

CHAPTER 2

GENETIC AND ENVIRONMENTAL FOUNDATIONS

MULTIPLE CHOICE

- 1) Hair color is an example of a
- A) karotype.
 - B) phenotype.
 - C) gamete.
 - D) genotype.

Answer: B

Page Ref: 51

Skill: Applied

Objective: 2.1

- 2) Directly observable characteristics are affected by an individual's lifelong history of experiences and also by the individual's
- A) karotype.
 - B) phenotype.
 - C) gamete.
 - D) genotype.

Answer: D

Page Ref: 51

Skill: Conceptual

Objective: 2.1

- 3) The nucleus of a cell contains
- A) karyotypes.
 - B) chromosomes.
 - C) genotypes.
 - D) phenotypes.

Answer: B

Page Ref: 52

Skill: Factual

Objective: 2.2

- 4) Chromosomes
- A) store and transmit genetic information.
 - B) come in 46 matching pairs.
 - C) are inherited from the mother only.
 - D) are inherited from the father only.

Answer: A

Page Ref: 52

Skill: Factual

Objective: 2.2

- 5) Each rung of the DNA ladder
- A) is made up of thousands of chromosomes.
 - B) contains 20,000 genes.
 - C) consists of a pair of chemical substances called bases.
 - D) contains 23 matching pairs.

Answer: C

Page Ref: 52

Skill: Factual

Objective: 2.2

- 6) Individuals around the world are about _____ percent genetically identical.
- A) 39.1
 - B) 59.1
 - C) 79.1
 - D) 99.1

Answer: D

Page Ref: 52–53

Skill: Factual

Objective: 2.2

- 7) On the DNA ladder, adenine always appears
- A) alone.
 - B) with thymine.
 - C) with cytosine.
 - D) with guanine.

Answer: B

Page Ref: 53

Skill: Factual

Objective: 2.2

- 8) DNA duplicates itself during
- A) mitosis.
 - B) osmosis.
 - C) meiosis.
 - D) gamete formation.

Answer: A

Page Ref: 53

Skill: Factual

Objective: 2.3

- 9) Research demonstrates that
- A) it takes a change in several base pairs to influence human traits.
 - B) approximately 75 percent of chimpanzee and human DNA is identical.
 - C) even at the microscopic level, biological events are the result of both genetic and nongenetic forces.
 - D) simpler species have far more proteins than humans or primates.

Answer: C

Page Ref: 53

Skill: Conceptual

Objective: 2.3

10) Gametes

- A) are formed during mitosis.
- B) contain only 23 chromosomes.
- C) contain 46 chromosomes.
- D) determine directly observable characteristics, like eye color.

Answer: B

Page Ref: 53

Skill: Factual

Objective: 2.4

11) _____ halves the number of chromosomes normally present in body cells.

- A) Mitosis
- B) Osmosis
- C) Meiosis
- D) Autosome formation

Answer: C

Page Ref: 53

Skill: Factual

Objective: 2.4

12) Which of the following is true about crossing over?

- A) It results in a new cell called a zygote.
- B) It creates new hereditary combinations.
- C) It increases the probability that nontwin siblings will be genetically identical.
- D) It decreases the chances that some members of a species will survive ever-changing environments.

Answer: B

Page Ref: 53

Skill: Conceptual

Objective: 2.4

13) Meiosis results in _____ in the male and _____ in the female.

- A) four sperm; one ovum
- B) one sperm; four ova
- C) millions of sperm; about 40,000 ova
- D) four sperm; millions of ova

Answer: A

Page Ref: 54

Skill: Factual

Objective: 2.4

14) Twenty-two matching pairs of chromosomes are

- A) sex chromosomes.
- B) XX.
- C) autosomes.
- D) XY.

Answer: C

Page Ref: 54

Skill: Factual

Objective: 2.5

15) Taylor's twenty-third pair of chromosome is XY. Taylor

- A) has PKU.
- B) has Down syndrome.
- C) is male.
- D) is female.

Answer: C

Page Ref: 54

Skill: Applied

Objective: 2.5

16) Which of the following is true about sex chromosomes?

- A) The Y chromosome is large and long, and the X chromosome carries most of the genetic material.
- B) Both boys and girls are born with several pairs of X and Y chromosomes.
- C) When gametes form in females, the X and Y chromosomes separate into different cells.
- D) The sex of a baby is determined by whether an X-bearing or a Y-bearing sperm fertilizes the ovum.

Answer: D

Page Ref: 55

Skill: Conceptual

Objective: 2.5

17) Dizygotic twins

- A) have the same genetic makeup.
- B) result from a zygote that separates into two clusters.
- C) are the most common type of multiple birth.
- D) are more alike than ordinary siblings.

Answer: C

Page Ref: 55

Skill: Factual

Objective: 2.6

18) The release and fertilization of two ova results in

- A) identical twins.
- B) fraternal twins.
- C) PKU.
- D) miscarriage.

Answer: B

Page Ref: 55

Skill: Factual

Objective: 2.6

19) Which of the following is a major cause of the dramatic rise in fraternal twinning in industrialized nations?

- A) temperature changes
- B) older maternal age
- C) late fertilization of the ovum
- D) variation in oxygen levels

Answer: B

Page Ref: 55

Skill: Conceptual

Objective: 2.6

20) Which of the following individuals is most likely to have fraternal twins?

- A) Marlie, a 25-year-old Caucasian American
- B) Janie, a 30-year-old Caucasian American
- C) Jessi, a 30-year-old Asian American
- D) Rhoda, a 30-year-old African American

Answer: D

Page Ref: 55

Skill: Applied

Objective: 2.6

21) Which of the following environmental influences contributes to monozygotic twinning?

- A) early fertilization of the ovum
- B) poor maternal nutrition
- C) temperature change
- D) high-fructose diet

Answer: C

Page Ref: 55

Skill: Conceptual

Objective: 2.6

22) If the alleles from both parents are alike, the child is

- A) homozygous.
- B) female.
- C) heterozygous.
- D) a monozygotic twin.

Answer: A

Page Ref: 56

Skill: Conceptual

Objective: 2.7

23) Heterozygous individuals with just one recessive allele

- A) cannot pass that trait to their children.
- B) may be carriers of the trait.
- C) will pass the dominant trait to their children.
- D) will pass the recessive trait to their children.

Answer: B

Page Ref: 56

Skill: Conceptual

Objective: 2.7

24) Which of the following is a recessive trait?

- A) curly hair
- B) facial dimples
- C) double-jointedness
- D) red hair

Answer: D

Page Ref: 56

Skill: Applied

Objective: 2.7

- 25) One of the most frequently occurring recessive disorders is
- A) phenylketonuria.
 - B) Huntington disease.
 - C) Marfan syndrome.
 - D) Down syndrome.

Answer: A

Page Ref: 56

Skill: Factual

Objective: 2.7

- 26) All U.S. states require that each newborn be given a blood test for
- A) cystic fibrosis.
 - B) PKU.
 - C) sickle cell anemia.
 - D) Tay-Sachs disease.

Answer: B

Page Ref: 56

Skill: Factual

Objective: 2.7

- 27) _____ enhance or dilute the effects of other genes.
- A) Alleles
 - B) Trait genes
 - C) Sickle cells
 - D) Modifier genes

Answer: D

Page Ref: 57

Skill: Factual

Objective: 2.7

- 28) Which of the following serious diseases is due to dominant alleles?
- A) Cooley's anemia
 - B) sickle cell anemia
 - C) Huntington disease
 - D) hemophilia

Answer: C

Page Ref: 57

Skill: Conceptual

Objective: 2.7

- 29) In incomplete dominance,
- A) both alleles are expressed in the phenotype.
 - B) children have a 25 percent chance of being carriers.
 - C) children have a 50 percent chance of inheriting the disorder.
 - D) one allele is expressed in the phenotype.

Answer: A

Page Ref: 57

Skill: Conceptual

Objective: 2.7

30) Sickle cell anemia

- A) is common among Jews of European descent.
- B) is common in children whose parents are of Mediterranean descent.
- C) occurs in full form when a child inherits two recessive alleles.
- D) is a homogeneous condition.

Answer: C

Page Ref: 57

Skill: Conceptual

Objective: 2.7

31) The average life expectancy of a North American with sickle cell anemia is

- A) 18.
- B) 35.
- C) 55.
- D) 62.

Answer: C

Page Ref: 57

Skill: Factual

Objective: 2.7

32) When a harmful allele is carried on the X chromosome,

- A) females are more likely to be affected.
- B) males are more likely to be affected.
- C) 50 percent of the female children are likely to have the disorder.
- D) 50 percent of the male children are likely to be carriers of the disorder.

Answer: B

Page Ref: 57

Skill: Factual

Objective: 2.7

33) Which of the following statements is true about sex differences?

- A) Rates of miscarriage are higher for girls, while rates of birth defects are higher for boys.
- B) Rates of miscarriage, mental retardation, and birth defects are all higher for girls.
- C) Worldwide, about 106 girls are born for every 100 boys.
- D) Rates of miscarriage, mental retardation, and birth defects are all higher for boys.

Answer: D

Page Ref: 59

Skill: Conceptual

Objective: 2.7

34) Genomic imprinting

- A) can be triggered by smoking or exposure to environmental pollutants, such as mercury or lead.
- B) occurs when alleles are chemically marked in such a way that one pair member is activated, regardless of its makeup.
- C) is more likely to affect males because their sex chromosomes do not match.
- D) is always permanent, cannot be erased in the next generation, and occurs in all offspring if it occurs in one.

Answer: B

Page Ref: 59

Skill: Conceptual

Objective: 2.7

35) Fragile X syndrome

- A) is an example of polygenic inheritance.
- B) occurs when there is a sudden but permanent change in a segment of DNA.
- C) is the most common inherited cause of mental retardation.
- D) occurs more often in females than males because the disorder is X-linked.

Answer: C

Page Ref: 59

Skill: Factual

Objective: 2.7

36) Mutations

- A) rarely occur spontaneously.
- B) can be caused by hazardous environmental agents.
- C) affect only one gene.
- D) cannot occur after birth.

Answer: B

Page Ref: 60

Skill: Factual

Objective: 2.7

37) In somatic mutations,

- A) the defective DNA is passed on to the next generation.
- B) cells that give rise to gametes mutate.
- C) the event giving rise to the mutation occurs at conception.
- D) the DNA defect appears in every cell derived from the affected body cell.

Answer: D

Page Ref: 60

Skill: Factual

Objective: 2.7

38) Personality variations among siblings is due to

- A) germline mutation.
- B) dominant–recessive inheritance.
- C) polygenic inheritance.
- D) homozygotic inheritance.

Answer: C

Page Ref: 60

Skill: Factual

Objective: 2.7

39) Most chromosomal defects result from

- A) mistakes during meiosis.
- B) germline mutations.
- C) mistakes during mitosis.
- D) somatic mutations.

Answer: A

Page Ref: 60

Skill: Factual

Objective: 2.8

- 40) Mr. and Mrs. White are told that their son has the most common chromosomal disorder. The Whites' son has _____ syndrome.

- A) Klinefelter
- B) Down
- C) Triple X
- D) Turner

Answer: B

Page Ref: 60

Skill: Applied

Objective: 2.8

- 41) The most frequently occurring form of Down syndrome results from
- A) an extra broken piece of a twenty-first chromosome attaching to another chromosome.
 - B) an error during the early stages of mitosis.
 - C) a failure of the twenty-first pair of chromosomes to separate during meiosis.
 - D) the inheritance of an extra X chromosome.

Answer: C

Page Ref: 60–61

Skill: Conceptual

Objective: 2.8

- 42) Which of the following individuals has the highest probability of having a child with Down syndrome?
- A) Isabella, who is 15 years old
 - B) Bonny, who is 24 years old
 - C) Raelyn, who is 33 years old
 - D) Katrina, who is 42 years old

Answer: D

Page Ref: 61

Skill: Applied

Objective: 2.8

- 43) Most children with sex chromosome disorders
- A) suffer from mental retardation.
 - B) have verbal difficulties.
 - C) have trouble with spatial relations.
 - D) have very specific intellectual problems.

Answer: D

Page Ref: 62

Skill: Conceptual

Objective: 2.8

- 44) Mr. and Mrs. Sedgwick's child was diagnosed with Turner syndrome. Their child has a(n) _____ chromosome.
- A) extra X
 - B) missing X
 - C) missing Y
 - D) extra Y

Answer: B

Page Ref: 62

Skill: Applied

Objective: 2.8

- 45) Angela and Tony's first child died in infancy. They badly want to have another child, but are worried about Angela's family history of genetic disorders. They want to find out if Angela is a carrier. Angela and Tony are candidates for
- A) in vitro fertilization.
 - B) genetic counseling.
 - C) donor insemination.
 - D) amniocentesis.

Answer: B

Page Ref: 63

Skill: Applied

Objective: 2.9

- 46) Except for _____, prenatal diagnosis should not be used routinely, since other methods have some chance of injuring the developing organism.
- A) maternal blood analysis
 - B) amniocentesis
 - C) chorionic villus sampling
 - D) ultrasound

Answer: A

Page Ref: 63

Skill: Factual

Objective: 2.9

- 47) Which of the following is a risk associated with frequent ultrasound use?
- A) premature labor
 - B) miscarriage
 - C) low birth weight
 - D) limb deformities

Answer: C

Page Ref: 64

Skill: Conceptual

Objective: 2.9

- 48) In proteomics,
- A) researchers map the sequence of all human DNA base pairs.
 - B) scientists modify gene-specified proteins involved in disease.
 - C) doctors correct genetic abnormalities by delivering DNA carrying a functional gene to the cells.
 - D) the fetus is inspected for defects of the limbs and face using a small tube with a light source.

Answer: B

Page Ref: 65

Skill: Conceptual

Objective: 2.9

- 49) Which of the following is true about adoption?
- A) In North America, more unwed mothers give up their babies than in the past.
 - B) Children adopted after infancy fare as well or better than those adopted as infants.
 - C) In North America, the availability of healthy babies has declined.
 - D) Fewer adoptive parents are accepting children who have known developmental problems.

Answer: C

Page Ref: 65

Skill: Conceptual

Objective: 2.9

- 50) Most adopted children
- A) fare well and make rapid progress.
 - B) have persistent cognitive delays.
 - C) suffer from severe emotional problems.
 - D) have persistent social problems.

Answer: A

Page Ref: 66

Skill: Conceptual

Objective: 2.9

- 51) _____ of all couples who try to conceive discover that they are infertile.
- A) One-third
 - B) One-fourth
 - C) One-sixth
 - D) One-eighth

Answer: C

Page Ref: 66 Box: SI: Health: The Pros and Cons of Reproductive Technologies

Skill: Factual

Objective: 2.9

- 52) Children conceived through assisted reproductive techniques
- A) may receive caregiving that is somewhat warmer than children who are conceived naturally.
 - B) are at greater risk for genetic disorders than their naturally conceived counterparts.
 - C) tend to experience severe adjustment problems throughout childhood, including insecure attachment to caregivers.
 - D) are usually well-adjusted until adolescence when they experience a significant rise in psychological problems.

Answer: A

Page Ref: 66 Box: SI: Health: The Pros and Cons of Reproductive Technologies

Skill: Conceptual

Objective: 2.9

- 53) Which of the following is true about surrogate motherhood?
- A) Most surrogates have no children of their own.
 - B) Surrogates cannot be paid for their childbearing services.
 - C) It usually involves the wealthy as contractors for infants and the less economically advantaged as surrogates.
 - D) It usually involves younger couples as contractors and older women as surrogates.

Answer: C

Page Ref: 67 Box: SI: Health: The Pros and Cons of Reproductive Technologies

Skill: Conceptual

Objective: 2.9

- 54) In power and breadth of influence, no other microsystem context equals the
- A) school.
 - B) church.
 - C) family.
 - D) peer group.

Answer: C

Page Ref: 69

Skill: Factual

Objective: 2.10

- 55) Contemporary researchers view the family as
- A) a network of interdependent relationships.
 - B) primarily influenced by third parties.
 - C) a macrosystem.
 - D) a chronosystem.

Answer: A

Page Ref: 70

Skill: Conceptual

Objective: 2.10

- 56) Jonelle can promote her grandchildren's development indirectly by
- A) responding warmly to the children.
 - B) gently reprimanding the children when they misbehave.
 - C) providing financial assistance to their parents.
 - D) implementing a reward system for the children's good behavior.

Answer: C

Page Ref: 71

Skill: Applied

Objective: 2.10

- 57) People who work in skilled and semiskilled manual occupations tend to _____ than people in professional and technical occupations.
- A) marry later
 - B) have more children
 - C) have fewer children
 - D) have children later

Answer: B

Page Ref: 71

Skill: Factual

Objective: 2.11

- 58) In diverse cultures around the world, _____ in particular fosters patterns of thinking and behaving that greatly improve quality of life, for both parents and children.
- A) education of women
 - B) collectivism
 - C) living near extended family
 - D) having one stay-at-home parent

Answer: A

Page Ref: 72

Skill: Conceptual

Objective: 2.11

- 59) Affluent parents
- A) too often fail to engage in family interaction and parenting that promote favorable development.
 - B) are less likely than low-SES parents to have children who use alcohol and drugs.
 - C) are less likely than low-SES parents to have children who report high levels of depression.
 - D) are more likely than low-SES parents to engage in family interaction and parenting that promote favorable development.

Answer: A

Page Ref: 72

Skill: Conceptual

Objective: 2.11

- 60) _____ strongly predicts women's preventive health behavior.
- A) Age
 - B) Marital status
 - C) IQ
 - D) Years of schooling

Answer: D

Page Ref: 73 Box: SI: Education: Worldwide Education of Girls: Transforming Current and Future Generations

Skill: Conceptual

Objective: 2.11

- 61) The largest barrier to the education of girls worldwide is/are
- A) cultural beliefs about gender roles.
 - B) a reluctance to give up a daughter's work at home.
 - C) that many schools charge parents a fee for each child enrolled.
 - D) a limited number of schools in developing areas.

Answer: C

Page Ref: 73 Box: SI: Education: Worldwide Education of Girls: Transforming Current and Future Generations

Skill: Factual

Objective: 2.11

- 62) In the United States, poverty rates
- A) have declined in recent years.
 - B) are lower among children than any other age group.
 - C) are lower for African Americans than for Caucasian Americans.
 - D) have risen in recent years.

Answer: D

Page Ref: 74

Skill: Factual

Objective: 2.11

- 63) Neighborhood resources
- A) have a greater impact on economically disadvantaged than on well-to-do young people.
 - B) contribute to favorable development in preschoolers, but not in adolescents.
 - C) are rarely needed in middle-income areas.
 - D) have a greater impact on affluent than on low-SES young people.

Answer: A

Page Ref: 76

Skill: Factual

Objective: 2.12

- 64) Which of the following children is least likely to participate in an available neighborhood organization?
- A) Meagan, who lives in a lower-middle class area
 - B) Francois, who lives in a low-income area
 - C) Chantel, who lives in an upper-middle class area
 - D) Lucius, who lives in an affluent area

Answer: B

Page Ref: 76

Skill: Applied

Objective: 2.12

- 65) Nate, whose parents are involved in his school activities, probably
- A) resents his parents' involvement in his education.
 - B) shows better academic achievement than his agemates whose parents are uninvolved.
 - C) lives in a low-SES household with many siblings.
 - D) attends a private school in a large city.

Answer: B

Page Ref: 77

Skill: Applied

Objective: 2.12

- 66) Parent-teacher contact is more frequent in
- A) small towns.
 - B) large cities.
 - C) low-SES schools.
 - D) small schools.

Answer: A

Page Ref: 77

Skill: Factual

Objective: 2.12

- 67) Which of the following statements reflects a widely held opinion in the United States?
- A) "The government should help poor parents raise their children."
 - B) "Most people are content with others intruding into family life as long as help is needed."
 - C) "If you decide to have a baby, you should be ready to care for it."
 - D) "People should try to define themselves as part of a group."

Answer: C

Page Ref: 78

Skill: Applied

Objective: 2.13

- 68) In _____ societies, people stress group over individual goals.
- A) individualistic
 - B) independent
 - C) collectivist
 - D) industrialized

Answer: C

Page Ref: 78

Skill: Factual

Objective: 2.13

- 69) In individualistic societies, people
- A) define themselves as part of a group.
 - B) are largely concerned with their own personal needs.
 - C) value an interdependent self.
 - D) readily endorse public policies for low-SES families.

Answer: B

Page Ref: 78

Skill: Conceptual

Objective: 2.13

70) _____ tends to increase as cultures become more complex.

- A) Collectivism
- B) Interdependence
- C) Individualism
- D) Social harmony

Answer: C

Page Ref: 78

Skill: Factual

Objective: 2.13

71) In the United States today, African-American parents _____ than Caucasian-American parents.

- A) live farther away from extended-family members
- B) see fewer relatives during the week
- C) perceive their relatives as less important in their lives
- D) more often live in extended-family households

Answer: D

Page Ref: 79 Box: CI: The African-American Extended Family

Skill: Factual

Objective: 2.13

72) Extended-family living is associated with

- A) more positive mother–child interaction during the preschool years.
- B) increased antisocial behavior in adolescents.
- C) decreased self-reliance in adolescents.
- D) lower rates of adolescent pregnancy and parenthood.

Answer: A

Page Ref: 79 Box: CI: The African-American Extended Family

Skill: Conceptual

Objective: 2.13

73) Which of the following is true about how the United States ranks on key measures of children’s health and well-being?

- A) The United States ranks in the top 10 on most key measures of children’s health.
- B) The United States ranks higher than Poland and Germany on the childhood poverty indicator.
- C) The United States ranks higher than Canada in public expenditure on children’s healthcare.
- D) The United States does not rank well on any key measure of children’s health and well-being.

Answer: D

Page Ref: 79

Skill: Conceptual

Objective: 2.13

74) In the United States, affordable child care is

- A) usually high in quality.
- B) fairly easy to find.
- C) in short supply.
- D) the norm.

Answer: C

Page Ref: 79

Skill: Factual

Objective: 2.13

75) Which of the following is a reason why attempts to help children and youths have been difficult to realize in the United States?

- A) While good social programs are inexpensive, they must compete for a share of the country's economic resources.
- B) Cultural values of interdependence and responsibility to others have made federal programs unnecessary.
- C) Children cannot vote or lobby to protect their own interests.
- D) Public policies aimed at fostering children's development do not yield valuable returns.

Answer: C

Page Ref: 80

Skill: Conceptual

Objective: 2.13

76) Which of the following is an accurate statement about the Convention on the Rights of the Child?

- A) The United States was one of the first countries in the world whose legislature ratified it.
- B) Opponents maintain that the Convention's provisions would shift the burden of child rearing from the state to the family.
- C) Although it includes the rights to freedom of thought and freedom of religion, it does not include the right to a free compulsory education.
- D) The United States is one of only two countries in the world whose legislature has not yet ratified it.

Answer: D

Page Ref: 81

Skill: Conceptual

Objective: 2.13

77) In the United States,

- A) a significant portion of government spending is devoted to improving quality of child care.
- B) the Children's Defense Fund is the most vigorous special interest group devoted to the well-being of children.
- C) the Convention on the Rights of the Child engages in research, public education, and legal action on behalf of children.
- D) UNICEF is the most vigorous special interest group devoted to the well-being of American children.

Answer: B

Page Ref: 81

Skill: Conceptual

Objective: 2.13

78) Behavioral geneticists

- A) have identified the variations in DNA sequences associated with most psychological disorders.
- B) argue that the effects of the environment account for only a small amount of variation in behavior.
- C) are still limited to investigating the impact of genes on complex characteristics indirectly.
- D) have identified the genes that underlie most polygenic traits, such as intelligence and personality.

Answer: C

Page Ref: 82

Skill: Factual

Objective: 2.14

79) Dr. Dimera is interested in measuring the extent to which individual differences in complex traits in a specific population are due to genetic factors. When conducting research, Dr. Dimera will most likely rely on

- A) heritability estimates.
- B) epigenesis.
- C) canalization.
- D) genetic-environmental correlation.

Answer: A

Page Ref: 82

Skill: Applied

Objective: 2.14

80) In a kinship study of intelligence, which of the following sibling pairs will likely share a high correlation?

- A) Max and Martin, nontwin brothers
- B) Jabar and Tobias, identical twins
- C) Marci and Sonia, fraternal twins
- D) Mary Jane and Susan, nontwin sisters

Answer: B

Page Ref: 82–83

Skill: Applied

Objective: 2.14

81) A heritability estimate of .3 for activity level would indicate that differences in _____ could explain ____ percent of the variation in activity level.

- A) the environment; 30
- B) heredity; 70
- C) heredity; 30
- D) the environment; 3

Answer: C

Page Ref: 83

Skill: Applied

Objective: 2.14

82) Heritability estimates

- A) give precise information on how personality traits develop.
- B) are likely to diminish the role of heredity because the environments of twin pairs are less diverse.
- C) tell researchers how environment can modify genetic influences.
- D) are controversial measures because they can easily be misapplied.

Answer: D

Page Ref: 83

Skill: Factual

Objective: 2.14

83) In an extremely understimulating environment, both Bella and Alice would have low intelligence. However, in a highly stimulating environment, Alice's performance would greatly exceed Bella's performance. This is an example of

- A) canalization.
- B) niche-picking.
- C) reaction range.
- D) genetic–environmental correlation.

Answer: C

Page Ref: 84

Skill: Applied

Objective: 2.14

84) Range of reaction reveals that

- A) individuals usually respond similarly to the same environment.
- B) unique blends of heredity and environment lead to both similarities and differences in behavior.
- C) twins are more alike than other siblings because they are raised in the same environment.
- D) our genes influence the environments to which we are exposed.

Answer: B

Page Ref: 84

Skill: Conceptual

Objective: 2.14

- 85) A behavior that is strongly canalized
- A) is easily modified by environmental conditions.
 - B) varies greatly with changes in the environment.
 - C) develops similarly in a wide range of environments.
 - D) influences the environment to which the individual is exposed.

Answer: C

Page Ref: 84

Skill: Factual

Objective: 2.14

- 86) Which of the following seems to be strongly canalized?
- A) intelligence
 - B) motor development
 - C) personality
 - D) emotional development

Answer: B

Page Ref: 84

Skill: Conceptual

Objective: 2.14

- 87) According to the concept of genetic–environmental correlation,
- A) the environments to which we are exposed determine which genes are expressed in our phenotypes.
 - B) our genes influence the environments to which we are exposed.
 - C) heredity restricts the development of some behaviors to just one or a few outcomes.
 - D) our genes influence how we respond to the environment.

Answer: B

Page Ref: 85

Skill: Conceptual

Objective: 2.14

- 88) Denyse and David are both actors and have enrolled their children in acting classes. This is an example of a(n) _____ genetic–environmental correlation.

- A) passive
- B) evocative
- C) active
- D) dynamic

Answer: A

Page Ref: 85

Skill: Applied

Objective: 2.14

- 89) Marcus, a cooperative, attentive child, receives more patient and sensitive interactions from his parents than they give to Erica, his distractible, inattentive sister. This is an example of a(n) _____ genetic–environmental correlation.

- A) passive
- B) evocative
- C) active
- D) dynamic

Answer: B

Page Ref: 85

Skill: Applied

Objective: 2.14

- 90) Grace, a musically talented youngster, joins the school orchestra and practices her violin. This is an example of a(n) _____ genetic–environmental correlation.

- A) passive
- B) evocative
- C) active
- D) dynamic

Answer: C

Page Ref: 85

Skill: Applied

Objective: 2.14

- 91) Niche-picking is an example of a(n) _____ genetic–environmental correlation.

- A) passive
- B) evocative
- C) active
- D) dynamic

Answer: C

Page Ref: 85

Skill: Conceptual

Objective: 2.14

- 92) Which of the following age groups does the most niche-picking?

- A) infants
- B) toddlers
- C) preschoolers
- D) adolescents

Answer: D

Page Ref: 85

Skill: Conceptual

Objective: 2.14

- 93) Niche-picking helps us understand why _____ pairs report similar stressful life events influenced by personal decisions and actions more often than other pairs.

- A) same-sex fraternal twin
- B) other-sex fraternal twin
- C) identical twin
- D) adopted sibling

Answer: C

Page Ref: 85

Skill: Conceptual

Objective: 2.14

- 94) The relationship between heredity and the environment is

- A) a one-way street.
- B) strongest for intelligence.
- C) best measured using heritability estimates.
- D) bidirectional.

Answer: D

Page Ref: 86

Skill: Conceptual

Objective: 2.14

- 95) According to the concept of epigenesis,
- A) development results from ongoing bidirectional interactions between heredity and all levels of the environment.
 - B) children's genetic makeup causes them to receive, evoke, and seek experiences that actualize their inborn tendencies.
 - C) heredity restricts the development of some behaviors to just one or a few outcomes.
 - D) children's genetic inheritance constrains their responsiveness to varying environments.

Answer: A

Page Ref: 86

Skill: Factual

Objective: 2.14

- 96) Jada provides her baby with a healthy diet, which promotes brain growth, leading to new connections among nerve cells, which transform gene expression. This sequence opens the door to new gene–environment exchanges, such as advanced exploration of objects and interaction with caregivers. This is an example of
- A) niche-picking.
 - B) canalization.
 - C) epigenesis.
 - D) range of reaction.

Answer: C

Page Ref: 86

Skill: Applied

Objective: 2.14

- 97) Research suggests that by itself, the DD genotype is
- A) related to impulsivity.
 - B) unrelated to impulsivity, overactivity, or oppositional behavior.
 - C) related to overactivity.
 - D) related to oppositional behavior.

Answer: B

Page Ref: 87 Box: B&E: A Case of Epigenesis: Smoking During Pregnancy Alters Gene Expression

Skill: Factual

Objective: 2.14

- 98) Which of the following individuals is the most likely to score high in impulsivity, according to research on smoking?
- A) Daniel, who has a DD genetic makeup and a mother who smoked during pregnancy
 - B) Reba, who has a DD genetic makeup and a nonsmoking mother
 - C) John, who has a DD genetic makeup and a mother who smoked prior to becoming pregnant
 - D) Samantha, who has a DB genetic makeup and a mother who smoked during pregnancy

Answer: C

Page Ref: 87 Box: B&E: A Case of Epigenesis: Smoking During Pregnancy Alters Gene Expression

Skill: Applied

Objective: 2.14

ESSAY

- 99) Summarize factors that account for the dramatic rise in fraternal twinning and other multiple births in industrialized nations over the past several decades.

Answer: Currently, fraternal twins account for 1 in about every 60 births in the United States. Older maternal age, fertility drugs, and in vitro fertilization are major causes of the dramatic rise in fraternal twinning and other multiple births in the past several decades. The rate of fraternal twinning rises with maternal age, peaking between 35 and 39 years, and then rapidly falls. Multiple births occur less often among women with poor diets, and occur more often among women who are tall and overweight or of normal weight. Multiple births are more likely with fertility hormones and in vitro fertilization. A variety of environmental influences prompt identical twinning, including temperature changes, variation in oxygen levels, and late fertilization of the ovum.

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- 100) List and describe the steps that prospective parents can take before conception to increase their chances of having a healthy baby.

Answer: *Arrange for a physical exam.* A physical exam permits detection of diseases and other medical problems that might reduce fertility, be difficult to treat during pregnancy, or affect the developing organism.

Consider their genetic makeup. Find out if anyone in their families has had a child with a genetic disease or disability. If so, seek genetic counseling before conception.

Reduce or eliminate toxins. The developing organism is highly sensitive to damaging environmental agents during the early weeks of pregnancy. Couples trying to conceive should avoid drugs, alcohol, cigarette smoke, radiation, pollution, chemical substances in the home and workplace, and infectious diseases. Furthermore, stay away from ionizing radiation and some industrial chemicals that are known to cause mutations.

Ensure proper nutrition. Taking a vitamin–mineral supplement containing folic acid before conception helps prevent many prenatal problems. Folic acid reduces the chances of neural tube defects, prematurity, and low birth weight.

Consult a doctor after 12 months of unsuccessful efforts at conception. Long periods of infertility may be due to undiagnosed spontaneous abortions, which can be caused by genetic defects in either partner. If a physical exam reveals a healthy reproductive system, seek genetic counseling.

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- 101) Discuss direct and indirect influences on family functioning, and provide an example of each.

Answer: Contemporary researchers view the family as a network of interdependent relationships. Bidirectional influences exist in which the behaviors of each family member affect those of others. Direct influences occur when the behavior of one family member helps sustain a form of interaction in the other that either promotes or undermines psychological well-being. For example, when warmth and affection accompany parents' requests, children tend to cooperate. When children willingly comply, their parents are likely to be warm and gentle in the future. In contrast, parents who discipline with hostility usually have children who refuse and rebel. Because children's misbehavior is stressful for parents, they may increase their use of punishment, leading to more unruliness by the children. In these examples, each of the children's reactions, in turn, prompts a new link in the interactive chain. Indirect influences occur when interactions between any two family members are affected by others, known as third parties, who are present in the setting. For example, when the parents' marital relationship is warm and considerate, mothers and fathers praise and stimulate their children more, and nag and scold them less. In contrast, when a marriage is tense and hostile, parents are likely to express anger, criticize, and punish.

Page Ref: 69–71

- 102) How does educating girls impact the welfare of families, societies, and future generations? What impact does it have on family health?

Answer: Although schooling is vital for all children, educating girls has an especially powerful impact on the welfare of families, societies, and future generations. The diverse benefits of girls' schooling largely accrue in two ways: (1) through enhanced verbal skills—reading writing, and oral communication; and (2) through empowerment—a growing desire to improve their life conditions.

Education gives girls the communicative skills and confidence to seek health services and to benefit from public health information. Years of schooling strongly predicts women's preventive health behavior. Because educated women have more life opportunities, they are more likely to take advantage of family planning services, delay marriage and childbearing, and have more widely spaced and fewer children. All these practices are linked to increased maternal and child survival and family health.

Page Ref: 73

103) Summarize the benefits of establishing family–neighborhood ties.

Answer: Family–neighborhood ties reduce parental stress and promote child development. They provide social support, which leads to the following benefits:

- *Parental self-worth.* A neighbor or relative who listens and tries to relieve a parent’s concern enhances her self-esteem. The parent, in turn, is likely to interact in a more sensitive and involved manner with her children.
- *Parental access to valuable information and services.* A friend who suggests where a parent might find a job, housing, and affordable child care and youth activities helps make the multiple roles of spouse, parent, and provider easier to fulfill.
- *Child-rearing controls and role models.* Friends, relatives, and other community members may encourage and demonstrate effective parenting practices and discourage ineffective practices.
- *Direct assistance with child rearing.* As children and adolescents participate in their parents’ social networks and in neighborhood settings, other adults can influence children through warmth, stimulation, and exposure to a wider array of competent models. In this way, family–neighborhood ties can reduce the impact of ineffective parenting. Nearby adults can also intervene when they see young people skipping school or behaving antisocially.

Page Ref: 76

104) Describe range of reaction and canalization, including how each of these concepts helps us to understand how heredity and the environment interact.

Answer: Range of reaction refers to each person’s unique, genetically determined response to a range of environmental conditions. Reaction range can apply to any characteristic. Reaction range highlights two important points about the relationship between heredity and the environment. First, it shows that because each of us has a unique genetic makeup, we respond differently to the same environment. Second, sometimes different genetic–environmental combinations can make two people look the same.

Canalization refers to the tendency of heredity to restrict the development of some characteristics to just one or, at most, a few outcomes. A behavior that is strongly canalized develops similarly in a wide range of environments; only strong environmental forces can change it. Canalization is highly adaptive. Through it, nature ensures that children will develop certain species-typical skills under a wide range of rearing conditions, thereby promoting survival.

Page Ref: 84

105) Define and provide an example of niche-picking.

Answer: Niche-picking is the tendency to actively choose environments that complement our heredity. It is an example of active genetic–environmental correlation. As children extend their experiences beyond the immediate family and are given the freedom to make more choices, they actively seek environments that fit with their genetic tendencies. For example, a well-coordinated, muscular child joins an after-school sports team. Infants and young children cannot do much niche-picking because adults select environments for them. In contrast, older children and adolescents are much more in charge of their environments.

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