

Chapter 02

Puberty, Health, and Biological Foundations

- _____ is a period of rapid physical maturation involving hormonal and bodily change.
A. Menopause
B. Puberty
C. Menarche
D. Andrarche
- Which of the following statements about puberty is false?
A. Puberty cannot be distinguished from adolescence.
B. Puberty ends before adolescence.
C. Puberty is the most important marker for the beginning of adolescence.
D. Puberty is a period of rapid physical maturation.
- Which of the following is a determinant of puberty?
A. heredity
B. hormones
C. birth weight
D. All of these choices are correct
- Stacy is 12 years old. Stacy is probably
A. arguing with her teachers about homework.
B. resisting parental rules.
C. going through puberty.
D. overweight or obese.
- Puberty takes place between ages _____ for most youth.
A. 8 and 15
B. 9 and 16
C. 10 and 17
D. 11 and 18
- Chemical substances that are secreted by the endocrine glands and carried by the bloodstream are known as
A. hormones.
B. endorphins.
C. cytokines.
D. enkephalins
- _____ are the main class of sex hormones in males; and _____ are the main class of female sex hormones.
A. Testosterones; estrogens
B. Androgens; estrogens
C. Estrogens; androgens
D. Androgens; progesterones
- The main androgen that plays an important role in male pubertal development is
A. cortisol.
B. leptin.
C. testosterone.
D. progesterone.
- The main estrogen that plays an important role in female pubertal development is
A. cortisol.
B. estradiol.
C. endorphin.
D. melatonin.
- Robert, age 14, is experiencing a rise in testosterone. Which of the following changes would Robert NOT expect to experience?
A. increase in height
B. voice changes
C. decrease in sexual desire
D. development of external genitals
- Sally, age 15, is experiencing a rise in estradiol. Which of the following changes would Sally expect to experience?
A. voice changes
B. uterine development
C. decrease in sexual desire
D. weight loss
- Which of the following structures is involved in puberty?
A. gonads
B. pineal gland
C. parathyroid gland

13. One of the two hormones secreted by the pituitary which regulates the levels of sex hormones is FSH (follicle-stimulating hormone); the other is
- insulin.
 - prolactin.
 - oxytocin.
 - D.** luteinizing hormone.
14. Which of the following hormones is NOT involved in the timing of puberty?
- FSH
 - LH
 - C.** BPH
 - GnRH
15. When the temperature in a room drops too low, the thermostat senses it and the furnace turns on. Once the temperature rises to a predetermined level, the furnace turns off. This is analogous to the way sex hormone levels operate on a
- positive feedback system.
 - B.** negative feedback system.
 - neutral feedback system.
 - None of these choices are correct.
16. Doreen has a tumor on her adrenal gland. Doreen is likely to experience problems with her
- hearing.
 - vision.
 - C.** growth.
 - balance.
17. Which of the following statements about adrenarche is TRUE?
- It involves changes in the thyroid gland.
 - B.** These hormonal changes occur between the ages of 6 and 9 in girls.
 - This phenomenon is well researched and well understood.
 - These changes begin earlier in boys than in girls.
18. Gonadarche is the period most people think of as
- adolescence.
 - menopause.
 - C.** puberty.
 - None of these choices are correct.
19. Judy and Justin are twins. Which of the following statements about their experiences with gonadarche is most likely to be TRUE?
- A.** Judy will begin gonadarche one to two years before her brother.
 - Judy and Justin will begin gonadarche at about the same time.
 - Justin will begin gonadarche about two years before his sister.
 - Their experiences of gonadarche will depend on whether or not they play sports.
20. The first menstrual period, which occurs in mid to late gonadarche, is known as
- dysmenorrhea.
 - spermarche.
 - C.** menarche.
 - dysphoria.
21. The first ejaculation of semen, which occurs in early to mid gonadarche, is known as
- spermatogenesis.
 - B.** spermarche.
 - andropause.
 - menarche.
22. Research shows a relationship between _____ and the onset of puberty.
- higher body weight
 - leptin
 - percentage of body fat
 - D.** All of these choices are correct
23. Which of the following is the BEST statement regarding the role of leptin in the onset of puberty?
- Leptin brings about the onset of puberty.
 - Leptin delays the onset of puberty.
 - Leptin controls the amount of kisspeptins which then brings about the onset of puberty.
 - D.** Leptin could either bring about the onset of puberty or could be the result of changes that occur during puberty.
24. Meaghan weighed 3 pounds, 2 ounces at birth but gained weight rapidly. She weighed 21 pounds at the end of her first year of life. Research indicates that Meaghan will probably experience menarche
- at the same time as her normal birth weight peers.
 - approximately one year later than her normal birth weight peers.
 - C.** five to ten months earlier than her normal birth weight peers.
 - approximately two years earlier than her normal birth weight peers.

25. Which of the following early experiences has been linked to early pubertal onset?

- A.** child maltreatment
- B. high socioeconomic status
- C. growing up in a nuclear family
- D. family stability

26. Early menarche has been linked to

- A.** a father's departure from the home.
- B. a mother's departure from the home.
- C. strong religious affiliation.
- D. lack of religious affiliation.

27. Lucy has grown up in a home with her biological mother and father and enjoys a middle socioeconomic class lifestyle. Joan has grown up with her adoptive parents and, although her family is fairly wealthy, her father has struggled with alcoholism for years. Kathy's parents have a poor relationship, low socioeconomic status, and her father frequently leaves the home for weeks at a time. Which of these girls will probably experience puberty FIRST?

- A. Joan
- B. Lucy
- C.** Kathy
- D. They will probably all experience menarche at approximately the same time.

28. Which of the following statements regarding the growth spurt is TRUE?

- A. The beginning of the growth spurt for boys is age 12.
- B.** The beginning of the growth spurt for girls is age 9.
- C. Height in elementary school is not a good predictor of height in adolescence.
- D. Better nutrition has very little impact on height.

29. At the peak of her weight gain in adolescence, Maud, age 12, gained 18 pounds in one year. Research on weight gain during adolescence would indicate that Maud's weight gain is

- A. excessive; she should have gained no more than 10 pounds.
- B. a little less than normal; she should have gained 20-23 pounds.
- C.** average.
- D. significantly below average; she should have gained approximately 25 pounds.

30. Which of the following statements about weight and skeletal changes in adolescence is NOT true?

- A. Boys' peak weight gain happens at approximately the same time as peak height gain.
- B. Girls' peak weight gain happens about six months after their peak height gain.
- C. Girls' increase in hip width is associated with an increase in estrogen.
- D.** Boys' increase in shoulder width is associated with an increase in cortisol.

31. Which of the following male pubertal characteristics develops LAST?

- A. detectable voice changes
- B.** growth of facial hair
- C. increase in penis size
- D. appearance of straight pubic hair

32. Three of the most noticeable signs of sexual maturation in boys are growth of facial hair, penis elongation, and

- A. increased shoulder width.
- B. first ejaculation.
- C. appearance of kinky pubic hair.
- D.** testes development.

33. Which of the following female characteristics is an EARLY sign of pubertal development?

- A. menarche
- B.** breast enlargement
- C. axillary (armpit) hair
- D. slight lowering of the voice

34. Claudia, age 13, has irregular menstrual cycles. Her pediatrician tells her mother that Claudia is probably not ovulating at every cycle. What should Claudia and her mother know about this information?

- A.** This is expected in early development.
- B. Claudia is atypical for her age; she should have regular cycles.
- C. Claudia is atypical for her age; she should be ovulating at each cycle even if her cycles are irregular.
- D. Claudia should see a specialist in adolescent physical development to see why she has these problems.

35. The term used to describe the very early onset and rapid progression of puberty is

- A. accelerated puberty.
- B.** precocious puberty.
- C. premature puberty.
- D. fast-track puberty.

36. Which of the following statements regarding precocious puberty is NOT true?
- A. It occurs ten times more often in girls than in boys.
 - B. It is diagnosed when pubertal onset occurs before age eight in girls.
 - C.** It is diagnosed when pubertal onset occurs before age eleven in boys.
 - D. The treatment is medically suppressing gonadotropic secretions.
37. Allison, age 7, has begun to show signs of breast development and pubic hair. Allison could be diagnosed with
- A. nothing; her early pubertal development is within normal range.
 - B.** precocious puberty.
 - C. fast-track puberty.
 - D. a psychiatric illness that is affecting her body.
38. The term "secular trend" refers to
- A.** patterns of pubertal onset over historical times.
 - B. patterns of adolescents moving away from religion and moving toward a secular world.
 - C. the tendency of pubertal change to occur slightly later than in previous generations.
 - D. the tendency of African-American boys and girls to mature later than their European-American and Asian peers.
39. Several times a day, Leilani, age 13, flips open her mirror and scans her face for any blemish that might have appeared. From what you have learned about body image, Leilani's behavior is
- A. indicative of a narcissistic personality disorder.
 - B.** normal for her age.
 - C. indicative of a body dysmorphic disorder.
 - D. a clear sign that she is unhappy with her body image.
40. Recent research on body image in adolescence has found all of the following EXCEPT
- A. adolescent boys become more satisfied with their bodies as they move through adolescence.
 - B.** overall health is not affected by body image.
 - C. boys who rated their appearance more positively were more likely to engage in risky sexual behavior.
 - D. lack of parental support is related to body image issues in adolescents.
41. Ryan, age 17, has a tattoo of an eagle on his bicep. If he is like the majority of students with tattoos, Ryan is
- A. a rebellious young man.
 - B.** a good student.
 - C. an only child.
 - D. creative and artistic.
42. In adolescent girls, increased levels of estrogen are linked to
- A. aggression.
 - B. eating disorders.
 - C. obsessive-compulsive disorder.
 - D.** depression.
43. Which statement about hormones and adolescent behavior is NOT TRUE?
- A. Higher levels of estrogen have been linked to depression in girls.
 - B.** Hormones and behavior interact together to produce behaviors.
 - C. Hormones are the primary explanation for mood swings and other erratic behaviors seen in teens.
 - D. Poor parent-child relationship has been linked with testosterone-linked risk-taking behaviors.
44. Research on the timing of puberty has indicated
- A.** Late maturing males had a more negative body image in early high school than early maturing males.
 - B. Early maturing females are less likely to have substance abuse issues and engage in sex at an early age.
 - C. Early maturing males are less likely to have successful peer relationships.
 - D. None of these choices are correct.
45. Which of the following factors can activate or suppress various aspects of the hormonal system?
- A. stress
 - B. sexual activity
 - C. depression
 - D.** All of these choices are correct
46. Which of the following statements regarding early-maturing boys is TRUE?
- A.** It is an advantage to be an early-maturing boy.
 - B. Early-maturing boys were more likely to smoke when they were in middle adulthood.
 - C. Early-maturing boys were more likely to drink alcohol when they were in middle adulthood.
 - D. Early-maturing boys were less successful than late-maturing boys at middle adulthood.
47. Recent research on early-maturing girls has found that
- A. early-maturing girls are more likely than late maturing girls to have eating disorders.
 - B. early-maturing girls have more dating experience than do late maturing girls.
 - C. early-maturing girls are more likely than late maturing girls to be depressed.
 - D.** All of these choices are correct.

48. Caryn matured early as an adolescent; her friend Wendy was a late-maturing adolescent. Research shows that, as adults
- A.** Caryn is more likely to have a higher body mass index than Wendy.
 - B. Wendy is more likely to have a higher body mass index than Caryn.
 - C. Wendy is less likely than Caryn to have attained a higher education.
 - D. Caryn is more likely to have attained a higher occupational level than Wendy.
49. Which of the following statements about the effects of puberty is NOT true?
- A. Most adolescents do not experience adolescence as a time of stress and storm.
 - B.** Biological changes are the dominant influences on adolescence.
 - C. Cognitive and social changes shape adolescence.
 - D. Grade level in school influences maturation.
50. Despite the fact that the United States has become a health-conscious nation, many adolescents
- A. smoke.
 - B. lead sedentary lifestyles.
 - C. have poor diets.
 - D.** All of these choices are correct.
51. Unprotected sexual intercourse is considered a health-_____ behavior.
- A.** compromising
 - B. detracting
 - C. decreasing
 - D. neutral
52. Wearing seat belts and eating nutritious foods are considered health-_____ behaviors.
- A. engaging
 - B.** enhancing
 - C. neglecting
 - D. neutral
53. Which of the following has research found to be positively related to promoting adolescents' health-enhancing behavior?
- A.** secure attachment to parents.
 - B. presence of extended family in an adolescent's life.
 - C. regular participation in religious services.
 - D. having at least one sibling.
54. High risk-taking behavior in adolescents has been linked to
- A.** hanging out with peers in unstructured contexts.
 - B. living in a community that offers a range of activities for youth.
 - C. having good grades in school.
 - D. All of these choices are correct.
55. The part of the brain involved in reasoning, decision making, and self-control is the
- A. amygdala.
 - B. cerebellum.
 - C. temporal lobe.
 - D.** prefrontal cortex.
56. The part of the brain involved in emotions is the
- A. occipital lobe.
 - B. prefrontal cortex.
 - C.** amygdala.
 - D. pons.
57. Which of the following strategies has been proposed to help adolescents satisfy their need for risk taking without compromising their health?
- A. enforcing laws controlling the sale of alcohol
 - B. increasing parental monitoring and supervision
 - C. raising the driving age
 - D.** All of these choices are correct
58. Claire is a 14-year-old African-American girl. If Claire is like most African-American girls,
- A. she has more contact with health services than older teens.
 - B. she does not have her health care needs met.
 - C. she does not receive health care from a private physician.
 - D.** All of these choices are correct
59. Which of the following is NOT a barrier to better health care for adolescents?
- A. cost
 - B.** health-care providers' commitment to confidentiality
 - C. availability of health care services
 - D. reluctance of health care providers to discuss sensitive health issues with their patients

60. The three leading causes of death in the United States for adolescents and emerging adults are homicide, suicide, and
- congenital heart disease.
 - leukemia.
 - C.** accidents.
 - AIDS.
61. Shane, age 19, died in a motor vehicle accident in which he was the driver. Of the following conditions, which is the LEAST likely to have caused Shane's accident?
- A.** his inexperience as a driver
 - speeding
 - driving while under the influence of alcohol or drugs
 - tailgating
62. Which of the following statements is NOT true?
- African-American males are three times more likely to die of gunshot wounds than of natural causes.
 - Suicide is the third-leading cause of death in adolescents and emerging adults.
 - C.** Since 1950 the suicide rate in the United States has quadrupled.
 - The U.S. suicide rate has declined in recent years.
63. Kaylee, age 22, has a cup of coffee for breakfast, skips lunch on most days, and eats a huge dinner. She is slightly overweight but does not exercise. She admits to getting by with only a few hours of sleep on weeknights but insists that she makes up for this by "sleeping in" on the weekends. Kaylee's lifestyle is
- A.** fairly typical of someone in emerging adulthood.
 - atypical of emerging adults; most emerging adults eat in a more healthy manner.
 - atypical of emerging adults; most emerging adults are underweight due to stress.
 - atypical of emerging adults; most emerging adults are exercise conscious.
64. Which of the following statements regarding nutrition among adolescents is TRUE?
- Adolescents in the U.S. are decreasing their intake of fried foods.
 - B.** Adolescents in the U.S. are decreasing their intake of fruits and vegetables.
 - Eating disorders are decreasing slightly among U.S. adolescents.
 - Adolescents are eating more whole grains than a decade ago.
65. Christine's parents buy fresh fruits and vegetables and have them available for her and the rest of the family. In addition, her parents like these foods. According to recent research, Christine is
- A.** likely to eat fruits and vegetables.
 - not likely to eat fruits and vegetables.
 - more likely to be influenced by the food choices of her peers than her parents.
 - likely to choose a high-fat snack than to eat the available fruits and vegetables.
66. A special concern is the amount of _____ in the diets of American adolescents.
- dairy
 - proteins
 - carbohydrates
 - D.** fat
67. Todd is 10 years old and his brother, Jonah, is 16. If they are like most boys their ages
- A.** Todd gets more exercise than Jonah.
 - Both boys get the same amount of exercise, but they differ in the physical activities that they select.
 - Jonah gets more exercise than Todd.
 - Neither boy gets enough exercise.
68. Which of the following factors has been linked to higher physical activity levels for adolescents?
- being an older adolescent
 - B.** having parents who thought exercise was important
 - having parents who nag at adolescents to be more physically active
 - All of these choices are correct
69. Which of these adolescents is likely to exercise the MOST?
- Andrew, a 15-year-old white male living in the United States.
 - B.** Karla, a 14-year-old girl living in Germany.
 - Maria, a 15-year-old girl living in the United States.
70. All of the following are health benefits of exercise EXCEPT
- lower blood pressure.
 - B.** lower incidence of Type 1 diabetes.
 - lower incidence of Type 2 diabetes.
 - lower triglyceride levels.
71. Exercise in adolescents has been linked to
- improved self-image.
 - Better brain connectivity.
 - less depression.
 - D.** All of these choices are correct.

72. Three contextual factors that influence whether or not adolescents engage in regular exercise are influence of the family, use of TV/computers, and
- A.** influence of schools.
 - B. influence of cell phones and iPods.
 - C. influence of siblings.
 - D. None of these choices are correct.
73. Which of the following statements about adolescents and sports is TRUE?
- A. Girls are more likely to play on a sports team than boys.
 - B.** Adolescents who spend time in sports are less likely to take drugs than their counterparts who are not involved in sports.
 - C. Sports do not play a particularly important role in the lives of adolescents in the United States.
 - D. Participation in sports has very little impact on self-esteem.
74. Ray, age 16, plays hockey in the winter and baseball in the spring and summer. Compared to his peers who do not play sports, Ray is more likely to
- A. sustain an injury.
 - B. be self-centered.
 - C. have poorer grades.
 - D.** All of these choices are correct.
75. The female athlete triad involves a combination of weight loss, absence of menstrual periods, and
- A. arthritis.
 - B.** osteoporosis.
 - C. Type 2 diabetes.
 - D. All of these choices are correct.
76. Amanda is a star athlete on her high-school swimming team. Recently she has developed weight loss, amenorrhea, and osteoporosis. Amanda has the classic symptoms of
- A. bulimia nervosa.
 - B.** female athlete triad.
 - C. female athlete syndrome.
 - D. None of these choices are correct.
77. Research on sleep patterns in adolescence have found all of the following to be true EXCEPT
- A. older adolescents get less sleep than younger adolescents.
 - B.** optimal sleep in adolescents is approximately seven hours per night.
 - C. in general, adolescents are not getting enough sleep.
 - D. getting less than the needed amount of sleep can lead to higher levels of anxiety and depression.
78. Research has shown that, given the opportunity, adolescents will sleep about how many hours each night?
- A.** 9.5
 - B. 7
 - C. 11
 - D. 8
79. The sleep-related hormone secreted at night is
- A. glucagon.
 - B. thyroxin.
 - C.** melatonin.
 - D. insulin.
80. Which of the following has not been proposed as a cause of adolescent's sleep debt?
- A. Biological changes in the brain
 - B. Use of caffeinated beverages.
 - C. Increased screen time.
 - D.** Social pressures.
81. Starting school later for older adolescents has been shown to
- A. increase absenteeism, as adolescents tend to oversleep.
 - B.** improve test scores.
 - C. decrease participation in extracurricular activities.
 - D. increase discipline problems.
82. The evolutionary process that favors the individuals of the species that are best adapted to survive and reproduce is known as
- A. Darwinism.
 - B. naturalism.
 - C. selective attention.
 - D.** natural selection.

83. Dr. Dutch studies adaptation and reproductive patterns to explain human behavior. Dr. Dutch is most likely

- A.** an evolutionary psychologist.
- B. a comparative psychologist.
- C. a cognitive psychologist.
- D. a forensic psychologist.

84. Which of the following topics would be of interest to an evolutionary psychologist?

- A. fear responses
- B. mating patterns
- C. intelligence
- D.** All of these choices are correct

85. Albert Bandura has criticized the evolutionary perspective of psychology because it doesn't give enough emphasis to the role of

- A.** culture.
- B. biology.
- C. ethnic differences.
- D. parental attachment.

86. DNA, the complex molecule that contains genetic information, is carried on

- A. cilia.
- B.** chromosomes.
- C. mitochondria.
- D. mitosis segments.

87. All of the following is true of genes EXCEPT

- A. they direct cells to reproduce themselves.
- B. they direct cells to assemble proteins.
- C.** they are located on segments of DNA.
- D. they have their own specific functions.

88. The Human Genome Project recently revised its original estimate of the number of genes that human beings have. The new estimate is approximately

- A.** 21,500.
- B. 32,500.
- C. 40,500.
- D. 10,000.

89. Which of the following statements about the working of genes is NOT true?

- A.** Each gene programs one protein.
- B. Genes work together to specify our characteristics.
- C. Genes are influenced by their environment.
- D. Events inside and outside of the cell can excite or inhibit gene expression.

90. Brendan is 6 feet tall, and has red hair and green eyes. His cousin, Connor, is 5 feet, 6 inches tall, and has brown hair and brown eyes. Both boys are described as friendly and outgoing. These descriptions of genetic expression are known as their

- A. genotypes.
- B.** phenotypes.
- C. pheromones.
- D. latent maps.

91. A person's genetic heritage is called his or her

- A.** genotype.
- B. phenotype.
- C. genome.

92. Expression of a certain trait or characteristic is partly due to genetics and partly shaped by

- A. chance or luck.
- B.** life experiences.
- C. race.
- D. None of these choices are correct.

93. You meet a scientist who tells you that she studies the extent to which heredity and environment impact individual differences in human traits and development. This scientist works in the field of

- A. cognitive genetics.
- B. behavior intervention.
- C. gene therapy.
- D.** behavior genetics.

94. Kyle and Karen are twins. Because they are brother and sister, you know that they are

- A.** fraternal twins.
- B. identical twins.
- C. maternal twins.
- D. paternal twins.

95. You learn that your new friends, Connie and Crystal, are identical twins. You now know that they
- A. developed from two separate eggs and shared the womb at the same time.
 - B.** developed from a single fertilized egg which then split into two; from there two separate people developed.
 - C. are probably no more alike than nontwins.
 - D. are also known as dizygotic twins.
96. Twin studies have found that _____ twins are more alike than _____ twins.
- A.** monozygotic; dizygotic
 - B. dizygotic; monozygotic
 - C. fraternal; identical
 - D. paternal; maternal
97. Adoption studies seek to discover the role of _____ on behavior.
- A.** environment
 - B. impulse control
 - C. brain development
 - D. None of these choices are correct
98. Behavior geneticist Sandra Scarr identified different ways in which heredity and environment correlate. Which of the following is NOT a pattern she described?
- A.** reactive
 - B. niche-picking
 - C. active
 - D. evocative
99. Which of the following best exemplifies an evocative genotype-environment correlation?
- A. Musical parents buy a piano for their children.
 - B. A high-school student bound for an agricultural college signs up for courses in plant biology.
 - C. A nervous adolescent displays anxiety at school.
 - D.** Parents suggest music lessons for their musically talented children.
100. Ben and Alex, ages 12 and 14, live with their biological parents in a middle-class neighborhood. This is an example of:
- A.** shared environment experience.
 - B. nonshared environment experience.
 - C. shared genetic experience.
 - D. nonshared genetic experience.
101. The fact that siblings living in the same house, with the same parents can be very different from each other may be due to
- A. shared environment experience.
 - B.** nonshared environment experience.
 - C. shared genetic experience.
 - D. nonshared genetic experience.
102. Which of the following statements regarding environmental experience is TRUE?
- A. Shared environment accounts for most of the variation in adolescent personality and interests.
 - B.** Heredity influences the nonshared environment of siblings.
 - C. There is no relationship between genetics and environment.
 - D. Environment is much more important than genetics in development of personality.
103. Cody is the star pitcher for his high-school baseball team. His father is a retired minor league baseball pitcher, and his mother played softball in college. The epigenetic view of development would say that Cody's pitching ability is the result of
- A.** a combination of heredity and environment.
 - B. his genetically inherited ability to accurately throw a ball.
 - C. hard work and practice; genes have little or nothing to do with his ability.
 - D. luck.
104. The emerging view of the role of genetics and environment is that many complex behaviors likely have some
- A. complex environment experiences.
 - B. genetic loading.
 - C. environment experiences of nature and biological encounters.
 - D.** All of these choices are correct.

105. Discuss the role of sex hormones in puberty for males and females.

Androgens are the main class of males sex hormones; testosterone is the androgen that plays an important role in pubertal development. Throughout puberty, rising testosterone levels are associated with physical changes, including development of external genital, an increase in height, and voice changes. Testosterone level has also been linked to sexual desire and activity. Estrogens are the main class of sex hormones in females. Estradiol is an estrogen that plays an important role in female pubertal development. As estradiol levels rise, breast development, uterine development, and skeletal changes occur.

106. Explain the negative feedback system involved in managing the levels of sex hormones.

Levels of sex hormones are regulated by two hormones secreted by the pituitary gland: FSH (folliclestimulating hormone) and LH (luteinizing hormone). FSH stimulates follicle development in females and sperm production in males. LH regulates estrogen secretion in females and testosterone production in males. In addition, the hypothalamus secretes a substance called GnRH. These hormones are regulated by a negative feedback system. If the level of sex hormones rises too high, the hypothalamus and the pituitary gland reduce their stimulation of the gonads, decreasing the production of sex hormones. If the level of sex hormones falls too low, the hypothalamus and the pituitary glands increase their production of the sex hormones.

107. What could happen if a prepubescent girl's percentage of total body fat was less than 17 percent?

Some scientists have hypothesized that the onset of menarche is influenced by the percentage of body fat in relation to total body weight. For menarche to occur, they say that a minimum of 17 percent of a girl's body weight must be comprised of fat. If this hypothesis is true, menarche could be delayed in a girl with low body fat.

108. Compare and contrast the experience of the growth spurt in boys and girls. Be sure to include ages and bodily changes.

The growth spurt associated with puberty occurs approximately two years earlier for girls than for boys. For girls, the mean beginning of the growth spurt is 9 years of age. The peak of pubertal change occurs at 11.5 years for girls. During their growth spurt, girls increase in height about 3.5 inches per year. At the peak of weight gain, girls gain an average of 18 pounds in one year, at approximately 12 years of age. In addition to changes in height and weight, girls experience a spurt in hip width that is associated with an increase in estrogen.

The mean age for the beginning of the growth spurt in boys is 11 years of age. The peak of pubertal change occurs at 13.5 years for boys. During their growth spurt, boys increase in height about four inches per year. Boys' peak weight gain per year (20 pounds) occurs at about the same time as their peak increases in height, about 13 to 14 years of age. Boys undergo an increase in shoulder width that is associated with an increase in testosterone. The later growth spurt in boys produces a greater leg length and changes in facial structure.

109. List in order the male and female pubertal changes.

Researchers have found that male pubertal characteristics develop in this order: increased penis and testicle size; appearance of straight pubic hair; minor voice change; first ejaculation; appearance of kinky pubic hair; onset of maximum growth; growth of hair in armpits; more detectable voice changes; growth of facial hair. The order of pubertal changes for females is: breasts enlarge or pubic hair appears; growth in height; increase in hip width; menarche.

110. Define the term "precocious puberty."

Precocious puberty is the term used to describe the very early onset and rapid progression of puberty. It is usually diagnosed when pubertal onset occurs before age eight for girls and before age nine in boys. Precocious puberty occurs approximately ten times more often in girls than in boys.

111. Compare and contrast changes in body image that occur at puberty for males and females.

In general, throughout puberty, girls are less happy with their bodies and have more negative body image than boys. As puberty proceeds, girls become increasingly more dissatisfied with their bodies, probably because their body fat increases. In contrast, boys become more satisfied as they move through puberty, probably because their muscle mass increases.

112. Discuss some of the advantages and disadvantages of early and late maturation.

Early-maturing boys view themselves more positively and have more successful peer relations than their late-maturing counterparts. One study indicated that early-maturing boys were less likely to drink alcohol or smoke cigarettes than late-maturing boys when they reached middle adulthood. However, when boys were studied years later, late-maturing boys had a stronger sense of identity than early-maturing boys. This may be because late-maturing boys had more time to explore a wide variety of options. At least during adolescence, it appears that it is an advantage to be an early-maturing, rather than a late-maturing male.

Early-maturing girls had more problems in school, were more independent, and were more popular with boys than late-maturing girls. Early-maturing girls were more likely than late-maturing girls to be satisfied with their body image. However, they are also more likely to smoke, drink, be depressed, have an eating disorder, be sexually active, and have older friends.

113. List at least three health-enhancing and three health-compromising behaviors in adolescence.

Health-compromising behaviors include drug use, violence, unprotected sexual intercourse, and dangerous driving. Health-enhancing behaviors are such things as exercising, eating a nutritious diet, wearing a seat belt, and getting adequate sleep.

114. What are some of the problems of risk-taking behavior in adolescence?

Adolescents who are risk takers may have poorer grades, and engage in poor decision making and impulsive behavior. Their health can be compromised if they drink, smoke, or become sexually active at young ages. Automobile fatalities can result from reckless driving.

115. Adolescents underutilize the services of private physicians and other health-care services. List and briefly explain at least four barriers to better health care for adolescents.

Among the chief barriers to better health care for adolescents is cost. Other reasons that adolescents do not seek health care include poor organization and availability of health services. Lack of confidentiality and reluctance on the part of health care providers to communicate with adolescents about sensitive issues may keep some adolescents away from the health-care system.

116. Describe the concerns that have been raised about the nutritional status and diets of adolescents in the United States today.

The eating habits of many adolescents are health-compromising, and an increasing number of adolescents have eating disorders. Adolescents in the United States are more likely to eat fried foods and less likely to choose fruits and vegetables. They tend to select foods that are high in protein and energy value. A special concern in American culture is the amount of fat in our diets. The popularity of fast foods, a staple in the diet of many adolescents, contributes to high dietary fat levels.

117. What steps would you take if you wanted to increase the activity levels of adolescents?

Adolescents who have physically active friends tend to be more active themselves. Encouraging teens to choose friends who like to be active is one way of increasing their physical activity.

Increasing time for physical education classes in school is key. Parents can model the benefits of physical activity for their children and plan family outings that include exercise. Parents can also encourage their children to play a sport or to exercise on a regular basis. Parents can also limit the time that adolescents are allowed to watch television and be on their computers.

118. What has research found about the amount of sleep that adolescents need, the amount of sleep that they usually get, and the problems associated with lack of adequate sleep?

Research on sleep suggests that adolescents need approximately 9.5 hours of sleep each night. A recent survey of adolescents showed that only 31 percent of U.S. adolescents got eight hours of sleep per night on school nights. Other studies confirm that adolescents are sleeping less than the optimal amount each night.

Adolescents who got inadequate sleep (eight hours or less on a school night) were more likely to feel tired or sleepy, more cranky and irritable, fall asleep in school, be in a depressed mood, and drink caffeinated beverages than their counterparts who got optimal sleep. In addition, getting less than six to eight hours of sleep a night has been linked to lower levels of exercise, less effective stress management, adoption of an unhealthy diet, and higher levels of anxiety.

119. What are some of the main themes in evolutionary psychology? Give an example of a human behaviour that evolutionary psychologists study.

The field of evolutionary psychology emphasizes the importance of adaptation, reproduction, and "survival of the fittest" in explaining behavior. Evolutionary psychology focuses on the conditions that allow individuals to survive or perish. In this view, the process of natural selection favors those behaviors that increase organisms' reproductive success—their ability to pass their genes on to the next generation. David Buss argues that just as evolution shapes our physical features, it also influences our decision making, our aggressive behavior, our fears, and our mating patterns.

120. Define the terms *genotype* and *phenotype*.

A person's genetic heritage—the actual genetic material—is his or her genotype. Not all of this genetic material is apparent in our observed and measurable characteristics. The way an individual's genotype is expressed in observed and measurable characteristics is called a phenotype. Phenotypes include physical traits, such as height, weight, eye color, and skin pigmentation, as well as psychological characteristics, such as intelligence, creativity, personality, and social tendencies. For each genotype, a range of phenotypes can be expressed.

121. Explain what twin studies are and why they are used in behavior genetics research.

Behavior geneticists use twin studies to try to determine the role of heredity for a given behavior or characteristic. Identical twins share the same genetic material, so any differences in their behavior could be attributed to environmental factors. Researchers frequently compare results of research conducted with both identical twins and fraternal twins. Several issues complicate the interpretation of twin studies. For example, perhaps the environments of identical twins are more similar than the environments of fraternal twins.

122. Explain what adoption studies are and why they are used in behavior genetics research.

Behavior geneticists use adoption studies to try to find out the relative contributions of heredity and environment to a given behavior or characteristic. Researchers compare adopted children to their adoptive parents and to their biological parents to see whom they resemble more, and in what ways. Because the children share genes with their biological parents, yet share an environment with their adoptive parents, if the children are more similar in a given way to their biological parents than adoptive parents, behavior geneticists conclude that heredity likely plays a significant role in behavior or characteristics. If adopted children are more similar in a given way to their adoptive parents than to their biological parents, then environment may play a larger role for that behavior or characteristic.

123. Describe the three ways in which behavioral geneticist Sandra Scarr believes that heredity and environment are related.

Sandra Scarr's three correlations are: passive genotype-environment correlations, evocative genotype-environment correlations, and active (niche-picking) genotype-environment correlations. In the passive genotype-environment correlation, biological parents who are genetically related to the child, provide a rearing environment for the child. In the evocative genotype-environment correlation, an adolescent's genetically shaped traits elicit environmental responses. They get what they need from the environment through this interaction. In the active genotype-environment correlation, adolescents seek out environments that are stimulating for them. They find settings that are best suited for their abilities.