perception The ability to relate and integrate information from two or more sensory modalities, such as vision and hearing.

intuitive thought substage Piaget's second substage of preoperational thought, in which children begin to use primitive reasoning and want to know the answers to all sorts of questions (between about 4 and 7 years of age).

J

joint attention Process that occurs when (1) individuals focus on the same object and track each other's behavior, (2) one individual directs another's attention, and (3) reciprocal interaction takes place.

justice perspective A moral perspective that focuses on the rights of the individual; individuals independently make moral decisions.

juvenile delinquent An adolescent who breaks the law or engages in behavior that is considered illegal.

L

laboratory A controlled setting in which research can take place.

language A form of communication, whether spoken, written, or signed, that is based on a system of symbols. Language consists of the words used by a community and the rules for varying and combining them.

language acquisition device (LAD) Chomsky's term that describes a biological endowment enabling the child to detect the features and rules of language, including phonology, syntax, and semantics.

lateralization Specialization of function in one hemisphere of the cerebral cortex or the other.

learning disability Describes a child who has difficulty understanding or using spoken or written language or doing mathematics. To be classified as a learning disability, the problem is not primarily the result of visual, hearing, or motor disabilities; intellectual disability; emotional disorders; or due to environmental, cultural, or economic disadvantage.

least restrictive environment (LRE) The concept that a child with a disability should be educated in a setting that is as similar as possible to the one in which children who do not have a disability are educated.

leisure The pleasant times after work when individuals are free to pursue activities and interests of their own choosing.

life expectancy The number of years that will probably be lived by the average person born in a particular year.

life span The upper boundary of life, which is the maximum number of years an individual can live. The maximum life span of human beings is about 120 to 125 years of age.

life-span perspective The perspective that development is lifelong, multidimensional, multidirectional, plastic, multidisciplinary, and contextual; that it involves growth, maintenance, and regulation; and that it is constructed through biological, sociocultural, and individual factors working together.

limbic system A lower, subcortical system in the brain that is the seat of emotions and experience of rewards.

long-term memory A relatively permanent type of memory that holds huge amounts of information for a long period of time.

longitudinal approach A research strategy in which the same individuals are studied over a period of time, usually several years or more.

M

macular degeneration A disease that involves deterioration of the macula of the retina, which corresponds to the focal center of the visual field.

meiosis A specialized form of cell division that occurs to form eggs and sperm (or gametes).

memory A central feature of cognitive development, pertaining to all situations in which an individual retains information over time.

menarche A girl's first menstruation.

menopause The complete cessation of a woman's menstrual cycles, which usually occurs in the late forties or early fifties.

mental age (MA) Binet's measure of an individual's level of mental development, compared with that of others.

metacognition Cognition about cognition, or knowing about knowing.

metalinguistic awareness Refers to knowledge about language, such as knowing what a preposition is or being able to discuss the sounds of a language.

middle adulthood The developmental period beginning at approximately 40 years of age and extending to about 60 to 65 years of age.

mindset The cognitive view that individuals develop for themselves.

mitochondrial theory The theory that aging is caused by the decay of mitochondria, tiny cellular bodies that supply energy for function, growth, and repair.

mitosis Cellular reproduction in which the cell's nucleus duplicates itself with two new cells being formed, each containing the same DNA as the parent cell, arranged in the same 23 pairs of chromosomes.

Montessori approach An educational philosophy in which children are given considerable freedom and spontaneity in choosing activities and are allowed to move from one activity to another as they desire.

moral development Development that involves thoughts, feelings, and actions regarding rules and conventions about what people should do in their interactions with other people.

morphology Units of meaning involved in word formation.

mTOR pathway A cellular pathway involving the regulation of growth and metabolism that has been proposed as a key aspect of longevity

mutual interpersonal expectations, relationships, and interpersonal conformity Kohlberg's third stage of moral development. At this stage, individuals value trust, caring, and loyalty to others as a basis of moral judgments.

myelination The process by which axons are covered and insulated with a layer of fat cells, which increases the speed at which information travels through the nervous system.

N

natural childbirth A childbirth method in which no drugs are given to relieve pain or assist in the birth process. The mother and her partner are taught to use breathing methods and relaxation techniques during delivery.

naturalistic observation Observation that occurs in a real-world setting without any attempt to manipulate the situation.

nature-nurture issue The debate about the extent to which development is influenced by nature and by nurture. Nature refers to an organism's biological inheritance, nurture to its environmental experiences.

neglected children Children who are infrequently nominated as a best friend but are not disliked by their peers.

neglectful parenting A style of parenting in which the parent is very uninvolved in the child's life; it is associated with children's social incompetence, especially a lack of self-control.

neo-Piagetians Developmentalists who have elaborated on Piaget's theory, giving more emphasis to how children use attention, memory, and strategies to process information.

neuroconstructivist view Developmental perspective in which biological processes and environmental conditions influence the brain's development; the brain has plasticity and is context dependent; and cognitive development is closely linked with brain development.

neurons Nerve cells that handle information processing at the cellular level in the brain.

nonnormative life events Unusual occurrences that have a major impact on a person's life. The occurrence, pattern, and sequence of these events are not applicable to many individuals.

normal distribution A symmetrical distribution with most scores falling in the middle of the possible range of scores and few scores appearing toward the extremes of the range.

normative age-graded influences Biological and environmental influences that are similar for individuals in a particular age group.

normative history-graded influences Biological and environmental influences that are associated with history. These influences are common to people of a particular generation.

O

object permanence The Piagetian term for understanding that objects and events continue to exist, even when they cannot directly be seen, heard, or touched.

operations In Piaget's theory, these are internalized, reversible sets of actions that allow children to do mentally what they formerly did physically.

organic intellectual disability Intellectual disability that involves some physical damage and is caused by a genetic disorder or brain damage.

organization Piaget's concept of grouping isolated behaviors and thoughts into a higher-order, more smoothly functioning cognitive system.

organogenesis Organ formation that takes place during the first two months of prenatal development.

osteoporosis A chronic condition that involves an extensive loss of bone tissue and is the main reason many older adults walk with a marked stoop. Women are especially vulnerable to osteoporosis.

P

pain cry A sudden outburst of loud crying without preliminary moaning, followed by breath holding.

palliative care Emphasized in hospice care; involves reducing pain and suffering and helping individuals die with dignity.

Parkinson disease A chronic, progressive disease characterized by muscle tremors, slowing of movement, and partial facial paralysis.

passive euthanasia Withholding available treatments, such as life-sustaining devices, and allowing the person to die.

perception The interpretation of what is sensed.

personal fable The part of adolescent egocentrism that involves an adolescent's sense of uniqueness and invincibility (or invulnerability).

perspective taking The social cognitive process involved in assuming the perspective of others and understanding their thoughts and feelings.

phenotype The way an individual's genotype is expressed in observed and measurable characteristics.

phonics approach The idea that reading instruction should teach the basic rules for translating written symbols into sounds.

phonology The sound system of a language, including the sounds used and how they may be combined.

Piaget's theory The theory that children construct their understanding of the world and go through four stages of cognitive development.

pituitary gland An important endocrine gland that controls growth and regulates other glands, including the gonads.

popular children Children who are frequently nominated as a best friend and are rarely disliked by their peers.

postconventional reasoning The highest level in Kohlberg's theory of moral development. At this level, the individual recognizes alternative moral courses, explores the options, and then decides on a personal moral code.

postformal thought Thinking that is reflective, relativistic, and contextual; provisional; realistic; and influenced by emotions.

postpartum period The period after childbirth when the mother adjusts, both physically and psychologically, to the process of childbearing. This period lasts for about six weeks or until her body has completed its adjustment and returned to a nearly prepregnant state.

practice play Play that involves repetition of behavior when new skills are being learned or when physical or mental mastery and coordination of skills are required for games or sports.

pragmatics The appropriate use of language in different contexts.

preconventional reasoning The lowest level in Kohlberg's theory of moral development. The individual's moral reasoning is controlled primarily by external rewards and punishment.

preoperational stage Piaget's second stage, lasting from about 2 to 7 years of age, during which children begin to represent the world with words, images, and drawings, and symbolic thought goes beyond simple connections of sensory information and physical action; stable concepts are formed, mental reasoning emerges, egocentrism is present, and magical beliefs are constructed.

prepared childbirth Developed by French obstetrician Ferdinand Lamaze, this childbirth strategy is similar to natural childbirth but includes a special breathing technique to control pushing in the final stages of labor and more detailed anatomy and physiology instruction.

pretense/symbolic play Play in which the child transforms the physical environment into a symbol.

Project Head Start A government-funded program that is designed to provide children from low-income families the opportunity to acquire the skills and experiences important for school success.

proximodistal pattern The sequence in which growth starts at the center of the body and moves toward the extremities.

psychoanalytic theories Theories holding that development depends primarily on the unconscious mind and is heavily couched in emotion, that behavior is merely a surface characteristic, that it is important to analyze the symbolic meanings of behavior, and that early experiences are important in development.

psychoanalytic theory of gender A theory deriving from Freud's view that the preschool child develops a sexual attraction to the opposite-sex parent, by approximately 5 or 6 years of age renounces this attraction because of anxious feelings, and subsequently identifies with the same-sex parent, unconsciously adopting the same-sex parent's characteristics.

puberty A brain-neuroendocrine process occurring primarily in early adolescence that provides stimulation for the rapid physical changes that occur in this period of development.

R

reciprocal socialization Socialization that is bidirectional, meaning that children socialize parents, just as parents socialize children.

reflexive smile A smile that does not occur in response to external stimuli. It appears during the first month after birth, usually during sleep.

rejected children Children who are infrequently nominated as a best friend and are actively disliked by their peers.

rite of passage A ceremony or ritual that marks an individual's transition from one status to another. Most rites of passage focus on the transition to adult status.

romantic love Also called passionate love, or *eros;* romantic love has strong sexual and infatuation components and often predominates in the early period of a love relationship.

S

scaffolding Process in which parents time interactions so that infants experience turn-taking with their parents.

schemes In Piaget's theory, actions or mental representations that organize knowledge.

secure attachment style An attachment style that describes adults who have positive views of relationships, find it easy to get close to others, and are not overly concerned or stressed out about their romantic relationships.

securely attached babies Babies that use the caregiver as a secure base from which to explore their environment.

selective optimization with compensation theory The theory that successful

aging involves three main factors: selection, optimization, and compensation.

self-concept Domain-specific evaluations of the self.

self-efficacy The belief that one can master a situation and produce favorable outcomes.

self-esteem The global evaluative dimension of the self. Self-esteem is also referred to as self-worth or self-image.

self-understanding The child's cognitive representation of self, the substance and content of the child's self-conceptions.

semantic memory A person's knowledge about the world—including a person's fields of expertise, general academic knowledge of the sort learned in school, and "everyday knowledge."

semantics The meaning of words and sentences.

sensation The product of the interaction between information and the sensory receptors—the eyes, ears, tongue, nostrils, and skin.

sensorimotor play Behavior engaged in by infants to derive pleasure from exercising their existing sensorimotor schemes.

sensorimotor stage The first of Piaget's stages, which lasts from birth to about 2 years of age; during this stage, infants construct an understanding of the world by coordinating sensory experiences with motoric actions.

separation protest An infant's distressed crying when the caregiver leaves.

seriation The concrete operation that involves ordering stimuli along a quantitative dimension (such as length).

service learning A form of education that promotes social responsibility and service to the community.

sexually transmitted infections (STIs) Infections contracted primarily through sexual contact, including oral-genital and anal-genital contact.

short-term memory The memory component in which individuals retain information for up to 30 seconds, assuming there is no rehearsal of the information.

sirtuins A family of proteins that have been proposed as having important influences on longevity, mitochondrial functioning in energy, calorie restriction benefits, stress resistance, and a lower incidence of cardiovascular functioning.

slow-to-warm-up child A child who has a low activity level, is somewhat negative, and displays a low intensity of mood.

social cognitive theory of gender A theory emphasizing that children's gender development occurs through the observation and imitation of gender behavior and through the rewards and punishments children experience for gender-appropriate and gender-inappropriate behavior.

social cognitive theory The theory that behavior, environment, and person/cognitive factors are important in understanding development.

social constructivist approach An approach that emphasizes the social contexts of learning and that knowledge is mutually built and constructed. Vygotsky's theory reflects this approach.

social contract or utility and individual rights The fifth Kohlberg stage. At this stage, individuals reason that values, rights, and principles undergird or transcend the law.

social conventional reasoning Thoughts about social consensus and convention, in contrast with moral reasoning, which stresses ethical issues.

social play Play that involves social interactions with peers.

social policy A national government's course of action designed to promote the welfare of its citizens.

social referencing "Reading" emotional cues in others to help determine how to act in a particular situation.

social role theory A theory that gender differences result from the contrasting roles of men and women.

social smile A smile in response to an external stimulus, which, early in development, typically is a face.

social systems morality The fourth stage in Kohlberg's theory of moral development. Moral judgments are based on understanding the social order, law, justice, and duty.

socioeconomic status (SES) Refers to the conceptual grouping of people with similar occupational, educational, and economic characteristics.

socioemotional processes Changes in an individual's relationships with other people, emotions, and personality.

socioemotional selectivity theory The theory that older adults become more selective about their social networks. Because they place a high value on emotional satisfaction, older adults often prefer to spend time with familiar individuals with whom they have had rewarding relationships.

stability-change issue The debate about the degree to which early traits and characteristics persist through life or change.

stagnation Sometimes called "self-absorption," this state of mind develops when individuals sense that they have done little or nothing for the next generation; this is the negative side of Erikson's generativity versus stagnation middle adulthood stage.

standardized test A test that is given with uniform procedures for administration and scoring.

Strange Situation An observational measure of infant attachment that requires the infant to move through a series of introductions, separations, and reunions with the caregiver and an adult stranger in a prescribed order.

stranger anxiety An infant's fear and wariness of strangers that typically appears in the second half of the first year of life.

strategies Deliberate mental activities designed to improve the processing of information.

sudden infant death syndrome (SIDS) A condition that occurs when an infant stops breathing, usually during the night, and suddenly dies without an apparent cause.

sustained attention Also referred to as vigilance; involves focused and extended engagement with an object, task, event, or other aspect of the environment.

symbolic function substage Piaget's first substage of preoperational thought, in which the child gains the ability to mentally represent an object that is not present (between about 2 and 4 years of age).

syntax The ways words are combined to form acceptable phrases and sentences.

T

telegraphic speech The use of short and precise words without grammatical markers such as articles, auxiliary verbs, and other connectives.

temperament An individual's behavioral style and characteristic way of responding emotionally.

tend-and-befriend Taylor's view that when women experience stress, they are more likely to seek social alliances with others, especially female friends.

teratogen Any agent that can potentially cause a birth defect or negatively alter cognitive and behavioral outcomes.

theory A coherent set of ideas that helps to explain data and to make predictions.

theory of mind Refers to the awareness of one's own mental processes and the mental processes of others.

thinking Manipulating and transforming information in memory.

top-dog phenomenon The circumstance of moving from the top position in elementary school to the lowest position in middle or junior high school.

transgender A broad term that refers to individuals whose gender identity or behavior is either completely or partially at odds with the sex into which they were born.

transitivity The ability to logically combine relations to understand certain conclusions.

triarchic theory of intelligence Sternberg's theory that intelligence consists of analytical intelligence, creative intelligence, and practical intelligence.

twin study A study in which the behavioral similarity of identical twins is compared with the behavioral similarity of fraternal twins.

U

universal ethical principles The sixth and highest stage in Kohlberg's theory of moral development. Individuals develop a moral standard based on universal human rights.

V

visual preference method A method developed by Fantz to determine whether infants can distinguish one stimulus from another by measuring the length of time they attend to different stimuli.

Vygotsky's theory A sociocultural cognitive theory that emphasizes how culture and social interaction guide cognitive development.

W

whole-language approach An approach to reading instruction based on the idea that instruction should parallel children's natural language learning. Reading materials should be whole and meaningful.

wisdom Expert knowledge about the practical aspects of life that permits excellent judgment about important matters.

working memory Closely related to short-term memory but places more emphasis on mental work. Working memory is like a mental "workbench" where individuals can manipulate and assemble information when making decisions, solving problems, and deciphering written and spoken language.

Z

zone of proximal development (ZPD) Vygotsky's term for tasks that are too difficult for children to master alone but can be mastered with assistance.

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