

decay (from repeated vomiting), stomach irritation, lowered body temperature, disturbances of body chemistry, and loss of hair (Palla & Litt, 1988).

The incidence of bulimia appears to have been increasing in recent decades in many Western countries, particularly among adolescent girls, but firm numbers have been hard to establish. Current estimates are that from 1.0% to 2.8% of adolescent girls and young adult women show the full syndrome of bulimia; as many as 20% of girls in industrialized Western countries show at least some bulimic behaviors, such as occasional purging (Attie & Brooks-Gunn, 1995; Graber, Brooks-Gunn, Paikoff, & Warren, 1994). In contrast, bulimia is unheard of in countries where food is scarce.

Risk Factors Some theorists have proposed biological causes for eating disorders such as some kind of brain dysfunction. Researchers have also recently identified a gene that may play a causal role in the development of anorexia nervosa (Frisch et al., 2001). Others, however, argue for a psychoanalytic explanation, such as a fear of growing up. But the most promising explanation may lie in the discrepancy between the young person's internal image of a desirable body and her (or his) perception of her (or his) own body.

Some developmentalists suggest that an emphasis on thinness as a characteristic of attractive women, which is common in Western cultures, contributes to the prevalence of eating disorders (Pelletier, Dion, & Levesque, 2004). In one approach to testing this hypothesis, 6- to 12-year-old girls' responses to images of thin, sexy women were compared to boys' reactions to images of muscular, hyper-masculine men in order to find out how early children become aware of cultural stereotypes about ideal male and female body types (Murnen, Smolak, Mills, & Good, 2003). Researchers found that even the youngest children in this age group express admiration for the appearance of the models depicted in such images and that children are most interested in idealized images of adults of their own gender. However, girls are more likely than boys to compare their own appearance to that of the models. Moreover, among girls, those who are happiest with their own physical appearance are the least likely to compare their own bodies to media images of attractive women (Murnen et al., 2003; Rabasca, 1999).

These findings support the assertion of many developmentalists that girls internalize images representing what might be called the "thin ideal" during the middle childhood years and use them as standards against which to compare the changes in their bodies that happen during puberty (Hermes & Keel, 2003). In fact, research shows that, by age 11, girls are significantly more dissatisfied with their bodies than boys are with theirs, and the gender gap in body satisfaction increases across the teen years (Sweeting & West, 2002). As you might expect, given these results, researchers have also found that the tendency of girls to compare themselves to the thin ideal increases as they advance through puberty (Hermes & Keel, 2003).

Recent thinking, however, has placed more emphasis on the pre-existing psychological health of people who develop eating disorders than on cultural influences. Some researchers assert that the body images of individuals who suffer from eating disorders are the result of a general tendency toward distorted thinking (Dyl et al., 2006). In other words, these researchers say that people who have eating disorders tend to think in distorted ways about many things, not just their bodies. From this perspective, internalized images of the "perfect" body fuel the sales of diet products among psychologically healthy people, but they trigger a far more serious outcome, a true eating disorder, in individuals who have a mentally unhealthy tendency toward thought distortion. Longitudinal evidence seems to support this view. In one such study, young women who had anorexia in adolescence (94% of whom had recovered from their eating disorders) were found to be far more likely than the general population to suffer from a variety of mental disorders (Nilsson, Gillberg, Gillberg, & Rastam, 1999). *Obsessive-compulsive personality disorder*, a condition characterized by an excessive need for control of the environment, seemed to be especially prevalent in this group. The study's authors further stated that the young women's mental difficulties did not appear to be the result of having previously suffered from an eating disorder. Instead, both the adolescent eating disorders and the women's problems in adulthood seem to have been produced by a consistent tendency toward distorted perceptions.

Depression and Suicide

Learning Objective 11.10

Which adolescents are at greatest risk of depression and suicide?

Epidemiological studies reveal that, at any given time, 18–30% of adolescents are in the midst of an enduring depression (CDC, 2006; Saluja et al., 2004). Teenaged girls are twice as likely as boys to report feelings of depression, a sex difference that persists throughout adolescence and into adulthood. This sex difference has been found in a number of industrialized countries and across ethnic groups in the United States (Nolen-Hoeksema & Girgus, 1994; Petersen et al., 1993; Roberts & Sobhan, 1992).

Neuroimaging studies show that adolescent depression is associated with some kind of dysfunction in the pituitary gland (MacMaster & Kusumakar, 2004). But what causes the pituitary to function inappropriately in the first place? Genetic factors may be involved, as children growing up with depressed parents are much more likely to develop depression than are those growing up with nondepressed parents (Eley et al., 2004; Merikangas & Angst, 1995). The genetic hypothesis has also received support from at least a few studies of twins and adopted children (Petersen et al., 1993). However, the link between parental and child depression may also be explained in terms of the parenting behaviors of depressed parents, which you read about in earlier chapters. Furthermore, the contributions of a variety of family stressors to adolescent depression are just as clear among children whose parents are not depressed. Any combination of stresses—such as the parents' divorce, the death of a parent or another loved person, the father's loss of job, a move, a change of schools, or lack of sleep—increases the likelihood of depression or other kinds of emotional distress in the adolescent (Compas et al., 1993; D'Imperio, Dubow, & Ippolito, 2000; Fredriksen, Rhodes, Reddy, & Way, 2004).

Depression can hinder academic achievement, because it interferes with memory. For example, depressed adolescents are more likely to remember negative information than positive information (Neshat-Doost, Taghavi, Moradi, Yule, & Dalgleish, 1998). If a teacher says to a depressed adolescent, "You're going to fail algebra unless you start handing in your homework on time," the teenager is likely to remember the part about failing algebra and forget that the teacher also provided a remedy—getting homework done on time. Further, depressed adolescents seem to be less able than their nondepressed peers to store and retrieve verbal information (Horan, Pogge, Borgaro, & Stokes, 1997). Consequently, therapeutic interventions, such as antidepressant medications, may improve a depressed teenager's academic performance along with her emotional state. Most such treatments have been shown to be as effective for adolescents as they are for depressed adults (Findling, Feeny, Stansbrey, Delpuerto-Bedoya, & Demeter, 2004).

In some teenagers, sadly, the suicidal thoughts that often accompany depression lead to action. Surveys suggest that 17% of high school students in the United States have thought seriously about taking their own lives, and 2–8% have actually attempted suicide (CDC, 2006). A very small number of teens, about 1 in 10,000, actually succeed in killing themselves (CDC, 2007). However, public health experts point out that many teenaged deaths, such as those that result from single-car crashes, may be counted as accidents when they are actually suicides (NCIPC, 2000).

Although depression is more common among girls, the likelihood of actually completing a suicide attempt is almost four times as high for adolescent boys as for adolescent girls. In contrast, suicide attempts are estimated to be three times more common among girls than among boys (CDC, 2007). Girls, more often than boys, use methods that are less likely to succeed, such as self-poisoning. Contributing factors to completed suicides include:

- *Some triggering stressful event.* Studies of suicides suggest that this triggering event is often a disciplinary crisis with the parents or some rejection or humiliation, such as breaking up with a girlfriend or boyfriend or failing in a valued activity.
- *An altered mental state.* Such a state might be a sense of hopelessness, reduced inhibitions from alcohol consumption, or rage.
- *An opportunity.* A loaded gun in the house or a bottle of sleeping pills in the parents' medicine cabinet creates an opportunity for a teenager to carry out suicidal plans.

Critical Thinking

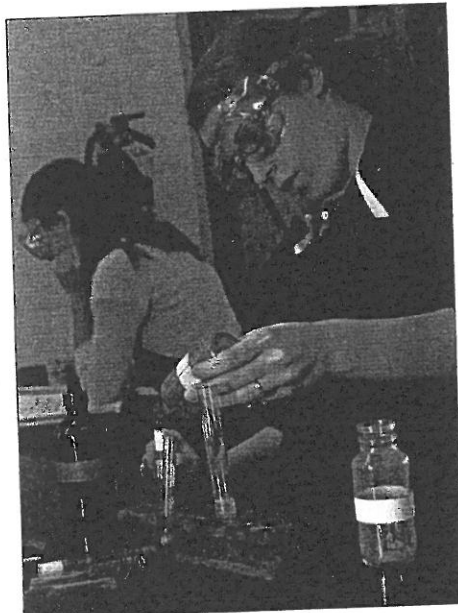
1. If you had the power to change U.S. culture in ways that you think would reduce the prevalence of the problems that were discussed in this section, what changes would you make?

Changes in Thinking and Memory

At the outset of the chapter, you read about two eighth-graders who succeeded in going to a concert without their parents' knowing about it. The kind of thinking that they used to plan their escapade was discovered by Piaget near the beginning of the 20th century. Such thinking enables adolescents to create an imaginary reality in their minds and project themselves into it. As Aisha and Michelle found out, however, the imagined world of the teenaged mind often excludes important details that help to ground such thinking in reality (see the Research Report on page 325). By the end of adolescence, though, teenagers' capacity to engage in this kind of thinking, which is similar to that of scientists, has dramatically improved.

Learning Objective 11.11

What are the characteristics of thought in Piaget's formal operational stage?



High school science classes may be one of the first places where adolescents are required to use deductive logic—a skill Piaget did not think was developed until the period of formal operations.

formal operational stage the fourth of Piaget's stages, during which adolescents learn to reason logically about abstract concepts

systematic problem-solving the process of finding a solution to a problem by testing single factors

hypothetico-deductive reasoning the ability to derive conclusions from hypothetical premises

Piaget's Formal Operational Stage

Piaget carried out a number of studies suggesting that an entirely new form of thought emerges between about age 12 and age 16. He called the stage associated with this kind of thought the **formal operational stage**. Typically, this stage is defined as the period during which adolescents learn to reason logically about abstract concepts. Formal operational thinking has a number of key elements.

Systematic Problem Solving One important feature of formal operations is **systematic problem-solving**, the ability to search methodically for the answer to a problem. To study this, Piaget and his colleague Barbel Inhelder (Inhelder & Piaget, 1958) presented adolescents with complex tasks, mostly drawn from the physical sciences. In one of these tasks, subjects were given varying lengths of string and a set of objects of various weights that could be tied to the strings to make a swinging pendulum. They were shown how to start the pendulum different ways—by pushing the weight with differing amounts of force and by holding the weight at different heights. The subject's task was to figure out which factor or combination of factors—length of string, weight of object, force of push, or height of push—determines the “period” of the pendulum (that is, the amount of time for one swing). (In case you have forgotten your high school physics, the answer is that only the length of the string affects the period of the pendulum.)

If you give this task to a concrete operational child, she will usually try out many different combinations of length, weight, force, and height in an inefficient way. She might try a heavy weight on a long string and then a light weight on a short string. Because she has changed both string length and weight

in these two trials, there is no way she can draw a clear conclusion about either factor. In contrast, an adolescent using formal operations is likely to be more organized, attempting to vary just one of the four factors at a time. She may try a heavy object with a short string, then with a medium string, then with a long one. After that, she might try a light object with the three lengths of string. Of course not all adolescents (or all adults, for that matter) are quite this methodical in their approach. Still, there is a very dramatic difference in the overall strategies used by 10-year-olds and 15-year-olds that marks the shift from concrete to formal operations.

Logic Another facet of this shift is the appearance in the adolescent's repertoire of skills of what Piaget called **hypothetico-deductive reasoning**, or the ability to derive conclusions from hypothetical premises. You may remember from Chapter 9 that Piaget suggested that the concrete operational child can use inductive reasoning, which involves arriving at a conclusion or a rule based on a lot of individual experiences, but performs poorly when asked to reason deductively. Recall that deductive reasoning involves considering hypotheses or hypothetical premises and then deriving logical outcomes. For example, the statement “If all people are equal, then you and I must be equal” involves logic of this type. Although children as young as 4 or 5 can understand some deductive relationships if the premises given are factually true, both cross-sectional and longitudinal studies support Piaget's assertion that only at

adolescence are young people able to understand and use the basic logical relationships (Ward & Overton, 1990; Mueller, Overton, & Reese, 2001).

Piaget suggested that hypothetico-deductive thinking underlies many ideas and behaviors that are common to adolescents. For instance, hypothetico-deductive thinking leads to an outlook he called *naive idealism* in many adolescents (Piaget & Inhelder, 1969). Naive idealism is manifested when adolescents use formal operational thinking to mentally construct an ideal world and then compare the real world to it. Not surprisingly, the real world often falls short. As a result, some teenagers become so dissatisfied with the world that they resolve to change it. For many, the changes they propose are personal. So a teen whose parents have been divorced for years may suddenly decide she wants to live with the noncustodial parent because she expects that her life will be better. Another may express naive idealism by becoming involved in a political or religious organization.

Adolescent Egocentrism Psychologist David Elkind hypothesized that another common manifestation of hypothetico-deductive reasoning is a type of thought he called *adolescent egocentrism*, the belief that one's thoughts, beliefs, and feelings are unique. One component of adolescent egocentrism, Elkind said, is the **personal fable**, the belief that the events of one's life are controlled by a mentally constructed autobiography (Elkind, 1967). For example, a sexually active teenage girl might be drawing upon such a personal fable when she says “I just don't see myself getting pregnant” in response to suggestions that she use contraception. In contrast to this inappropriately rosy view of the future, a teen who is involved in a violent

personal fable the belief that the events of one's life are controlled by a mentally constructed autobiography

RESEARCH REPORT

Formal Operational Thinking and Everyday Problem Solving

Like those of Aisha and Michelle, the covert concert-goers at the beginning of the chapter, the plans of young adolescents often go awry due to their failure to include some important factor in them. In her classic study, Catherine Lewis (1981) found that younger teenagers were more likely than those who were older to base solutions on incomplete formulations of problems. For instance, Lewis asked eighth-, tenth-, and twelfth-grade students to respond to a set of dilemmas that involved a person facing a difficult decision, such as whether to have an operation to repair a facial disfigurement (Lewis, 1981). Forty-two percent of the twelfth-graders, but only 11% of the eighth-graders, mentioned future possibilities in their comments on these dilemmas. For example, in answer to the cosmetic surgery dilemma, a twelfth-grader said,

Well, you have to look into the different things . . . that might be more important later on in your life. You should think about, will it have any effect on your future and with, maybe, the people you meet (Lewis, 1981, p. 541)

An eighth-grader, in response to the same dilemma, said,

The different things I would think about in getting the operation is like if the girls

turn you down on a date, or the money, or the kids teasing you at school. (Lewis, 1981, p. 542)

The eighth-grader's answer focused on the here and now, on concrete things. By contrast, the twelfth-grader considered things that might happen in the future. Thus, when faced with a practical dilemma, young adolescents, most of whom can solve laboratory tasks that measure formal operational thinking, seem to use concrete rather than formal operational reasoning.

What accounts for this pattern of findings? Perhaps younger teens fail to use formal operational thinking effectively because the parts of the brain needed to connect it to everyday problems may not be sufficiently developed until the late teens. Neuroimaging studies comparing the brain activity of children, teens, and adults while they were engaged in a gambling task provide support for this hypothesis (Crone & van der Molen, 2004). However, Piaget would probably argue that young teens aren't good at applying their formal operational schemes to everyday problems because they haven't had much practice using them, a hypothesis that might also explain these neuroimaging results.

Recall that Piaget hypothesized that, when we apply a scheme to a problem, we are engaging in assimilation. According to his view,

when teens assimilate problems to immature formal operational schemes, their failures trigger equilibration, the process that kicks in when our schemes don't faithfully represent reality. Equilibration leads to accommodations, or changes in the schemes, that are put to work on the next time an appropriate problem comes around. Applying the accommodated scheme to a new problem initiates a new cycle of assimilation, equilibration, and accommodation. Through this back and forth process, teenagers' formal operational schemes become more reliable. Thus, young teens have to experiment with their formal operational schemes in the real world, just as Aisha and Michelle did, before they can be expected to be able to be proficient at using them.

Questions for Critical Analysis

1. How do these aspects of adolescent thinking come into play when teenagers have to come up with ways of coping with teachers whom they don't like or of raising a failing grade?
2. To what extent does teens' limited ability to use formal operational thinking in everyday contexts explain findings about the ineffectiveness of sex education programs that you read about earlier in the chapter?

street gang may say "I'll probably get shot before I make 18" when advised to leave the gang and focus on acquiring the academic skills needed to graduate from high school.

Elkind also proposed that adolescent egocentrism drives teenagers to try out various attitudes, behaviors, and even clothing choices in front of an **imaginary audience**—an internalized set of behavioral standards usually derived from a teenager's peer group. Think about the example of a teenaged girl who is habitually late for school because she changes clothes two or three times every day before leaving home. Each time the girl puts on a different outfit, she imagines how her peers at school will respond to it. If the imaginary audience criticizes the outfit, the girl feels she must change clothes in order to elicit a more favorable response. Similarly, a boy may spend hours in front of the mirror trimming his sideburns in an effort to achieve a look he thinks his peers will approve of.

Many developmentalists have found Elkind's personal fable and imaginary audience to be helpful in explaining a variety of adolescents' everyday behaviors. However, research examining these constructs has produced mixed results (Bell & Bromnick, 2003; Vartanian, 2000). While it is true that adolescents use idealized mental models to make all kinds of decisions about their own and others' behavior, researchers have found that school-aged children sometimes exhibit similar forms of thought (Vartanian, 2001). Nevertheless, developmentalists agree that the tendency to exaggerate others' reactions to one's own behavior and to base decisions on unrealistic ideas about the future are two characteristics that distinguish adolescents from younger children.

Learning Objective 11.12

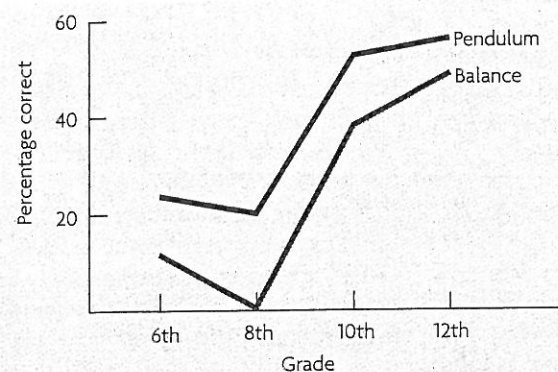
What are some major research findings regarding the formal operational stage?

imaginary audience an internalized set of behavioral standards usually derived from a teenager's peer group

Figure 11.3
Within Stage
Development in Formal
Operations

These are the results from two of the ten different formal operational tasks used in Martorano's cross-sectional study.

(Source: Martorano, 1977, p. 670. Copyright by the American Psychological Association.)



Direct Tests of Piaget's View

In an early cross-sectional study, researchers tested 20 girls in each of four grades (sixth, eighth, tenth, and twelfth) on ten different tasks that required one or more of what Piaget called formal operational skills (Martorano, 1977). Indeed,

many of the tasks the researchers used were those Piaget himself had devised. Results of performance on two of these tasks are graphed in Figure 11.3 on page 326. The pendulum problem is the one described earlier in this section; the balance problem requires a youngster to predict whether two different weights, hung at varying distances on each side of a scale, will balance—a task similar to the balance scale problem Siegler used (recall Figure 9.4). To solve this problem using formal operations, the teenager must consider both weight and distance simultaneously. You can see from Figure 11.3 that older students generally did better, with the biggest improvement in scores between eighth and tenth grades (between ages 13 and 15).

Formal operational reasoning also seems to enable adolescents to understand figurative language, such as metaphors, to a greater degree. For example, one early study found that teenagers were much better than younger children at interpreting proverbs (Saltz, 1979). Statements such as "People who live in glass houses shouldn't throw stones" are usually interpreted literally by 6- to 11-year-olds. By 12 or 13, most adolescents can easily understand them, even though it isn't until much later that teenagers actually use such expressions in their everyday speech (Gibbs & Beitel, 1995). See the Research Report

Take another look at Figure 11.3: Only about 50–60% of twelfth-graders solved the two formal operations problems, and only 2 of the 20 twelfth-grade participants used formal operational logic on all ten problems. Further, recent studies have found rates of formal operational thinking in high school students that are very similar to those found in studies conducted in the 1960s, 1970s, and 1980s (Bradmetz, 1999). The consistency of such findings over several cohorts of adolescents suggests that Piaget's predictions about adolescents' thinking abilities were overly optimistic—in contrast to his overly pessimistic estimates of young children's abilities, which you read about in earlier chapters.

In adulthood, rates of formal operational thinking increase with education. Generally, the better educated the adult participants in a study of formal operational thinking, the greater the percentage who display this kind of reasoning (Mwamwenda, 1999).

Piaget's belief in the universality of formal operations may have resulted from his failure to appreciate the role of education in the development of advanced forms of thought. The current consensus among developmentalists is that all teenagers and adults without mental retardation have the capacity for formal operational thinking, but they actually acquire it in response to specific demands, such as those imposed by higher levels of education. Thus, people whose life situations or cultures do not require formal operational thinking do not develop it.

Advances in Information Processing

Learning Objective 11.13

What kinds of advances in information processing capabilities occur during adolescence?

Adolescents process information faster, use processing resources more efficiently, understand their own memory processes better, and have more knowledge than do elementary school children (Kail, 1990, 1997). As a result, their working memories function more efficiently and they outperform school-aged children even on such simple memory tasks as recognizing faces (Gathercole, Pickering, Ambridge, & Wearing, 2004; Itier & Taylor, 2004). Moreover, they are much better at using strategies to help themselves remember things and can more easily understand and remember complex information, such as that presented in a textbook.

Metacognition, Metamemory, and Strategy Use By age 14 or 15, the metacognitive and metamemory skills of adolescents far exceed those of younger children. For example, in one classic study, 10- and 14-year-olds were instructed to do a particular activity for exactly 30 minutes (Ceci & Bronfenbrenner, 1985). Experimenters provided them with a clock and instructed them to use it to determine when they should stop. Few of the 10-year-olds periodically checked the time to see if 30 minutes had elapsed, but most of the 14-year-olds did. As a result, less than half of the younger participants succeeded in stopping on time, but more than three-quarters of the teenagers did so.

Another early study of metamemory involved offering fifth-graders, eighth-graders, and college students the opportunity to earn money for remembering words (Cuvo, 1974). Researchers designated the words to be recalled as being worth either 1 cent or 10 cents. Fifth-graders rehearsed 1-cent and 10-cent words equally. In contrast, eighth-graders and college students put more effort into rehearsing the 10-cent words. At the end of the rehearsal period, fifth-graders recalled equal numbers of 1- and 10-cent words, while older participants remembered more 10-cent words. Further, college students outperformed eighth-graders in both rehearsal and recall. This finding suggests that the capacity to apply memory strategies selectively, based on the characteristics of a memory task, appears early in the teenaged years and continues to improve throughout adolescence.

Training studies, in which children and adolescents are taught to use a particular memory strategy, also suggest that metacognitive abilities enable teenagers to benefit more from training than younger children do. For example, researchers taught elementary school students and high school students a strategy for memorizing the manufacturing products associated with different cities (for example, Detroit—automobiles) (Pressley & Dennis-Rounds, 1980). Once participants had learned the strategy and were convinced of its effectiveness, researchers presented them with a similar task, memorizing Latin words and their English translations. Experimenters found that only the high school students made an effort to use the strategy they had just learned to accomplish the new memory task. The elementary school children used the new strategy only when researchers told them to and demonstrated how it could be applied to the new task. High school students' success seemed to be due to their superior ability to recognize the similarity between the two tasks—an aspect of metamemory.

Text Learning Differences between younger children's and adolescents' processing of and memory for text are even more dramatic. In a classic study of text processing, experimenters asked 10-, 13-, 15-, and 18-year-olds to read and summarize a 500-word passage. The researchers hypothesized that participants would use four rules in writing summaries (Brown & Day, 1983). First, they would delete trivial information. Second, their summaries would show categorical organization—that is, they would use terms such as "animals" rather than specific names of animals mentioned in the text. Third, the summaries would use topic

sentences from the text. Finally, the participants would invent topic sentences for paragraphs that didn't have them.

The results of the study suggested that participants of all ages used the first rule, because all of the summaries included more general than detailed or trivial information about the passage. However, the 10-year-olds and 13-year-olds used the other rules far less frequently than did the 15- and 18-year-olds. There were also interesting differences between the two older groups. Fifteen-year-olds used categories about as frequently as 18-year-olds did, but the oldest group used topic sentences far more effectively. This pattern of age differences suggests that the ability to summarize a text improves gradually during the second half of adolescence.

Studies of text outlining reveal a similar pattern (Drum, 1985). Both elementary and high school students know that an outline should include the main ideas of a passage along with supporting details. However, research suggests that 17-year-olds generate much more complete outlines than 14-year-olds do. Moreover, 11-year-olds' outlines usually include only a few of the main ideas of a passage and provide little or no supporting details for those main ideas.

Critical Thinking

1. How could some of the cognitive advances that emerge during adolescence be used in an essay countering negative stereotypes of teenagers in the media?

Schooling

Do you remember your first day of secondary school? How many times did you get lost looking for a classroom? Did you carry all your books with you to avoid having to go to your locker between periods? Perhaps you forgot the combination to your locker. Such are the experiences of children who must transition from the relative simplicity of elementary school to the intimidating complexity of secondary school. Eventually, most students adjust to the new setting. Yet, as you will see, there are both benefits and costs that are associated with such transitions.

Learning Objective 11.14

How do changes in students' goals contribute to the transition to secondary school?

Transition to Secondary School

There are many places in the world, including some in North America, where children attend a lower school for 8 years before moving on to a high school for 4 years. Such an arrangement is known as an *8-4 system*. Because students typically show achievement declines after entering high school, educators have developed two models that include a transitional school—a junior high school, middle school, or intermediate school—between elementary and high school. The junior high system typically includes 6 years of elementary school followed by 3 years of junior high and 3 years of high school. The middle school model includes 5 years of elementary school, 3 years of middle school, and 4 years of high school.

Neither the junior high nor the middle school approach seems to have solved the transition problem. Students show losses in achievement and in self-esteem across both transition points in the 6-3-3 and 5-3-4 systems. Further, students in both of these systems show greater losses during the transition to high school than do those in 8-4 systems (Alspaugh, 1998; Anderman, 1998). Consequently, educators and developmentalists are currently searching for explanations and practical remedies.

Middle School One potential explanation for transition-related achievement declines associated with the transition to middle school is that students' academic goals change once they leave elementary school. Researchers classify such goals into two very broad categories: *task goals* and *ability goals*. **Task goals** are goals based on personal standards and a desire to become more competent at something. For example, a runner who wants to improve her time in the 100-meter dash has a task goal. An **ability goal** is one that defines success in competitive terms, being better than another person at something. For example, a runner who wants to be the fastest person on her team has an ability goal. Longitudinal research shows that most fifth-graders have task goals, but by the time they have been in

task goals goals based on a desire for self-improvement

ability goals goals based on a desire to be superior to others

sixth grade a few months, most children have shifted to ability goals (Anderman & Anderman, 1999; Anderman & Midgley, 1997).

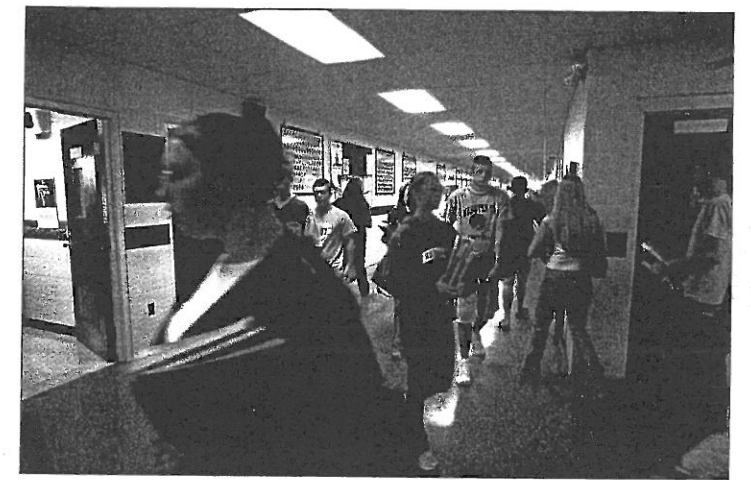
A student's goal influences his behavior in important ways. Task goals are associated with a greater sense of personal control and more positive attitudes about school (Anderman, 1999; Gutman, 2006). A student who takes a task-goal approach to school work tends to set increasingly higher standards for his performance and attributes success and failure to his own efforts. For example, a task goal-oriented student is likely to say he received an A in a class because he worked hard or because he wanted to improve his performance.

In contrast, students with ability goals adopt relative standards—that is, they view performance on a given academic task as good as long as it is better than someone else's. Consequently, such students are more strongly influenced by the group with which they identify than by internal standards that define good and bad academic performance. Ability goal-oriented students are also more likely than others to attribute success and failure to forces outside themselves. For example, such a student might say he got an A in a class because it was easy or because the teacher liked him. Moreover, such students are likely to have a negative view of school (Anderman, 1999).

Because middle schools emphasize ability grouping more than elementary schools, it is likely that many middle school students change their beliefs about their own abilities during these years (Anderman, Maehr, & Midgley, 1999; Roeser & Eccles, 1998). Thus, high-achieving elementary students who maintain their levels of achievement across the sixth-grade transition gain confidence in their abilities (Pajares & Graham, 1999). In contrast, the changes in self-concept experienced by high achievers who fail to meet expectations in middle school as well as average and low-achieving students do probably lead to self-esteem losses for many of them. Once an ability goal-oriented student adopts the belief that her academic ability is less than adequate, she is likely to stop putting effort into school work. In addition, such students are likely to use ineffective cognitive strategies when attempting to learn academic material (Young, 1997). Consequently, achievement suffers along with self-esteem.

Another factor that influences young adolescents' adjustment to secondary school is their perception of the school's climate. Researchers have found that many middle school students perceive their schools to be impersonal and unsupportive (Barber & Olsen, 2004). To address this perception, some schools provide students with an adult mentor, either a teacher or a volunteer from the community, to whom they are assigned for a transitional period or throughout the middle school years. In practice, the characteristics of mentoring programs vary widely (Galassi, Gullledge, & Cox, 1997). Some consist simply of giving sixth-graders the name of a teacher they can consult if they encounter any problems. At the other end of the spectrum, some mentoring programs assign each student to a teacher, who is supposed to monitor several students' daily assignment sheets, homework completion, grades, and even school supplies. The homeroom teacher also maintains communication with each child's parents regarding these factors. If a student isn't doing his math homework or doesn't have any pencils, it is the homeroom teacher's responsibility to tell his parents about the problem. The parents are then responsible for follow-up.

Research suggests that programs of this level of intensity are highly successful in improving middle school students' grades (Callahan, Rademacher, & Hildreth, 1998). Their success probably lies in the fact that the homeroom teacher functions very much like an elementary school teacher. This is significant because, despite cultural expectations to the contrary, a sixth-grader is developmentally a child, whether she is in an elementary school or a middle school. Consequently, it isn't surprising that a strategy that makes a middle school more like an elementary school—a school designed for children, not adolescents—is successful. In fact, some observers think that middle schools have failed to meet their goal of easing the transition to high school because they have simply duplicated high school



Some developmentalists argue that the transition to middle school or junior high school is difficult for many young adolescents because they are not developmentally ready for the secondary-school model. Children who attend middle and junior high schools where close relationships between teachers and students are encouraged, as they are in elementary school, show smaller declines in achievement and self-esteem.

organization and imposed it on students who are not developmentally ready, rather than providing them with a real transition.

One approach aimed at making middle schools truly transitional involves organizing students and teachers into teams. For example, in some schools, sixth, seventh, and eighth grades are physically separated in different wings of the school building. In such schools, each grade is a sort of school-within-a-school. Teachers in each grade-level team work together to balance the demands of different subject-area classes, assess problems of individual students, and devise parent involvement strategies. Preliminary research suggests that the team approach helps to minimize the negative effects of the middle school transition. As a result, it has become the recommended approach of the National Middle School Association in the United States (NMSA, 2004).

High School Regardless of the type of school they attended previously, the early days of high school set a general pattern of success or failure for teenagers that continues into their adult years. For example, teenagers who fail one or more courses in the first year of high school are far less likely than their peers to graduate (Neild & Balfanz, 2006; Roderick & Camburn, 1999). It appears that minority students have a particularly difficult time recovering from early failure.

However, some psychologists emphasize the positive aspects of transition to high school, claiming that participation in activities that are usually offered only in high school allows students opportunities to develop psychological attributes that can't be acquired elsewhere. To demonstrate the point, a number of research studies had high school students use pagers to signal researchers whenever they were experiencing high levels of intrinsic motivation along with intense mental effort (Larson, 2000). The results showed that students experienced both states in elective classes and during extracurricular activities far more often than in academic classes (Larson, 2000). In other words, a student engaged in an art project or sports practice is more likely to experience this particular combination of states than one who is in a history class. Consequently, educators may be able to ease the transition to high school for many students by offering a wide variety of elective and extracurricular activities and encouraging students to participate.

Learning Objective 11.15

What gender and ethnic differences in science and math achievement have been found by researchers?

Gender, Ethnicity, and Achievement in Science and Math

Girls seem to be at particular risk for achievement losses after the transition to high school. For example, eighth-grade boys outscore girls in science achievement, and the gap widens substantially by the time adolescents reach tenth grade (Burkham, Lee, & Smerdon, 1997). Moreover, research suggests that the gender gap is widest among the most intellectually talented students. Nevertheless, girls possess characteristics that educators can build upon to improve their achievement in science classes. For one thing, associating with same-sex peers who are interested in and perform well in science classes influences girls' achievement in this domain (Riegle-Crumb, Farkas, & Muller, 2006). Thus, offering girls the opportunity to participate in science clubs and *learning communities*, small groups of students who take courses together, may be an effective means of increasing their science achievement (Reid & Roberts, 2006). Furthermore, girls' choices in course-taking during middle school are more influenced by parental encouragement than are those of boys (Simpkins, Davis-Kean, & Eccles, 2006). Thus, parental involvement may be the key to enhancing middle-school girls' interest in science and motivating them to take more advanced science courses in high school.

Clearly, cultural attitudes also influence girls' science achievement. For example, girls' and their parents' perceptions of science as a suitable career for females strongly predict girls' success in science courses (Jacobs, Finken, Griffin, & Wright, 1998). Even girls who are very high achievers in high school science have less confidence in their ability to succeed in college science courses and are, thus, less likely to pursue science majors in college (Catsambis, 1995; Guzzetti & Williams, 1996).

The gender gap in mathematics achievement widens in high school as well, although sex differences are smaller today than they were in the 1960s (Hyde, Fennema, & Lamon, 1990). Research suggests that variations in boys' and girls' approaches to problem-solving may be responsible for sex differences in high school. Boys seem to be better at identifying effective strategies for solving the types of problems found on standardized math tests (Gallagher et al., 2000). However, developmentalists still don't know how boys acquire this advantage.

Like their scientifically talented peers, mathematically gifted high school girls have considerably less confidence in their abilities than their male counterparts do, even though the girls typically get better grades (Guzzetti & Williams, 1996; Marsh & Yeung, 1998). Research demonstrates that it is girls' beliefs about their abilities that shape their interest in taking higher-level high school and college math courses (Simpkins, Davis-Kean, & Eccles, 2006). Consequently, even though girls get better grades in math than boys do, they are still less likely to take advanced courses such as calculus or to choose careers in math (Davenport et al., 1998). However, as we noted with regard to science, girls whose same-sex friends are interested in math have more confidence in their math ability and are more open to taking advanced coursework in mathematics. Studies have shown that enrolling mathematically talented middle-school girls in single-sex, math-focused extracurricular activities increases their interest in the subject and their math-related confidence (Reid & Roberts, 2006).

As striking as the gender differences in math are, they pale in comparison to ethnic variations (Davenport et al., 1998). For example, by the last year of high school, only a third of African American and Hispanic American students have completed 2 years of algebra. In contrast, slightly more than half of White students and two-thirds of Asian American students have taken 2 years of algebra. Further, Asian American high school students earn twice as many credits in advanced courses as White students, and three to four times as many as African American and Hispanic American students.

One reason for the ethnic differences is that Asian American and White students are more likely to enter ninth grade with the skills they need to take their first algebra class. More than half of African American and Hispanic American teens are required to take remedial courses before beginning algebra, compared to about one-third of Asian American and White students (Davenport et al., 1998). Observers point out that about the same proportion of high school students across all ethnicities expect to go to college. However, it appears that Asian American and White students are much more likely to enter high school prepared to pursue college-preparatory courses (Thompson & Joshua-Shearer, 2002). Many researchers conclude that rigorous transitional classes in eighth and ninth grade might enable greater numbers of African American and Hispanic American students to complete college-preparatory math classes in high school (Gamoran, Porter, Smithson, & White, 1997).

Evidence for this position is drawn from studies involving mathematically talented students. There are large ethnic differences in high school course choices among highly able students—those who score in the top 25% of standardized math achievement tests. One study found that 100% of Asian American and 88% of White high school students scoring at this level were enrolled in advanced mathematics courses. In contrast, only 40% of mathematically talented African American and Hispanic American students were enrolled in such classes (Education Trust, 1996). It may be that high school counselors more often encourage Asian American and White students to take advanced math classes (Davenport, 1992).



Family interactive style predicts academic achievement in high school. Adolescents whose parents display authoritative parenting are more likely than those with authoritarian or permissive parents to achieve academic success in high school.

Dropping Out of High School

Dropping out of high school, like academic success, results from a complex interaction of academic and social variables (Garnier, Stein, & Jacobs, 1997). The proportion of U.S. students who drop out has steadily declined over the past few

Learning Objective 11.16

What variables predict the likelihood of dropping out of high school?

decades. Almost 90% of high school students in the United States receive a diploma (FIFCFS, 2000). Hispanic Americans have the highest drop-out rate at 24%, compared with 12% for African Americans and 7% for Whites (NCES, 2006).

Despite ethnic differences in drop-out rates, social class is a better predictor of school completion than is ethnicity. Children growing up in low-income families are considerably more likely to drop out of high school than are those from more economically advantaged families. For instance, in 2004, the drop-out rate for students whose families were in the low-income quartile in the United States was 18%, while that of students whose household income placed them in the top quartile was only 3% (NCES, 2006). Because minority teenagers in the United States are so much more likely to come from poor families they are also more likely to drop out of school (see No Easy Answers).

It is important to remember, however, that the majority of students across all ethnic and income groups stay in school. Those who don't, again regardless of group, share several risk factors. Longitudinal studies show that students who have a history of academic failure, a pattern of aggressive behavior, and poor decisions about risky behavior are most likely to drop out (Cairns & Cairns, 1994; Farmer et al., 2003; Garnier et al., 1997; Jimerson, 1999). With respect to risky behavior, decisions about sexual intercourse seem to be especially critical. For girls, giving birth and getting married are strongly linked to dropping out. Another risky behavior, adolescent drug use, is also a strong predictor of dropping out (Garnier et al., 1997). In fact, alcohol and drug use better predict a high school student's grades than do the student's grades in elementary or middle school. Consequently, decisions about such risky behaviors seem to be one factor that can cause a teen to deviate from a previously positive developmental pathway.

Peer influence may also be a factor in dropping out. Teens who quit school are likely to have friends who have dropped out or who are contemplating leaving school (Ellenbogen & Chamberland, 1997). Family variables are also linked to dropping out. For example, children whose families move a lot when they are in elementary or middle school are at increased risk for dropping out of high school (Worrell, 1997).

NO EASY ANSWERS

Reaching the High School Drop-Out

One of the greatest challenges facing educators is how to motivate teenagers who have dropped out of high school to return. To address the problem, educators have developed programs for teenagers who have left school. Most such programs seek to improve participants' self-esteem and to enhance their belief in their ability to fashion a productive future for themselves (Gonzales, Dumka, Deardorff, Carter, & McCray, 2004; Romi & Kohan, 2004). One recent educational innovation, the *charter school*, seems to be especially promising with regard to meeting the educational needs of drop-outs. These schools are funded either by states or by local school districts, based on the number of students they attract. Recent surveys of charter schools reveal that about 5% are aimed at drop-outs (Consoletti & Allen, 2007).

YouthBuild/Boston is a good example. Part of a national network of programs, YouthBuild/Boston offers low-income dropouts an opportunity to achieve three goals. First, students learn marketable construction-related job

skills such as carpentry, safety management, and computer-aided drafting. Second, they work toward either a GED or a high school diploma. Third, students work on construction projects that help provide poor families in their neighborhoods with affordable housing.

The 18- to 24-year-olds who attend YouthBuild/Boston spend half their time in academic classes and the other half working at construction sites. Each student has an individualized academic plan, and about a third plan to go on to college. To address students' motivational needs, the program includes counseling, help with goal-setting, and leadership skill development. Students also get help with material needs such as child care and income assistance through a network of social service providers, to which they are referred by school counselors.

Programs such as YouthBuild/Boston attract large numbers of students and have good attendance rates (Massachusetts Department of Education, 2000). About 30% of enrollees

eventually obtain a GED or a high school diploma. Yet a high proportion of these charter school students drop out. (YouthBuild/Boston, 2000). Presumably, the same factors that led these youths to drop out of school in the first place continue to be problematic. For this reason, charter schools are continuing to strive to modify their programs to foster higher retention and graduation rates.

Take a Stand

Decide which of these two statements you most agree with and think about how you would defend your position:

1. Since a large proportion of students drop out of them, charter schools for high school drop-outs appear to be a waste of taxpayers' money.
2. The public should support charter schools, because they may save money in the long run by preventing high school drop-outs from ending up on the welfare rolls.

One group of researchers has explored the possibility that, by taking into consideration several relevant factors, a general profile of high school students who are potential drop-outs can be identified. Their research has led to identification of the type of high school student who is likely to drop out: one who is quiet, disengaged, low-achieving, and poorly adjusted (Janosz, Le Blanc, Boulerice, & Tremblay, 2000). Many such students display a pattern of chronic class-cutting prior to dropping out (Fallis & Opatow, 2003). Thus, students who exhibit this pattern may be targeted for drop-out prevention programs.

Whatever its cause, dropping out of high school is associated with a number of long-term consequences. For instance, unemployment is higher among adults who dropped out of high school than among those who graduated, and drop-outs who do manage to find jobs earn lower wages than peers who graduate (Crystal, Shae, & Krishnaswami, 1992). Adults who dropped out of high school are also more likely to experience depression (Hagan, 1997). Furthermore, research suggests that staying in school may be an important protective factor for boys who have poor self-regulation skills. When boys who are poor self-regulators stay in school, they appear to be less likely than poor self-regulators who drop out to become involved in criminal activity in early adulthood (Henry et al., 1999).

Critical Thinking

1. What kind of mentoring programs would you propose for helping children transition to secondary school, increasing math and science achievement among girls and minorities, and preventing high school students from dropping out?

SUMMARY

Physical Changes

Learning Objective 11.1 How do the brains and other body systems of adolescents differ from those of younger children?

- The brain continues to develop in adolescence. There are two major brain growth spurts: the first between ages 13 and 15 and the second between ages 17 and 19. Puberty is accompanied by a rapid growth spurt in height and an increase in muscle mass and in fat. Boys add more muscle, and girls more fat.

Learning Objective 11.2 What are the major milestones of puberty?

- Puberty is triggered by a complex set of hormonal changes, beginning at about age 7 or 8. Very large increases in gonadotrophic hormones are central to the process. In girls, mature sexuality is achieved as early as 12 or 13. Sexual maturity is achieved later in boys, with the growth spurt occurring a year or more after the start of genital changes.

Learning Objective 11.3 What are the consequences of early, "on time," and late puberty for boys and girls?

- Variations in the rate of pubertal development have some psychological effects. In general, children whose physical development occurs markedly earlier or later than they expect or desire show more negative effects than do those whose development is "on time."

Adolescent Sexuality

Learning Objective 11.4 What are the patterns of adolescent sexual behavior in the United States?

- Sexual activity among teenagers has increased in recent decades in the United States. Roughly half of all U.S. teens have had sexual intercourse by the time they reach their last year of high school.

Learning Objective 11.5 Which teenaged girls are most likely to get pregnant?

- Long-term consequences for adolescent girls who bear children are generally negative, although a minority of such girls are able to overcome the disadvantages.

Learning Objective 11.6 What are some of the causes that have been proposed to explain homosexuality?

- Hormonal, genetic, and environmental factors have been proposed to explain homosexuality. The process of realizing one's sexual orientation is a gradual one that often isn't completed until early adulthood. Transgendered teens are those whose psychological gender differs from their biological sex. Gay, lesbian, bisexual, and transgendered adolescents must cope with peer rejection and parental anger; they have higher rates of depression and other emotional difficulties as a result.

Adolescent Health

Learning Objective 11.7 How does sensation-seeking affect risky behavior in adolescents?

- Adolescents have fewer acute illnesses than younger children but, because of their heightened level of sensation-seeking, more injuries. In general, they show higher rates of various kinds of risky behavior, including unprotected sex, drug use, and fast driving.

Learning Objective 11.8 What patterns of drug, alcohol, and tobacco use have been found among adolescents in the United States?

- Alcohol and drug use among U.S. teenagers, after declining for several decades, is now on the rise. Those most likely to use or abuse drugs are those who also show other forms of deviant or problem behavior, including poor school achievement.

Learning Objective 11.9 What are the characteristics and causes of eating disorders?

- Eating disorders such as bulimia nervosa and anorexia nervosa are more common among teenaged girls than among boys.

Learning Objective 11.10 Which adolescents are at greatest risk of depression and suicide?

- Depression and suicide are mental health problems that are common during adolescence. Both are more common among girls, although boys are more likely to succeed with a suicide attempt.

Changes in Thinking and Memory

Learning Objective 11.11 What are the characteristics of thought in Piaget's formal operational stage?

- Piaget proposed a fourth stage of cognitive development in adolescence. The formal operational stage is characterized by the ability to apply basic cognitive operations to ideas and possibilities, in addition to actual objects.

Learning Objective 11.12 What are some major research findings regarding the formal operational stage?

- Researchers have found clear evidence of such advanced forms of thinking in at least some adolescents. But formal operational thinking is not universal, nor is it consistently used by those who are able to do it.

Learning Objective 11.13 What kinds of advances in information processing capabilities occur during adolescence?

- Memory function improves in adolescence as teens become more proficient in metacognition, metamemory, and strategy use.

Schooling

Learning Objective 11.14 How do changes in students' goals contribute to the transition to secondary school?

- The transition to middle school may be accompanied by changes in children's goal orientation that result in declines in achievement and self-esteem. The high school transition offers many teens more opportunities to pursue special interests and extracurricular activities.

Learning Objective 11.15 What gender and ethnic differences in science and math achievement have been found by researchers?

- Female, African American, and Hispanic American high school students score lower on science and math achievement tests and choose to take courses in these disciplines less often than do White and Asian American males. Girls may view success in science and math as unacceptable for women. African American and Hispanic American students may not be getting the preparation they need in middle school for advanced high school math courses.

Learning Objective 11.16 What variables predict the likelihood of dropping out of high school?

- Those who succeed academically in high school are typically from authoritative families. Those who drop out are more likely to be from low-income families or to be doing poorly in school.

KEY TERMS

ability goals (p. 325)

adolescence (p. 307)

anorexia nervosa (p. 321)

bulimia nervosa (p. 321)

formal operational stage (p. 324)

hypothetico-deductive reasoning (p. 324)

imaginary audience (p. 326)

menarche (p. 310)

personal fable (p. 325)

pituitary gland (p. 309)

primary sex characteristics (p. 310)

puberty (p. 309)

secondary sex characteristics (p. 310)

secular trend (p. 311)

systematic problem-solving (p. 324)

task goals (p. 328)

transgendered (p. 317)

TEST YOURSELF

Physical Changes

11.1 Which of the following brain changes is typical during adolescence?

- The brain stem becomes thicker.
- The corpus callosum becomes thicker.
- The hypothalamus becomes larger.
- The amygdala shrinks.

11.2 During adolescence, the average percentage of body weight made up of fat

- increases for girls and decreases for boys.
- decreases for both boys and girls.
- decreases for girls and increases for boys.
- increases for both boys and girls.

11.3 Which of the following endocrine glands is most important in the regulation of the hormonal processes of puberty?

- the ovaries
- the testes
- thyroid
- pituitary gland

11.4 Of the following hormones, which one is responsible for the prenatal formation of genitalia and triggers development of primary and secondary sex characteristics in males?

- estrogen
- testosterone
- thyroxine
- gonadotrophic hormone

11.5 Which of the following events could be attributed to the secular trend?

- Girls begin to date earlier than they did at the beginning of the 20th century.
- More sexualized images are available in programming for television, films, and video games.
- Cultural values lead people to prefer a thin, angular body type.
- The age of menarche has declined.

11.6 Among boys, the peak of the growth spurt occurs

- at approximately the same time viable sperm are produced.
- after growth of a beard and lowering of the voice.
- to signal that puberty has begun.
- after growth of the genitals and of pubic hair.

Adolescent Sexuality

11.7 Which of the following statements about the sexual behavior of teens is true?

- The proportion of sexually experienced teens decreases across grades 9 to 12.
- Sexual experience is consistent across racial and ethnic groups.
- Boys are more sexually active than girls.
- Teens consistently use effective contraceptive methods.

11.8 Which of the following adolescents are most likely to be sexually active?

- teens who are well-monitored by adults
- teens who live in poor neighborhoods
- girls who have their first date at a relatively late age
- boys who do not use alcohol

11.9 Which of the following is most likely to describe a teenaged girl who is pregnant?

- She is 15 to 17 years old.
- She has left high school.
- She is married.
- She is White.

11.10 Which of the following is associated with reduced likelihood that a teenaged girl will become pregnant?

- Her mother is opposed to contraception and refuses to discuss it with her.
- She has a number of different sexual partners rather than one regular sexual partner.
- Her mother was sexually active and pregnant at a young age.
- She does well in school and desires to go to college.

11.11 According to the crisis intervention model for understanding and helping teens in crisis, a teenager who has given up hope or who is in denial about a problem is in the _____ stage.

- initial
- escalation
- redefinition
- dysfunctional

11.12 The concordance rate for homosexuality in identical twins suggests that homosexuality

- is fully determined by genes.
- is still completely unexplainable.
- has an environmental component.
- is on the rise.

11.13 Which statement best describes the process through which most people identify with a homosexual orientation?

- They know it as soon as the hormones of puberty begin to flow.
- Most people realize it gradually across the adolescent and early adulthood years.
- Peers inform them that they are probably gay or lesbian.
- There is no consistent pattern.

11.14 Most transgendered teens

- are attracted to the opposite sex.
- were exposed to high levels of male sex hormones before birth.
- are warmly accepted by their peers.
- have been interested in cross-gender activities since early childhood.

Adolescent Health

11.15 A desire to experience increased levels of arousal, such as those that accompany fast driving or the "highs" associated with drugs, is called

- an extracurricular activity.
- socializing.
- independence.
- sensation-seeking.

- 11.16** Of the following influences on teenagers' decisions about smoking, which seems to have the least impact?
- factual knowledge about health risks
 - peer influences
 - parental influence
 - family rules about substance use
- 11.17** Which of the following best characterizes the eating disorder bulimia nervosa?
- disturbed body image, extreme dieting, and excessive weight loss
 - an aversive, phobic reaction to food that triggers vomiting
 - obsessive and excessive eating that results in a weight gain in excess of 25% of base body weight
 - intense concern about weight combined with cycles of binge eating and purging
- 11.18** Which of the following health conditions is *not* an effect of anorexia nervosa?
- sleep disturbance
 - prolonged menstrual flow
 - obsessive exercising
 - cardiovascular problems
- 11.19** Which of the following has *not* been proposed as a possible cause for eating disorders?
- fear of growing up
 - biological causes, such as a form of brain dysfunction
 - history of abuse or abandonment
 - mental illness
- 11.20** Which of the following is *not* an accurate statement about depression among adolescents?
- At any given time, 5–8% of adolescents are experiencing an enduring depression.
 - Teenaged boys are twice as likely as girls to report having experienced depression.
 - Depression can hinder academic achievement because it interferes with memory.
 - Depression may contribute to suicide by adolescents.

Changes in Thinking and Memory

- 11.21** A teenager who can derive conclusions from hypothetical premises, such as what his mother might say if she finds out that he failed a French test, is engaged in
- hypothetico-deductive reasoning.
 - information processing.
 - metacognition.
 - logico-conditional thinking.
- 11.22** A teenager who knows the risks of driving under the influence but still insists on doing it because she would never have an accident is engaging in
- an imaginary audience.
 - a personal fable.
 - projection.
 - naïve idealism.
- 11.23** Which of the following is the best example of a child who has task goals for her athletic activities?
- Mia hopes to become the best goalie in her high school soccer league.
 - Tovah wants to improve her personal best time in the 100-meter freestyle swimming event.
 - Sharinda works hard at free-throw practice because she wants to have the best free-throw percentage on her basketball team.
 - Robin hopes that her fitness training program will help her become the best tennis player her school has ever had.

Schooling

- 11.24** Which of the following systems seems to provide the best transition to high school for students?
- 6-3-3 system
 - 5-3-4 system
 - 8-4 system
 - 6-2-4 system
- 11.25** Which of the following statements is true about the transition from elementary school to high school?
- Teenagers who fail one or more courses in the first year of high school are far less likely than their peers to graduate.
 - Mentoring programs are unsuccessful in improving middle school students' grades.
 - The grade-level team approach is useful only in elementary school.
 - An emphasis on ability grouping in middle school is essential in assisting young teenagers in making the transition to high school.
- 11.26** Which of the following statements about gender, ethnicity, and achievement in science and math is true?
- Gender differences in achievement in math are greater than ethnic differences.
 - Ethnic differences in achievement in math are greater than gender differences.
 - Girls excel in math but not science.
 - Intellectually talented girls are encouraged to take courses in sciences such as chemistry and physics rather than zoology or botany.
- 11.27** Which of the following factors has *not* been found to be related to dropping out of high school?
- low socioeconomic status
 - having a peer group that does not value academic achievement
 - drug use
 - authoritarian parenting

PEARSON

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- involve both parents and adolescents, rather than just the adolescents themselves.
- report to public health agencies any suspicions they have about teens who may have a STD.

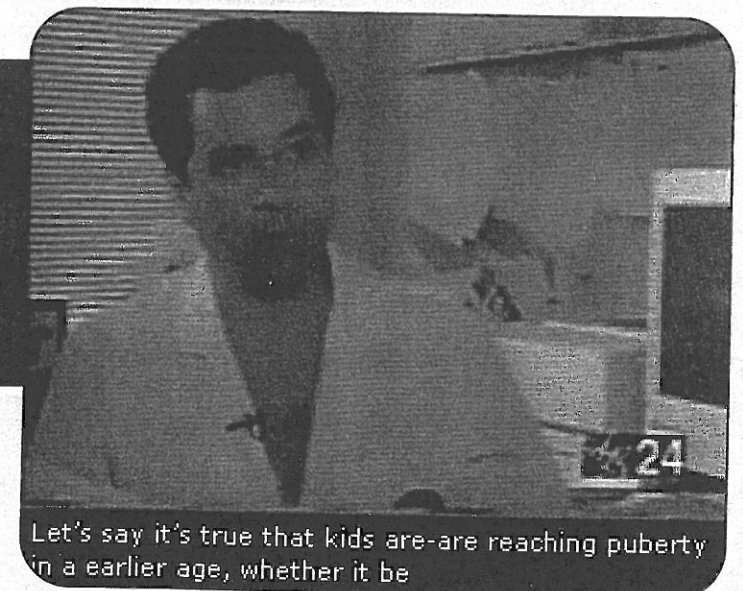
Watch: Secular Trend

Step 2

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Learning Objective 11.2

What are the major milestones of puberty?



Let's say it's true that kids are reaching puberty in a earlier age, whether it be