

Student name: _____

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

The physical developments of puberty are influenced by which of the following?

environmental factors

an identity crisis

psychological factors

falling in love

What is the physical transition from child to adult during adolescence called?

puberty

early adolescence

middle adolescence

late adolescence

The term *puberty* refers to the period during which an individual

is between the ages of 12 and 15.

creates new hormones via the endocrine system.

becomes capable of sexual reproduction.

stops growing in height.

Physically, puberty involves a rapid increase in growth, development of primary sex characteristics, changes in the brain's anatomy, and

an increase in psychological stress.

a series of public initiation rites.

development of secondary sex characteristics.

increases in intellectual functioning.

The simultaneous release of growth hormones, thyroid hormones, and _____ stimulates rapid acceleration in height and weight during puberty.

leptin

estrogens

androgens

testosterone

The hormonally induced increase in the rate of growth in height and weight is referred to as the adolescent growth spurt.

peak height velocity.

epiphysis.

somatic development.

At the time when adolescents are growing most rapidly, they grow at about the same rate as newborns.

infants.

toddlers.

elementary schoolchildren.

Which of the following is true about the adolescent growth spurt?

generally begins two years earlier for girls than for boys

generally begins two years earlier for boys than for girls

increases around age 15 for boys and girls

proceeds along a smooth and rapid course over the teen years

Which of the following statements about changes in skeletal structure during puberty is true?

One marker that indicates the termination in growth in height is epiphysis.

Bones become more porous and more likely to break.

Nearly half an individual's adult height is gained during puberty.

Growth begins with the torso and shoulders, proceeds to the arms and legs, then to the extremities.

What is the name for the system that describes the five stages of pubertal development?

primary stages

secondary stages

Tanner stages

pubertal stages

Professor Radon is studying the _____ system, which produces, circulates, and regulates levels of hormones in the body.

adrenal

circulatory

respiratory

endocrine

Which of the following statements about the production of hormones at puberty is true?

The body begins to produce several hormones that have not been present until this time.

There is an increase in the production of certain hormones.

Boys' bodies produce more estrogens, and girls' bodies produce more androgens.

The feedback loop regulating the endocrine system becomes increasingly less important.

When levels of androgens and estrogens fall below the set points, the _____ stops inhibiting the pituitary gland, thus permitting it to stimulate the release of sex hormones by the gonads.

thyroid

adrenal gland

hypothalamus

feedback loop

What is the term for the maturation of the adrenal glands that takes place during adolescence?

androgen

estrogen

adrenarche

HPG axis

Adrenarche contributes to the development of _____, signaling the beginning of sexual maturation to others.

body hair

body odor

sex characteristics

gonads

Which of the following is part of the feedback loop in the endocrine system?

adrenal gland

melatonin

pituitary gland

thyroid hormones

Which body system produces, circulates, and regulates hormones?

endocrine

lymphatic

integumentary

nervous

Gonads are the glands that secrete sex hormones: in males, the _____; in females, the _____.

epididymis; mammarys

hypothalamus; amygdala

androgens; estrogens

testes; ovaries

What is the name of the hormone produced when a person is exposed to stress?

androgen

cortisol

estrogen

melatonin

Which of the following statements about prenatal development is true?

Up until about eight weeks after conception, all human brains are masculine.

Puberty is part of a gradual process that begins at conception.

Sex hormones do not appear in the brain during fetal development.

Fetal exposure to cortisol is directly linked to the timing of puberty.

The average girl in the United States reaches _____, the time of her first menstrual period, sometime between the ages of 12 and 14.

sexual maturity

menarche

puberty

adrenarche

Which of the following sex characteristics is the first to develop in boys?

production of sperm

appearance of facial hair

growth of testes and scrotum

growth of penis

Which of the following is true about the occurrence of the first ejaculation of semen?

It is biologically predetermined.

It is genetically inherited.

It is often determined culturally.

It is two years after accelerated penis growth.

As Yu Yan's breasts are beginning to develop, she will most likely experience concurrent menarche.

ovulation.

growth of pubic hair.

growth in height.

Which of the following female sex characteristics is usually the last to develop?

menarche

regular ovulation

development of the areola

growth of pubic hair

Which of the following statements about puberty in girls is true?

Regular ovulation and the ability to carry a baby to term usually follow menarche immediately.

The development of the areola and nipple are far better indicators of sexual maturation than breast size.

Menarche occurs very early in the process of sexual development.

The changes in the nipple and areola occur earlier in large breasts.

The first sign of puberty in girls is generally

growth of breasts.

underarm hair.

menarche.

acne.

Which of the following statements about the timing and tempo of sexual maturation is true?

In the United States, and in all other countries, menarche typically occurs around age 12.

The duration of puberty varies widely, from 1.5 to 6 years in girls and 2 to 5 years in boys.

Adolescents who begin puberty early also complete it early.

Adolescents who begin puberty earlier usually grow to be taller adults.

Osman is a junior high student anticipating puberty. He wants to know when puberty will start and how long it will take until he looks like and is considered an adult. What will his health teacher tell him about the timing and rate of puberty?

It is highly variable and influenced by both genetic and environmental factors.

It is highly predictable, beginning around 12 years of age and taking four years to complete.

It can be accelerated through good nutrition and excessive exercise.

It is determined more by his environmental and family situation than genetics.

Based on research addressing ethnic differences in the timing and rate of pubertal maturation, which American girl would be expected to mature earliest?

Brandy, a middle-income Black adolescent

Miranda, a middle-income Latinx adolescent

Emily, a middle-income White adolescent

Grace, a middle-income Asian adolescent

Which of the following factors is most important in determining the onset of puberty?

the presence of sexually mature partners in the environment

whether the individual is healthy enough to begin reproduction

information coded in an individual's genes

whether there are nutritional resources available to support a pregnancy

Which of the following statements accurately describes the role leptin plays in the onset of puberty?

Low levels of leptin increase melatonin production, which triggers puberty.

Leptin stimulates production of kisspeptin, which triggers puberty.

Leptin is inhibited by cortisol, which can delay puberty.

High levels of leptin inhibit kisspeptin, thus delaying puberty.

Which of the following environmental factors affects the onset of puberty?

exposure to cold temperatures

changing seasons

poor air quality

amount of light exposure

During puberty, the structure and functioning of the brain

are impacted by reduced levels of sex hormones.

do not undergo changes that influence behavior.

have a direct effect on behavior.

show less activity in regions controlling emotions.

Pubertal hormones affect brain systems in ways that increase adolescents'

aggression levels.

emotional arousal.

desire to rebel.

dependency levels.

After about eight weeks of conception, male fetuses are exposed to higher levels of _____, resulting in a more "masculinized" brain than females

testosterone

melatonin

estrogen

kisspeptin

Which of the following can delay the onset of puberty?

stress

childhood abuse

nutritional deficiencies

lack of exercise

Differences in the timing and rate of puberty among individuals growing up in the same general environment are largely caused by which factor?

hormones

genetics

exercise

psychology

Which of the following factors can hasten the onset of maturation?

peer pressure

protein deficiency

chronic illness

father absence

Léa is an 18-year-old living in a college dormitory. She has noticed that her menstrual periods have begun to synchronize with_____, which is compelling evidence that social relationships can affect biological functioning.

the time her female roommate menstruates

her most stressful days of the month

the days she feels most sexually aroused

her biological sister living in a different city

It has been found that, in general, puberty is commencing earlier and taking less time to conclude in girls.

longer to conclude in both sexes.

longer to conclude in girls.

less time to conclude in boys.

Professor Kendall has been researching adolescent maturation around the world. Which of the following is she likely to determine has the smallest role in determining group differences in pubertal maturation?

nutrition

sanitation

infectious diseases

genetics

Over the past century, the onset of puberty has been coming at an earlier age due to improved nutrition, better sanitation, and improved control of infectious diseases. This is referred to as the cross-sectional trend.

endocrine trend.

menarche trend.

secular trend.

Who is at the greatest risk of developing body dissatisfaction?

Callie, an early-maturing White girl who compares herself to her friends

Jada, a late-maturing Black girl who compares herself to media images

Tyree, an early-maturing Black male who compares himself to his friends

Michael, a late-maturing White male who feels he is not muscular enough

Which of the following is probably true for Ashley, an early-maturing girl who was short and stocky as a child?

After puberty, she will be shorter and heavier than her late-maturing peers.

After puberty, she will be shorter and thinner than her late-maturing peers.

After puberty, she will be taller and heavier than her late-maturing peers.

After puberty, she will be taller and thinner than her late-maturing peers.

Which of the following statements about hormonal changes of puberty is true?

Hormonal changes affect the brain in ways that increase adolescents' desire for sensation-seeking activities.

Hormonal changes of puberty make adolescents more risk averse.

Hormonal changes of puberty make adolescents more introverted.

Hormonal changes affect the brain in ways that decrease adolescents' desire for rewarding activities.

Suzanne and Carlos are the first members of their class to begin the pubertal transition. Based on what you know about early-maturing adolescents, Suzanne and Carlos are more likely to

become involved in delinquent behavior.

be academically successful in school.

be ostracized by their classmates.

get along well with their parents.

Which of the following characteristics is associated with being an early-maturing boy?

fewer problem behaviors

more even temperament

a more positive self-image

more intellectual curiosity

Mikhail, an early maturer, is more likely to _____ than Devon, a late maturer.

socialize with younger boys

suffer greater consequences if bullied by peers

be closely supervised by his parents

have low self-esteem

Which of the following is true about early-maturing boys?

They are more likely to have low self-esteem.

They may have higher rates of depression.

They are better prepared to deal with changes during adolescence.

They act more childish than their later-maturing peers.

During puberty, individuals who mature early are likely to exhibit which of the following?

more intellectual curiosity

less frequent temper tantrums

less depression and anxiety

problem behavior, such as drug use

In America, early-maturing girls are more likely than their late-maturing peers to
be unpopular with their peers.
have a negative self-image.
succeed in school.
perceive themselves as attractive.

Avram is a late-maturing boy. A year after pubertal onset, we would expect Avram to show which advantage over his early-maturing peers?

greater athletic ability
more popularity with the opposite sex
lower chance of being bullied
higher levels of social initiative

Which of the following characteristics is typically associated with being an early-maturing girl?

more emotional difficulties
being less popular, especially with boys
a more positive body image
better physical health in adulthood

The main reason for sex differences in the impact of early and late maturation is

biological differences between male and female brains.
psychological differences between boys and girls.
the different rates at which boys and girls mature.
different cultural expectations of boys and girls.

Nadia is an early-maturing girl. Compared to her late-maturing peers, which of the following statements is most likely to be true for Nadia?

Nadia is less likely to have depression, anxiety, or an eating disorder.

Nadia is likely to be more popular with boys but less popular with girls.

Nadia is more likely to be popular with both the girls and the boys.

Nadia is less likely to be the victim of rumors, gossip, and social exclusion.

The impact of early maturation on problem behaviors or depression is worse when adolescents have many stressful life events.

are from ethnic minority families.

are involved in romantic relationships.

are unpopular with their peers.

Follow-up studies of Swedish women who had been early maturers found that as adults they were

less likely to experience physical health problems.

less likely to continue their education beyond high school.

more likely to continue their education beyond high school.

indistinguishable from those who had been late maturers.

Which of the following girls will experience the greatest menstrual discomfort?

Sarita, who is prepared for the physical changes

Alison, who is a late maturer

Loryn, who has a negative attitude toward menarche

Deepika, who is unpopular among her classmates

What have studies shown about prepubertal girls who expect menstruation to be uncomfortable?

They have milder menstrual symptoms than their peers.

They have more severe menstrual symptoms than their peers.

Their menstrual symptoms are about the same as their peers.

They experience menarche sooner than their peers.

Which of the following conditions is most likely to produce the most favorable and easiest adjustment to menarche?

The girl's mother prepares her by describing the unpleasant aspects of menarche.

The girl reaches menarche earlier than her peers.

Menarche occurs before the girl has learned about the physical changes that will happen.

The girl knows the facts about the physical changes her body will undergo.

When adolescents in the United States begin to experience specific pubertal events, which of the following is most likely to occur?

A girl's mother will be the first person the girl tells that she has begun to menstruate.

A girl's best friend will be the first person the girl tells that she has begun to menstruate.

A girl is likely not to tell anyone that she is menstruating for the first several months.

A boy will tell his friends about his first ejaculation soon after it occurs.

Which of the following statements about puberty's impact on family relationships is true?

Puberty appears to increase distance between parents and children.

Other species do not experience distance during the pubertal transition.

The distancing effect of puberty on families occurs regardless of ethnicity.

Puberty is more likely to disrupt family relationships if it happens early.

Although both sexes experience changes in muscle tissue and body fat, the ratio of muscle to body fat is

greater in boys than girls.

greater in girls than boys.

about the same in both genders.

greater in early-maturing girls than in late-maturing boys.

Brianna, an adolescent girl, is more susceptible to feelings of body dissatisfaction if she compares herself to

Keegan, her twin brother.

Keira, her older sister.

Barbara, her mother.

Ayomi, her best friend.

What effect does the rapid increase in body fat have on adolescent girls?

leads to a majority of adolescent girls dieting unnecessarily

leads to an increase in healthy eating patterns among adolescent girls

increases feelings of body dissatisfaction among Black adolescent girls

is a major factor for obesity among adolescent girls

In which of the following parts of the world is there a strong pressure on girls to be thin?

America, Europe, and Asia

Africa and the Middle East

the Southern Hemisphere

the Eastern Hemisphere

The biological changes that take place during puberty can indirectly cause changes in adolescents' behavior in which of the following ways?

The biological changes cause adolescents to feel moodier as they mature.

The biological changes affect adolescents' self-image.

The biological changes cause adolescents' sleep cycle to shift earlier.

The biological changes cause increased emotional distance from parents in all ethnic groups.

Dr. Davis is interested in how puberty affects adjustment. He studies a group of 100 junior high school students over the course of three years. He is conducting what kind of study?

longitudinal

cross-sectional

vertical

correlational

A research design in which subjects of different ages are assessed simultaneously is called a ___ study.

longitudinal

cross-sectional

correlational

vertical

Which of the following statements about adolescent mood swings is true?

The effect of hormones on adolescent mood swings is strongest toward the end of puberty.

The majority of adolescents do not report large ups and downs in their moods.

Adolescent girls are more prone to mood swings than their male peers.

Pubertal hormones make adolescents less responsive to their social environment.

Which of the following plays the greatest role in the development of depression?

rapid increases in hormones

early maturation

stressful life events

the delayed phase preference

Studies show that adolescent mood swings are most closely related to changes in hormone levels.

seasons.

nutrition.

activities.

Dr. Achikeh is studying whether puberty is stressful. As she recruits candidates for her study, she determines that adolescents who found puberty to be stressful are more likely to come from which group?

females who matured late

males who matured early

females who matured early

males who matured late

Heightened susceptibility to stress during adolescence is an example of the fact that puberty makes the brain

more malleable.

less malleable.

higher functioning.

lower functioning.

Which of the following students is most at risk of developing depression?

Johan, a teenage boy who stays up until 12:00 a.m. every night reading books and begins school at 10:00 a.m.

Sofia, a teenage girl who stays up until 12:00 a.m. using her smartphone and begins school at 8:00 a.m.

Afua, a teenage girl who goes to bed at 10:00 p.m. and begins school at 8:00 a.m.

Hinata, a teenage boy who stays up until 1:00 a.m. watching television and begins school at 10:00 a.m.

Given a choice, Darrell would prefer to stay up until 1:00 a.m. and sleep until 10:00 a.m. What is this pattern called?

secular trend

delayed phase preference

longitudinal design

Tanner stages

Which of the following statements accurately describes melatonin activity during adolescence?

The cycle of melatonin secretion is shifted earlier at puberty.

The cycle of melatonin secretion is shifted later at puberty.

Melatonin levels are not affected by puberty.

Melatonin levels change only after puberty is complete.

Which of the following is suggested by the delayed phase preference?

School should be held in the afternoon and evening.

School should be held year-round.

School should begin later in the morning.

School should begin earlier in the morning.

Maia has an erratic sleep schedule. On weekdays she stays up past midnight and gets up early for school. On weekends she stays up even later and sleeps in until noon. The best way for Maia to improve her sleep is to

go to bed early on weekdays and stay up late only on weekends.

go to bed early on weekends to make up for lost sleep during the week.

get up at the same time on both weekdays and weekends.

get up whenever she feels most awake on weekends.

Farez's school schedule has changed, and he now gets an extra hour of sleep in the morning. Farez is most likely to experience which of the following?

improved self-control

cognitive impairment

obesity

a later rise in melatonin

What can be said about the sleep duration of today's teenagers compared to teenagers from several decades ago?

They get about the same amount of sleep.

They have more variable amounts of sleep.

They sleep significantly more.

They sleep significantly less.

In which of the following individuals will the nighttime increase in melatonin likely begin latest?

Okapi, a 13-year-old boy who has just begun puberty

Rochana, a 14-year-old girl who experienced menarche two years prior

Aleksy, a 14-year-old boy who is still developing pubic hair

Olivia, a 15-year-old girl who is just beginning to develop breasts

Melatonin levels change naturally in response to

stress hormones.

androgens and estrogens.

sleep-wake cycles.

the amount of light.

The_____ is the minimal amount of energy one uses when resting.

basal metabolism rate

delayed phase preference

secular trend

feedback loop

The ratio of an individual's weight to height, used to gauge when a person is overweight or obese, is called

change in body composition.

body mass index.

secular trend.

feedback loop.

Which of the following is true about obesity?

Obesity is a body mass index at or above the 95th percentile.

Thirty percent of American adolescents are obese.

The rate of obesity has quadrupled since 2005.

Obesity is caused by a low basal metabolic rate.

According to the textbook, in general, the amount of time individuals spend in sedentary activities

increases from childhood to adolescence.

decreases from childhood to adolescence.

remains the same from childhood to adolescence.

is directly related to socioeconomic status.

Which of the following statements about obesity is true?

Obesity is especially prevalent among middle-class adolescents.

Adolescent obesity has been especially dramatic among White males.

Adolescent obesity is limited to the United States.

Obesity is the most serious health problem of American adolescents.

Which of the following adolescents is most likely to maintain a healthy weight?

Maryam, who gets inadequate sleep on school nights

Kevin, who has a history of depression

Anton, whose friends love junk food

Charice, who is a member of her school's tennis team

Rosa often eats large amounts of fast food quickly. Rosa is upset by her eating habits but cannot seem to stop. Tanya believes that "thin is in" and uses vomiting and laxatives as a way to keep her weight down. Both girls exhibit what psychologists call

disordered eating.

bulimia.

anorexia nervosa.

binge eating disorder.

Which of the following is associated with disordered eating in the United States?

having a positive body image

having parents who are healthy weight

alcohol and tobacco use

strong friendships

Kasmitha has been known to go on eating binges and then purge immediately afterward. Kasmitha is probably suffering from

anorexia nervosa.

bulimia.

binge eating disorder.

obesity.

Fabiola has been known to exercise excessively, count calories, and diet obsessively. She is currently depriving herself of food even though she is 20 pounds underweight. Fabiola is probably suffering from

anorexia nervosa.

bulimia.

binge eating disorder.

depression.

The potentially fatal disorder in which young women starve themselves is called

bulimia.

anorexia nervosa.

obesity nervosa.

purging.

Eating disorders are more common in

Black adolescents than White adolescents.

affluent adolescents than poor adolescents.

White adolescents than Latinx adolescents.

female adolescents than male adolescents.

Which of the following teenagers most closely resembles the profile of someone who has binge eating disorder?

Ye-jun, a wrestler who nearly starves himself so he can stay in his weight bracket

Carla, a gymnast who binges on junk food but makes herself vomit after each meal

Solomon, a football player who believes he is overweight and exercises twice a day, seven days a week

Sherri, a volleyball player who binges on junk food but does not engage in any weight loss behaviors

Which of the following statements about cultural influences on disordered eating is correct?

Anorexia nervosa is more prevalent in Western cultures.

Rates of anorexia nervosa vary based on body ideals across cultures.

Bulimia is found all over the world and is more linked to genetics than culture.

Rates of bulimia are influenced by levels of body dissatisfaction in Western cultures.

Which adolescent has the lowest risk of developing an eating disorder?

Valeria, a second-generation Colombian American girl who wants to fit in with American culture

Tengfei, a late-maturing boy who has a good relationship with his parents

Brooklyn, a girl whose mother diets frequently and was diagnosed with bulimia as a teenager

Dominique, an early-maturing Black girl who loves following fashion influencers on social media

Which of the following is an example of an extremely disturbed body image, as is seen with eating disorders?

Selma, who has a body mass index in the 5th percentile and believes she is overweight

Angelica, who has a body mass index in the 88th percentile and believes she needs to lose weight

Rania, who has a body mass index in the 85th percentile and is happy with her body

Esther, who has a body mass index in the 55th percentile and has a negative body image

Adolescent girls' belief that being thin will make them more popular with boys is based on images from movies, television, and social media.

the opinions of their parents and peers.

the reality of their experiences.

their own negative self-images.

Dr. Perez is treating Ethan, a 15-year-old boy for bulimia. Dr. Perez should be aware that

Ethan probably also uses anabolic steroids and exercises excessively.

Ethan's condition may have resulted from being bullied by his peers.

Ethan's condition will not likely persist into adulthood.

Ethan may also need treatment for other mental health problems.

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Dr. Singh believes that adolescence is a time of storm and stress caused by the production of new hormones. Do you agree or disagree with this conclusion? Be sure to support your answer with what you know about the physiological changes of adolescence. (HINT: What do we know about the endocrine system?)

In Mr. Novak's seventh-grade health class, there is a pair of 12-year-old fraternal twins, Shawn and Serenity. Serenity has recently grown a couple inches taller than Shawn, who is concerned that he's not growing as fast as she is. What changes should Shawn expect to go through during puberty compared with his sister? What are the changes in growth and sexual maturation that boys and girls experience during puberty, and how do they differ?

Over the years you've kept in touch with your high school counselor, who has now asked you (an adolescent development expert!) to talk to the parents of his high school students. He has asked you to give a parenting class focusing on the types of issues and events parents might expect to occur during puberty, with an emphasis on problems parents might anticipate and how to avoid these problems. What will you tell the parents?

Imagine that your friend has told you that she recently heard that scientists can use a person's DNA to determine exactly when that person will go through puberty. Do you agree with her? What evidence supports your decision?

Maria and John are the first two students in their class to begin the transition into adolescence. Based on what you know about the timing of puberty during adolescence, what effect, if any, will this have on Maria's and John's development?

Emma and Montrell are the last two students in their class to begin the transition into adolescence. Based on what you have learned about the timing of puberty during adolescence, what effect, if any, will this have on Emma's and Montrell's development?

Diego, an adolescent boy, and Hiyori, an adolescent girl, are both in the middle of puberty. They have each noticed changes in the physical structure of their bodies. Describe the changes in stature and dimensions of the body that Diego and Hiyori have already or will most likely experience. Given the nature of sex differences in the physical changes of puberty, is it inevitable that Hiyori will experience body dissatisfaction? What about Diego?

Fifteen-year-old Maya's parents are worried about her. Maya seems to be sleepy all the time. She sometimes falls asleep at the kitchen table when she gets home from school but stays up late at night, past 11:00 p.m., when her parents go to sleep. Maya also seems to be irritable a lot of the time. On weekends, Maya usually sleeps until noon, even though her parents have asked her to get up earlier to help with chores. Maya's parents insist that she never had any problems like this

when she was younger. How would you explain the changes in Maya's behavior (particularly her sleep changes) to her parents?

You are giving a presentation on puberty and eating disorders to parents at a junior high school. What would you say so that they understand the relationship between puberty and eating disorders?

Answer Key

Test name: Ch1_Adolescence_13e

A

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Short Answer

I disagree with Dr. Singh's belief that adolescence is a time of storm and stress. All of our hormones are present at birth; the only change is in the amount that they are secreted as we grow. Our endocrine system produces, regulates, and controls the hormones in our body. The endocrine system can be equated to a thermostat—the sex hormones are set at a certain set point that is controlled by the hypothalamus stimulating the pituitary gland to trigger the gonads, which will secrete androgens in males and estrogens in females (males and females have both but in different amounts). The onset of puberty is triggered by a desensitization of the hypothalamus to the level of hormones it needs to keep it at the set point. When this happens, a higher level is needed to get the hypothalamus at its new "temperature"; this is the feedback loop system that occurs in puberty. It is not the result of new hormones, just a change in the amounts.

Key Points:

- a. Adolescence is not a time of storm and stress.
- b. Include a description of the endocrine system.
- c. Mention the desensitization of the hypothalamus.

Short Answer

Serenity is experiencing the adolescent growth spurt, which typically begins earlier in girls by about two years, although boys usually grow at a faster rate. Shawn's height may catch up to Serenity's within a couple of years. After he begins his growth spurt, Shawn will likely see growth of pubic hair and of the testes and scrotum, while Serenity is more likely to experience breast development first, followed by pubic hair. Boys then usually experience penis growth with the first ejaculation about a year later, although this is often culturally determined. Voice changes and facial and body hair tend to be later developments. On the other hand, after breast development and pubic hair, girls typically experience growth of the reproductive organs—the uterus, vagina, labia, and clitoris. Menarche (the beginning of menstruation) tends to be a later development. Regular ovulation usually follows menarche by about two years. One way in which boys and girls differ is that boys are usually fertile before they look grown up, while girls tend to look like adults before they have full reproductive function.

Key Points:

- a. The adolescent growth spurt begins earlier for girls than for boys by about two years.
- b. After the growth spurt, boys experience growth of pubic hair and the sex organs, followed by the first ejaculation and later voice changes and body and facial hair.
- c. Girls develop breasts and pubic hair first, followed by growth of the reproductive organs, then menarche, and eventually regular ovulation.

Short Answer

The timing and rate of development varies widely for individuals both within and among groups, and helping youngsters understand what they can expect in terms of development and in terms of variation can help them deal with the changes they experience. Timing, however, can have a huge impact on boys and girls, with early-maturing girls and late-maturing boys being especially vulnerable to self-esteem issues and early-maturing adolescents being at risk for problem behaviors, including dropping out of school. The direct effects of biological changes during adolescence, primarily from hormonal changes, can increase sex drive and sexual activity; also, changes in adolescents' self-image can affect their behavior, and changes in appearance may cause others to react to them differently, such as expecting mature behavior from someone who appears to be physically mature. Despite the popular belief that adolescents are prone to mood swings, these variations are greatly exaggerated and are often due to specific events going on in the adolescent's life. A particular health concern, however, involves changes in sleep patterns—adolescents need nine hours of sleep a night, and because they are staying up later, they would benefit from waking later and starting classes later, not earlier, than they did in elementary and junior high school. Many of the problems that occur, especially from being early or late-maturing, are linked either to preexisting problems from childhood or cultural attitudes and expectations. By understanding and addressing the issues, pitfalls, and factors affecting these aspects of development, adults can help adolescents work through them.

Key Points:

- a. There are differences in the timing and rate of development that may have an impact on adolescents.
- b. Biological changes can affect psychological functioning directly and indirectly.
- c. Moodiness is not as prevalent as commonly believed.
- d. Changes in sleep patterns suggest a need for changes in schedules.
- e. Problems are often associated with childhood problems and cultural contexts.

Short Answer

The timing of puberty is highly variable (puberty onset can occur anytime between ages 8 and 13 in American girls and between ages 9 and 14 in American boys). Although the timing of puberty is indeed highly heritable, the environment can also have a substantial impact on pubertal onset. The two most influential environmental factors are nutrition and health. In fact, puberty can be significantly delayed if an individual has a history of nutrient deficiencies, caloric restriction, or chronic illnesses. There are also important familial factors that are related to pubertal onset: puberty tends to begin slightly earlier among girls who grow up in high-conflict families, girls who grow up with a stepfather, girls who were physically or sexually abused during childhood, and girls who grew up in father-absent households. There is also quite a bit of research that has documented a secular trend—that menarche among American girls has occurred at earlier and earlier ages. The secular trend could be due to better nutrition, better sanitation, and better control of infectious diseases (it is likely not due to variations in genes).

Key Points:

- a. Timing of puberty is highly variable.
- b. Timing of puberty is influenced by genetic and environmental factors.
- c. Age at puberty onset has declined over time (secular trend).

Short Answer

Maria, an early maturer, is more likely to suffer from low self-esteem and depression than her on-time or late-maturing peers. She may even suffer from eating disorders, panic attacks, or social anxiety or be the victim of rumors, gossip, and social exclusion. She might receive more attention from older boys and in turn start participating in deviant activities. John, on the other hand, will not experience as many emotional difficulties as Maria. He may also be quite popular and self-confident, as it is likely that he will be tall and muscular before his peers. However, like Maria, he is also more likely to participate in deviant activities, such as alcohol and drug use, delinquency, and problems at school. However, it is important to note that the ultimate impact of the timing of pubertal onset will depend on the broader context in which maturation takes place.

Key Points:

- a. Early maturation is more negative for girls and more positive for boys.
- b. Early-maturing adolescents tend to engage in more delinquent activities.
- c. Impact of puberty depends on the broader context in which adolescents live.

Short Answer

Emma is likely to experience many positive effects of late maturation. For example, she is more likely to be the thin, "leggy" American ideal, and she will have more time to prepare for puberty than early or on-time maturers (she may even have fewer psychological problems than early and on-time girls). Emma is also less likely than early maturers to engage in delinquent behaviors. For Montrell, there are greater disadvantages: he will be seen as childish and have trouble being noticed by his peers; he will also have less self-confidence than his early-maturing peers or on-time maturers. However, it is also likely that Montrell will be better able to control his temper and impulses during puberty (as he will be relatively older and more mature than his early-maturing peers were when they went through puberty).

Key Points:

- a. Late maturation is more negative for boys and more positive for girls.
- b. Late-maturing adolescents tend to engage in less delinquent activities.
- c. Impact of puberty depends on the broader context in which adolescents live.

Short Answer

The simultaneous release of growth hormones, thyroid hormones, and androgens lead to the adolescent growth spurt, which Hiyori will probably experience two years prior to Diego. When Hiyori and Diego are growing most rapidly during adolescence, they will grow at approximately the same rate as a toddler. Much of the height gain during puberty results from an increase in torso length rather than leg length. The sequence in which Hiyori and Diego will grow will be pretty comparable: first the extremities (head, hands, and feet), then the arms and legs, followed by torso and shoulder growth. One marker that indicates the termination in growth in height is epiphysis (closing of the ends of the long bones in the body). In addition to sheer changes in height and weight, there are changes in the relative proportion of body muscle and body fat. Diego might decrease in body fat just before puberty, whereas Hiyori will probably increase in body fat more rapidly during puberty. Hiyori might react to the increase in body fat at puberty by dieting unnecessarily. At the end, Diego will probably finish adolescence with a muscle-to-fat ratio of about 3 to 1, while Hiyori will probably be 5 to 4. The rapid increase in body fat that occurs among females in early adolescence frequently prompts young girls to become overly concerned about their weight (even if their weight is within the normal range for their height and weight). Although more than half of adolescent girls diet unnecessarily during this time in response to the increase in body fat, if Hiyori matures early, begins dating early, or compares herself with her peers, she will be particularly susceptible to body dissatisfaction. Diego's feelings about how he looks will probably revolve around how muscular he is and will probably be less affected by comparisons with peers.

Key Points:

- a. Describe the asynchronicity of body growth.
- b. Explain the changes in the relative proportion of body muscle and body fat.
- c. Describe why girls are prone to body dissatisfaction.

Short Answer

According to research, Maya's sleep pattern is a result of the delayed phase preference in which adolescents' biological clock shifts later. Her circadian rhythm is no longer the same as it was when she was a child. Melatonin, for example, is secreted two hours later after puberty, and therefore causes teens to be sleepier later. Adolescents are more sleep deprived, and this may also be due to more freedom to choose their own bedtime and the external stimuli available to teens today, such as social media and television. Research shows that adolescents who do not get enough sleep suffer from poorer mental health, more delinquency, and more substance use and are more likely to be overweight. Furthermore, adolescents are better able to fight sleep than are children and stay up later to watch TV or use their phones (environmental distractions). As a result of these changes, Maya would like to sleep later and wake up later, but school prevents her from doing so and subsequently makes Maya sleep deprived.

Key Points:

- a. Mention and define delayed phase preference, circadian rhythm, and melatonin shift.
- b. Mention influence of external and environmental stimuli (e.g., artificial light, computers).
- c. Mention early school start times.
- d. Mention sleep deprivation.
- e. Adolescents are better able to fight sleepiness than children, enabling them to stay up even later.

Short Answer

Although a variety of nutritional and behavioral factors can lead to weight gains during adolescence, gaining weight can sometimes result directly from the physical changes of puberty. Not only does the ratio of body fat to muscle increase markedly during puberty, but the body's basal metabolism rate also drops. Normal weight gain and change in body composition, which accompanies puberty, leads many adolescents, especially girls, to become extremely concerned about their weight. Girls who go through puberty earlier than their peers have an increased likelihood of developing disordered eating patterns. Eating disorders that promote starving and dieting, such as anorexia and bulimia, can affect hormone levels that initiate puberty. A consequence of starvation during early adolescence is that pubertal development is severely delayed. Eating disorders are also linked to other mental health problems, such as depression or obsessive-compulsive disorder. Sometimes psychological issues precede the development of an eating disorder; therefore, these disorders are considered manifestations of underlying psychological distress.

Key Points:

- a. Mention physical changes that could relate to eating disordered behavior (e.g., weight gain caused by drop in basal metabolism rate, ratio of muscle to fat).
- b. Early-maturing girls are at greater risk.
- c. Anorexia nervosa and bulimia can delay pubertal development.
- d. Eating disorders are best understood as manifestations of internalized distress.