TOTAL ASSESSMENT GUIDE

Chapter 2 Heredity and Environment

Learning Objectives	Remember the Facts	Understand the Concepts	Apply What You Know
LO 2.1: Explain the three major functions of genes.	1,3,5-7,94-95,99-100, 126-131,158,169	2,4,96,159	97-98,160
LO 2.2: Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.	8,11,101,132	10,102	9,170
LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.	12-15,18,21,24-25, 103-105,136, 138-139,162	17,106,133, 140-141,171	16,19-20,22-23,26, 134-135,137,161,172
LO 2.4: Describe the cause and the main characteristics of Down syndrome.	27-28,30,32	29,142,163,173	31,107
LO 2.5: Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.	33-40,44,144	43,45,108-110, 113,143,145, 147-148,175	41-42,111-112,146, 164,174
LO 2.6: Explain the concepts of heritability and shared and nonshared environment and how their contributions change with age.	46,48-49,51, 114-115,152	47,53-54,116, 149,176	50,52,150-151,165
LO 2.7: Explain limitations involved in estimating hereditary and environmental influences on behavior.	56,117-119		55,57,177
LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.	58,60-61,67-68,153	59,62-66,166-167	120,178

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Learning Objectives	Remember the Facts	Understand the Concepts	Apply What You Know
LO 2.9: Explain how scientists obtain evidence for gene–environment interactions in humans.	69,155	70-73,154,179	
LO 2.10: Describe evidence from animal and human studies that environments influence gene expression.	74,76,78,122,155	75,77,79,121, 180-181	
LO 2.11: Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.	80-82,84,87,123	83,85-86,88, 124-125	182
LO 2.12: Explain how the influences of different levels of the external environment might be studied, using the example of obesity.	91,156-157	89,93,168	90,92,183

Manis, *The Dynamic Child*, Test Bank

Chapter Two: Heredity and Environment

Multiple-Choice Questions

TB_Q2.1.1

A(n) _____ is a segment of DNA that serves as a template for making one or more proteins.

a. gamete
b. gene
c. miosis
d. chromosome

Answer: b. gene

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.2

The 23 pairs of chromosomes in every human being are stored
a. in the master cell.
b. in arterial blood.
c. in the brainstem.
d. in every bodily cell

Answer: d. in every bodily cell.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.1.3

The basis of the genetic code in all living things is
a. the sequence of chemical bases in DNA.
b. the types of proteins contained in the DNA.
c. the arrangement of chromosomes in the cell.
d. the pattern in which the DNA strand coils.

Answer: a. the sequence of chemical bases in DNA.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.4

Scientists have discovered that the human genome contains about 21,000 genes and
a. each gene holds the instructions to make one protein.
b. each gene can make more than one protein.
c. most of these genes are turned off throughout development.
d. most of these genes are turned on at birth and remain on.

Answer: b. each gene can make more than one protein.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.1.5

The process by which cells divide and multiply is
a. mitosis.
b. meiosis.
c. DNA.
d. unknown to scientists.

Answer: a. mitosis.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.1.6

The type of cell division that occurs only in men’s and women’s reproductive cells is called
a. gametes
b. the genetic code.
c. meiosis.
d. mitosis.

Answer: c. meiosis.

Learning Objective: LO 2.1 Explain the three major functions of genes.

Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.1.7

The name for reproductive cells is
a. meiosis.
b. proteins.
c. gametes.
d. miosis.

Answer: c. gametes.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.2.8

Gene _____ is the extent to which a gene can perform its functions of regulating other genes or producing proteins used in the body.
a. expression
b. meiosis
c. mitosis
d. DNA

Answer: a. expression

Learning Objective: LO 2.2 Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.
Topic/Concept: Understanding the Path from Genes to Behavior: Fragile X Syndrome
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.2.9

Patricia had Fragile X syndrome, in which a gene on her X chromosome
a. functions normally.
b. is found only in females.
c. is silenced.
d. is damaged, affecting locomotion.

Answer: c. is silenced.

Learning Objective: LO 2.2 Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.
Topic/Concept: Understanding the Path from Genes to Behavior: Fragile X Syndrome
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.2.10

Studies of brain functioning, cognition, and behavior in children with fragile X syndrome reveal that in single gene disorders, the effects of genes on behavior are

a. direct.
b. mediated by both brain development and cognitive functioning.
c. influenced more by the environment than by alterations in brain development.
d. impossible to determine.

Answer: b. mediated by both brain development and cognitive functioning.

Learning Objective: LO 2.2 Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.
Topic/Concept: Understanding the Path from Genes to Behavior: Fragile X Syndrome
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.2.11

In fragile X, deficient levels of the FMRP protein affect all of the following *except*

a. executive functions of the brain.
b. responsibility to the environment.
c. physical growth of the body.
d. cognitive skills such as memory and language.

Answer: c. physical growth of the body.

Learning Objective: LO 2.2 Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.
Topic/Concept: Understanding the Path from Genes to Behavior: Fragile X Syndrome
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.12

A(n) _____ is an alternate form of a gene—generally one comes from the mother and one comes from the father.

a. phenotype
b. genotype
c. allele
d. polygenic inheritance

Answer: c. allele

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.13

The genotype is the particular combination of alleles present in
a. a species.
b. an individual.
c. a family.
d. a single-gene disorder.

Answer: b. an individual.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.3.14

The _____ is the observable trait or disease in an individual, influenced by genotype and environment.
a. phenotype
b. allele
c. X chromosome
d. Y chromosome

Answer: a. phenotype

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.3.15

In inheritance, one of the two _____ is dominant, meaning that it is expressed. The other is recessive.
a. gametes

b. chromosomes
c. alleles
d. twins

Answer: c. alleles

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.16

Two parents with curly hair (a dominant trait) are wondering how likely it will be that their first child would have curly hair. A geneticist determines that they are both heterozygous for curly hair (meaning they have one dominant and one recessive allele each). She tells them the probability of their first child having curly hair is about

a. 100%.
b. 75%.
c. 50%.
d. 25%.

Answer: c. 50%.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Apply What You Know

TB_Q2.3.17

Huntington's disease is a dominant single-gene disorder. This means that

a. it can only be passed on if both parents have the allele for the disease.
b. it can be passed on if one or the other parent has the allele for the disease.
c. it can only be passed on if one parent has begun to have symptoms of the disease.
d. it will not be passed on if one parent has the allele for the disease and the other does not.

Answer: b. it can be passed on if one or the other parent has the allele for the disease.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.3.18

The majority of genetic disorders involve _____ traits
a. unknown
b. dominant
c. chromosome
d. recessive

Answer: d. recessive

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.19

Raymond has a mother who is a carrier of the disease PKU, and a father who is also the carrier. What are Raymond's chances of actually having the disease?
a. 100%
b. 50%
c. 25%
d. 0%

Answer: c. 25%

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.3.20

Jane had PKU. The doctor told Jane's mother that in PKU, the _____, as well as the genotype, is involved.
a. meiosis
b. environment
c. extra 21st chromosome
d. zygote

Answer: b. environment

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.

Topic/Concept: Patterns of Inheritance
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.3.21

Color blindness is an example of X-linked inheritance. The gene for color blindness is located on the X chromosome. It is more likely to occur

a. in females because they have two X chromosomes.

b. in females because the effects of any genetic disorder are stronger for them.

c. in males because the Y chromosome does not have a corresponding allele to counteract the color blindness allele on the X chromosome.

d. in males because the effects of any genetic disorder are stronger for them.

Answer: c. in males because the Y chromosome does not have a corresponding allele to counteract the color blindness allele on the X chromosome.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.22

Huberto had one X chromosome and one Y chromosome. Therefore, Huberto was a(n)

a. boy.

b. girl.

c. PKU carrier.

d. example of X-linked inheritance.

Answer: a. boy.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.3.23

Alice and Jag picked out two names for their baby, one (Aamir) in case the baby was a boy, and another (Beatrice) in case the baby was a girl. The happy day arrived and their baby was born. The baby turned out to have two X chromosomes. What did Alice and Jag name the baby?

a. Aamir

b. X

c. Beatrice
d. The answer can't be determined from the information given.

Answer: c. Beatrice

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Apply What You Know

TB_Q2.3.24

One result of the Human Genome Project is that scientists have
a. identified the genetic basis of about half of the known Mendelian single-gene disorders,
b. developed methods of treating most of the known Mendelian single-gene disorders.
c. learned how to prevent disorders such as PKU and Huntington's disease.
d. identified the genetic basis of all of the single-gene disorders.

Answer: a. identified the genetic basis of about half of the known Mendelian single-gene disorders.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 3
Skill Level: Remember the Facts

TB_Q2.3.25

_____ refers to traits or disorders influenced by the combined effects of more than one gene.
a. Polygenic inheritance
b. Down syndrome
c. Fragile X syndrome
d. Mendelian

Answer: a. Polygenic inheritance

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.26

Seo-yun was one of four children. Her mother was short, and her father was tall. In all likelihood, when they are grown, Seo-yun and her siblings will have heights

a. like her mother.
b. in an intermediate range between the heights of the parents.
c. like her father.
d. all precisely in the middle between her mother's height and her father's height.

Answer: b. in an intermediate range between the heights of the parents.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.4.27

The more common source of cognitive disabilities is

a. chromosomal errors.
b. the absence of an extra chromosome.
c. single-gene disorders.
d. exposure to radiation.

Answer: a. chromosomal errors.

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.4.28

Chromosomal errors generally occur during the process of

a. mitosis.
b. meiosis.
c. protein synthesis.
d. pregnancy.

Answer: b. meiosis.

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.4.29

Absence of chromosomes or presence of extra chromosomes in a fetus usually results in
a. death of the fetus.
b. a normal baby of either gender.
c. a boy.
d. a good outcome for the baby provided the mother is over age 45.

Answer: a. death of the fetus.

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.4.30

Having an infant with Down syndrome is more common if _____ is older.
a. the mother, but not the father
b. the father, but not the mother
c. more than one sibling
d. the mother or the father

Answer: d. the mother or the father

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.4.31

Down syndrome is caused by
a. a missing chromosome.
b. two X chromosomes.
c. an extra 21st chromosome.
d. the presence of an X and a Y chromosome.

Answer: c. an extra chromosome.

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.4.32

Down syndrome is associated with all of the following, *except*
a. dementia in later life.
b. heart conditions.
c. distinctive facial features.
d. delayed motor but not cognitive development.

Answer: d. delayed motor but not cognitive development.

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Difficulty Level: 3
Skill Level: Remember the Facts

TB_Q2.5.33

The nature–nurture debate within psychology
a. is new.
b. has been settled—nurture won.
c. is still debated in modern psychology.
d. is not relevant to modern psychology.

Answer: c. is still debated in modern psychology.

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.34

_____ is/are a field in which scientists study genetic and environmental contributions to psychological and physical traits.
a. Twin studies
b. Behavior genetics
c. Adoption design
d. Segregating genes

Answer: b. Behavioral genetics

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.35

Which of the following has different alleles and therefore can be inherited in different patterns from one person to another?

a. Adoption design
b. All gene
c. Segregating genes
d. Zygote

Answer: c. Segregating genes

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.36

_____ is a research design in which the contribution of genes and environment is teased apart by comparing individuals who share 100% or 50% of their segregating genes.

a. Twin design
b. Heritability
c. Adoption design
d. Epigenesis

Answer: a. Twin design

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.5.37

In a(n) _____, biological parents, their adopted-away children, and the adoptive parents and siblings are compared.

a. twin design
b. singleton design
c. adoption design
d. polygenic inheritance

Answer: c. adoption design

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment

Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.38

Correlations for the IQ scores of identical twins raised in the same home _____ those for fraternal twins raised in the same home.

a. are lower than
b. cannot be compared to
c. are the same as
d. are higher than

Answer: d. are higher than

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.39

The correlations for IQ scores of biologically related parents and children _____those for adoptive parents and children.

a. are higher than
b. are lower than
c. cannot be compared to
d. are the same as

Answer: a. are higher than

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.40

The correlations between IQ scores for cousins are _____ siblings raised in the same home.

a. somewhat lower than
b. higher than
c. the same as
d. much lower than

Answer: a. somewhat lower than

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.41

Kijana and Elroi were newborn identical twins. Being identical twins, Kijana and Elroi share what percentage of their segregating genes?

a. 25%
b. 50%
c. 75%
d. 100%

Answer: d. 100%

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.5.42

Oscar was born first, and Frank was born a few minutes later. Oscar and Frank were fraternal twins. Fraternal twins share about _____ of their segregating genes.

a. 10%
b. 20%
c. 50%
d. 90%

Answer: c. 50%

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.5.43

What do parents and adoptive children share?

a. Genes and environment
b. Genes, but not environment
c. Neither genes nor environment

d. Environment, but not genes

Answer: d. Environment, but not genes

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.5.44

The IQ scores of adoptive parents are correlated with their adopted children, which represents a(n)

a. genetic influence.
b. coincidence.
c. environmental influence.
d. design error.

Answer: c. environmental influence.

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.45

Identical twins reared apart still have substantial correlations between their IQ scores, suggesting a role for _____, but the correlations are lower than those recorded for identical twins reared together, suggesting a role for _____.

a. environment; genes
b. genes; genes
c. genes; environment
d. environment; environment

Answer: c. genes; environment

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.6.46

_____ is the proportion of variance in a trait that is due to variation in genes.
a. Shared environment
b. Heritability
c. Non-shared environment
d. Gene–environment correlation

Answer: b. Heritability

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.6.47

An important insight to take from the data on heritability of different traits and disorders is that
a. traits tend to be heritable, but disorders are not.
b. disorders tend to be heritable, but traits are not.
c. most traits and disorders are moderately to strongly heritable.
d. very few traits and disorders are even moderately heritable.

Answer: c. most traits are moderately to strongly heritable.

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.6.48

The heritability values for common traits are _____ than those for major mental disorders.
a. much higher
b. somewhat higher
c. about the same
d. lower

Answer: d. lower

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2

Skill Level: Remember the Facts

TB_Q2.6.49

_____ refers to influences that make children and adults raised in the same circumstances similar.

a. Shared environment
b. Nurture
c. Behavior genetics
d. Non-shared environment

Answer: a. Shared environment

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.6.50

Timo, age 7, and Nora, age 9, had the same parents, rode the bus every day to the same school, and had their rooms at home across the hall from each other. Timo and Nora had a(n)

a. non-shared environment.
b. identical genetics.
c. shared environment.
d. twin design.

Answer: c. shared environment.

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.6.51

Behavior geneticists use the term _____ to refer to influences that make children and adults raised in the same circumstances different.

a. shared environment
b. twin design
c. direct index
d. non-shared environment

Answer: d. non-shared environment

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.6.52

Mina had taken piano lessons since she was 5 years old. She was 10 now. Her brother, Lee, had taken piano lessons even longer, and had just switched to a different teacher. Though Mina and Lee were raised in the same home, the piano lesson differences are examples of influences from a(n)

a. genetic variation.
b. non-shared environment.
c. adoption study.
d. shared environment.

Answer: b. non-shared environment.

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.6.53

Adoption studies have shown that _____ children become _____ similar with age in general cognitive ability.

a. genetically unrelated/more
b. genetically identical/less
c. genetically related/more
d. genetically related/less

Answer: c. genetically related/more

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.6.54

Twin studies show that some personality traits such as antisocial behavior and religiousness, show

a. increasing heritability with age.

b. decreasing heritability with age.
c. no change in heritability with age.
d. increasing shared environmental influences with age.

Answer: a. increasing heritability with age.

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.7.55

Gerardo loved to do somersaults and to jump up and down, like all small children, but his parents noticed that he did so more vigorously than his playmates. Gerardo seemed to have athletic potential. His parents discussed this, and thought they should encourage it. Soon a small trampoline was added to Gerardo's room, and at age 8, he was taking private gymnastics lessons from an Olympic gold medal winner. This is an example of how

a. environments influence genes.
b. environments and genes are unrelated.
c. genes influence environments.
d. genes exert no influence on environments.

Answer: c. genes influence environments.

Learning Objective: LO 2.7 Explain limitations involved in estimating hereditary and environmental influences on behavior.
Topic/Concept: Limitations of Behavior Genetic Studies
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.7.56

Something that complicates genetic studies is that genes have different effects in different environments, such as the different outcomes for children with PKU with and without exposure to phenylalanine in the diet. This complication is referred to as

a. a genetic disorder.
b. a gene–environment interaction.
c. gene-environment variation.
d. variable phenotypes.

Answer: b. a gene–environment interaction.

Learning Objective: LO 2.7 Explain limitations involved in estimating hereditary and environmental influences on behavior.
Topic/Concept: Limitations of Behavior Genetic Studies

Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.7.57

Svetlana's parents grew up in Russia, with many food shortages. When they immigrated to the United States, there was plenty of food for Svetlana. Svetlana's parents were of average height, but Svetlana was much taller. Presumably her parents had genes that would have enabled them to be taller than they were if they'd had adequate nutrition. The difference in the heights of Svetlana and her parents illustrates how

a. environments influence gene expression.
b. gene expression and environments are unrelated.
c. gene expression influences environments.
d. environments have no effect on gene expression.

Answer: a. environments influence gene expression.

Learning Objective: LO 2.7 Explain limitations involved in estimating hereditary and environmental influences on behavior.
Topic/Concept: Limitations of Behavior Genetic Studies
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.8.58

Genes and environment work together to produce developmental change. This is referred to as

a. exclusivity of genes and environment.
b. transactions of genes and environment.
c. predominance of genes.
d. predominance of environment.

Answer: b. transactions of genes and environment.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.8.59

Genes and environment work together

a. intermittently.
b. at key points in development.
c. continuously.
d. not at all.

Answer: c. continuously.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.8.60

_____ refers to differences in experiences that are based in part on genetic variations among different people.

a. Epigenesis
b. Distal influence
c. Gene–environment correlation
d. Gene–environment interaction

Answer: c. Gene–environment correlation

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.8.61

The observation that levels of the environment affect individuals with one genetic make-up more than those with another genetic make-up is known as

a. gene–environment interaction.
b. epigenesist.
c. gene–environment correlation.
d. proximal influence.

Answer: a. gene–environment interaction.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.8.62

In _____ gene–environment correlations, children inherit genotypes correlated with their family environment.

a. active
b. passive
c. evocative
d. epigenetic

Answer: b. passive

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.8.63

In _____ gene–environment correlations, people elicit different responses from the people in their environments on the basis of their genetic predispositions.

a. active
b. passive
c. evocative
d. epigenetic

Answer: c. evocative

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.8.64

In _____ gene–environment correlations, people seek out or create environments correlated with their genetic predispositions.

a. active
b. passive
c. evocative
d. epigenetic

Answer: a. active

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 3

Skill Level: Understand the Concepts

TB_Q2.8.65

Passive gene–environmental correlations
a. increase between childhood and adulthood.
b. decrease between childhood and adulthood.
c. are present in childhood.
d. are absent in childhood.

Answer: c. are present in childhood.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.8.66

The similarity between parents and biological children given up for adoption may be explained by
a. passive gene–environment correlations.
b. simple Mendelian inheritance.
c. evocative and active gene–environment correlations.
d. shared environment

Answer: c. evocative and active gene–environment correlations.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.8.67

In the study by Tucker-Drob and Harden (2012), an environmental influence was shown by the finding that _____ at age 2 correlated with child cognitive ability at age 4.
a. parental stimulation
b. child cognitive ability
c. external environmental factors, such as family income
d. children's genetic profiles

Answer: a. parental stimulation

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.8.68

The finding in Tucker-Drob & Harden's (2012) longitudinal twin study that parental stimulation at age 4 was predicted by child cognitive ability at age 2, and that this relationship was largely a genetic one, provided evidence for

a. a gene-environment interaction.
b. environments influencing gene expression.
c. a passive gene-environment correlation.
d. an evocative gene-environment correlation.

Answer: d. an evocative gene-environment correlation.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 3
Skill Level: Remember the Facts

TB_Q2.9.69

In _____ , levels of the environment affect individuals with one genetic make-up more than individuals with another genetic make-up.

a. distal influences
b. gene–environment interaction
c. heritability
d. proximal influence

Answer: a. gene–environment interaction

Learning Objective: LO 2.9 Explain how scientists obtain evidence for gene–environment interactions in humans.
Topic/Concept: Gene–Environment Interactions
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.9.70

With better understanding of the human genome, there is accumulating evidence that _____ affect a child's responsiveness to specific environmental hazards.

a. no genes that have been identified

b. unknown genes do
c. only the environmental exposures of the child
d. specific genes

Answer: d. specific genes

Learning Objective: LO 2.9 Explain how scientists obtain evidence for gene–environment interactions in humans.
Topic/Concept: Gene–Environment Interactions
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.9.71

Several research groups have found that _____ individuals showed higher levels of antisocial behavior if they had a low-activity MAOA allele but not a high-activity MAOA allele.
a. non-maltreated
b. maltreated
c. all
d. no

Answer: b. maltreated

Learning Objective: LO 2.9 Explain how scientists obtain evidence for gene–environment interactions in humans.
Topic/Concept: Gene–Environment Interactions
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.9.72

In a study of adults, scientists found that those maltreated in childhood had the greatest likelihood of depression as adults if they had _____ serotonin transporter gene allele.
a. the short-long (heterozygous)
b. the long
c. the short-short (homozygous)
d. an unknown type of

Answer: c. the short-short (homozygous)

Learning Objective: LO 2.9 Explain how scientists obtain evidence for gene–environment interactions in humans.
Topic/Concept: Gene–Environment Interactions
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.9.73

Many studies demonstrate interactions between a single gene and specific environmental factors. However, in the real world, the most common interactions probably take place between _____ of genes and _____ environments.

a. large numbers/diverse
b. small numbers/diverse
c. small numbers/limited
d. large numbers/limited

Answer: a. large numbers/diverse

Learning Objective: LO 2.9 Explain how scientists obtain evidence for gene–environment interactions in humans.
Topic/Concept: Gene–Environment Interactions
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.10.74

Environmental influences on gene expression

a. are virtually nonexistent.
b. are internal to the body only.
c. are within the cell, the body and the external environment.
d. originate only from the external environment.

Answer: c. are within the cell, the body and the external environment.

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.10.75

The experiment by Meaney and colleagues (Meaney, 2010; Weaver et al., 2004;), on rats raised by nurturant and non-nurturant mothers, concluded that early experience

a. cannot modify gene expression.
b. can modify gene expression if it starts before birth.
c. can modify gene expression.
d. can modify gene expression if it starts within 2 months after birth.

Answer: c. can modify gene expression

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression

Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.10.76

_____ is a mechanism in which chemicals attached to the genes can turn gene expression on or off, based on input from other genes or from the environment.

a. Epigenesis
b. Distal influence
c. Heritability
d. Proximal influence

Answer: Epigenesis

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.10.77

Methyl groups

a. have no impact on the expression of genes.
b. alter the sequence of letters in the DNA code
c. attach to DNA and reduce the expression of some genes.
d. are present in DNA due to rare mutations.

Answer: c. attach to DNA and reduce the expression of some genes.

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.10.78

Studies have found that life stress _____ is associated with higher degrees of methylation in genes involved in brain development.

a. after age five
b. at any point in the lifespan
c. never
d. in the first four years of life

Answer: d. in the first four years of life

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.10.79

Which of the following statements about epigenetics is true?

a. Epigenetic changes are only one of many ways that experience can modify DNA expression.

b. Epigenetic findings are rejected by most developmental scientists because they contrast with traditional views of heredity and environment.

c. Epigenetics has proven that there is no biological mechanism through which experiences can affect gene expression.

d. Through over a century of research, epigenetics has contributed substantially to the body of developmental knowledge.

Answer: a. Epigenetic changes are only one of many ways that experience can modify DNA expression.

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.11.80

The _____ approach says that the emergence of social smiling results from factors ranging from genetic activity to the social environment.

a. developmental systems
b. traditional nature–nurture
c. polygenetic inheritance
d. segregating gene

Answer: a. developmental systems

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.11.81

Each of the following is a level of analysis in Gottlieb's developmental system approach *except*

a. brain & cognition.
b. motor.
c. genes.
d. environment.

Answer: b. motor.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.11.82

In the experiment with mallard ducklings, Gottlieb and colleagues provided evidence that each species inherits not only species-typical genes, but also

a. the same environmental context.
b. a species-typical environment.
c. species-atypical genes.
d. epigenetic factors.

Answer: b. a species-typical environment.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.11.83

Over a lifetime, identical twins—with identical genetic codes—

a. remain identical in gene expression.
b. have the same experiences.
c. can be quite different in gene expression.
d. end up with different genetic codes.

Answer: c. can be quite different in gene expression.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.11.84

According to Gottlieb, the inevitability of development is
a. the fundamental principle of human development.
b. a result of both genetically controlled maturation and a species-typical rearing environment.
c. a result primarily of genetically controlled maturation.
d. applicable to humans in all circumstances.

Answer: b. a result of both genetically controlled maturation and a species-typical rearing environment.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.11.85

The environment, for Gottlieb, meant
a. only the cells surrounding the genes.
b. the prenatal environment.
c. neurotransmitters.
d. all influences outside of the genes.

Answer: d. all influences outside of the genes.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.11.86

To Gottlieb, the influence of the environment, behavior, neural activity, and genetic activity on individual development is
a. unidirectional.
b. confined to the period before birth.
c. bidirectional.
d. determined with absolute certainty.

Answer: c. bidirectional.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.

Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.11.87

The first environment in which genes begin functioning is
a. different cell types.
b. a single cell.
c. the womb.
d. a variety of chemicals.

Answer: b. a single cell.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.11.88

The developmental systems model is best thought of as a(n)
a. conceptual framework.
b. specific theory about development.
c. obsolete concept.
d. complex theory that is quite easy to test.

Answer: a. conceptual framework.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.12.89

Because the problem of obesity has occurred across children as a group,
a. it is entirely due to genetic factors.
b. it should probably no longer be viewed as a problem.
c. it is entirely due to environmental factors.
d. it cannot be entirely due to genetic factors.

Answer: d. it cannot be entirely due to genetic factors.

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.12.90

Environmental factors leading to a lack of physical activity also contribute to a trend toward obesity in children. All of the following might interfere with physical activity for an inner-city youngster *except*

a. unavailability of recreational sports programs.
b. parents who can't afford the money for a sports program.
c. they are less likely to be allowed to walk or bike to school.
d. they are more likely than more affluent youngsters to spend time on the internet.

Answer: d. they are more likely than more affluent youngsters to spend time on the internet

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.12.91

_____ refer(s) to environmental influences that are not present in the child's immediate environment, but can have an effect through the immediate environment.
a. Proximal influences
b. Epigenesis
c. Distal influences
d. Adoption design

Answer: c. Distal influences

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.12.92

Caleb was steadily gaining weight and he wasn't too pleased about it. There were snacks readily available at Caleb's house, and this is contributing to his weight gain. Environmental influences in the child's immediate surroundings are

a. proximal influences.
b. biological.
c. distal influences.
d. inevitable.

Answer: a. proximal influences.

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.12.93

A(n) _____ influence on eating habits is the large portion sizes sold by fast-food restaurants.

a. healthy
b. proximal
c. distal
d. epigenetic

Answer: c. distal

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Understand the Concepts

True/False Questions

TB_Q2.1.94

Every cell in the human body has 33 pairs of chromosomes.

Answer: False

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction

Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.95

DNA is contained in chromosomes.

Answer: True

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.96

Proteins are the building blocks of the body.

Answer: True

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.1.97

Marie and John had a baby. The baby had both an X and a Y chromosome. When the baby was born, the doctor announced, “It’s a boy!”

Answer: True

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.1.98

A baby girl has two Y chromosomes.

Answer: False

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.1.99

Judging by the photograph of human chromosomes near the start of the Chapter 2, chromosome 1 is the smallest.

Answer: False

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.100

RNA is a partner compound of DNA.

Answer: True

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.2.101

Fragile X syndrome is the most common single-gene disorder associated with cognitive disability.

Answer: True

Learning Objective: LO 2.2 Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.
Topic/Concept: Understanding the Path from Genes to Behavior: Fragile X Syndrome
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.2.102

Genes never vary in their expression.

Answer: False

Learning Objective: LO 2.2 Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.
Topic/Concept: Understanding the Path from Genes to Behavior: Fragile X Syndrome
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.3.103

An allele is an alternate form of a gene.

Answer: True

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.104

The particular combination of alleles present in an individual is known as the phenotype.

Answer: False

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.105

The observable trait or disease shown by an individual is known as the genotype.

Answer: False

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.106

In polygenetic inheritance, the combined effects of more than one gene influence traits and disorders.

Answer: True

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2

Skill Level: Understand the Concepts

TB_Q2.4.107

The average life span for individuals with Down syndrome is about 50 years.

Answer: True

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.5.108

It is possible to tease apart the relative contributions of genes and environment by studying resemblances in psychological traits among family members.

Answer: True

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.5.109

Identical twins share 50% of their segregating genes.

Answer: False

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.5.110

Segregating genes can produce variation among people.

Answer: True

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment

Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.5.111

Fraternal twins share none of their segregating genes.

Answer: False

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.5.112

Laura had adopted children from three different countries and three different races. Laura and her children all shared the same genes.

Answer: False

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.5.113

Adoptive parents' IQ scores are correlated with those of their adopted children.

Answer: True

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.6.114

"Heritability" means the same thing as "inherited."

Answer: False

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.6.115

Behavior geneticists break environmental influences into shared environment and non-shared environment.

Answer: True

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.6.116

An index of non-shared environment is provided by the extent of differences between identical twins raised in the same family.

Answer: True

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.7.117

Genes cannot exert an influence on the environment.

Answer: False

Learning Objective: LO 2.7 Explain limitations involved in estimating hereditary and environmental influences on behavior.
Topic/Concept: Limitations of Behavior Genetic Studies
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.7.118

Genes have the same effect regardless of the environment.

Answer: False

Learning Objective: LO 2.7 Explain limitations involved in estimating hereditary and environmental influences on behavior.
Topic/Concept: Limitations of Behavior Genetic Studies
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.7.119

Scientists have found evidence that the environment influences gene expression.

Answer: True

Learning Objective: LO 2.7 Explain limitations involved in estimating hereditary and environmental influences on behavior.
Topic/Concept: Limitations of Behavior Genetic Studies
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.8.120

It is possible that evocative and active effects account for the similarity between parents and their biological children who have been adopted by a different family.

Answer: True

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.10.121

Experiments with rats provides support for the role of the social environment in gene expression.

Answer: True

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.10.122

There is no evidence of epigenetic effects in humans.

Answer: False

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.11.123

In Gottlieb's model, genetic activity can act on the environment, but the environment cannot influence genetic activity.

Answer: False

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.11.124

Gottlieb thought that development was probabilistic.

Answer: True

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.11.125

Gottlieb's developmental systems model is easy to test.

Answer: False

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 2

Skill Level: Understand the Concepts

Fill-In-the-Blank Questions

TB_Q2.1.126

_____ are structures that contain the strands of DNA.

Answer: Chromosomes

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.127

A(n) _____ is a particular segment of a strand of DNA that provides instructions for producing a protein.

Answer: gene

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.128

In _____, a cell duplicates its DNA strand and divides into two cells.

Answer: mitosis

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.129

In _____, reproductive cells divide into daughter cells containing only one strand of DNA.

Answer: meiosis

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.1.130

Men's and women's reproductive cells are called _____ .

Answer: gametes

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.1.131

During fertilization, the sperm and ovum combine to produce a(n) _____ .

Answer: zygote

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.2.132

The _____ of a gene is the extent to which the gene can perform its function.

Answer: expression

Learning Objective: LO 2.2 Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.
Topic/Concept: Understanding the Path from Genes to Behavior: Fragile X Syndrome
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.133

In chromosomes 1 to 22, each of the thousands of genes has two or more _____, one from the mother and one from the father.

Answer: alleles

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.3.134

Each person's individual combination of alleles makes up the person's _____.

Answer: genotype

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.3.135

Jules didn't have much hair when he was born, but it was red. The observable trait of "red hair" was part of Jules' _____ .

Answer: phenotype

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Skill Level: Apply What You Know

TB_Q2.3.136

The dominant-recessive form of inheritance was first discovered by an Austrian monk named Gregor _____.

Answer: Mendel

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.3.137

Light-colored hair is a(n) _____ trait.

Answer: recessive

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.3.138

Most genetic disorders involve _____ traits.

Answer: recessive

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.139

Choosing between dominant, recessive and X-linked, Huntington's disease is an example of a(n) _____ disorder.

Answer: dominant

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.3.140

In the 23rd pair of chromosomes, the ___ is the larger of the two.

Answer: X

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.3.141

In _____, traits or disorders are influenced by the combined effects of more than one gene.

Answer: polygenetic inheritance

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.4.142

The presence of an extra chromosome, or the absence of a chromosome, usually causes a pregnancy to _____ very early.

Answer: terminate

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.5.143

_____ asks how much of the variation in a particular trait is due to genes and how much to environment.

Answer: Behavior genetics

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.5.144

In a(n) _____ design, the relative contributions of genes and environment to variation in traits are teased apart by comparing identical and fraternal twins.

Answer: twin

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment

Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.5.145

When a fertilized zygote divides, thereby producing two individuals who share 100 percent of their segregating genes, _____ twins occur.

Answer: identical

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.5.146

Bhakti and Preeti were _____ twins, formed when two ova are fertilized by different sperm cells.

Answer: fraternal

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.5.147

_____ genes can be inherited in different patterns from one person to another because they have different alleles.

Answer: Segregating

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.5.148

A(n) _____ design is a research design in which biological parents, their adopted-away children, and the adoptive parents and siblings are compared.

Answer: adoption

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.6.149

The proportion of variance in a trait that is due to variation in genes is called _____ .

Answer: heritability

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 3
Skill Level: Understand the Concepts

TB_Q2.6.150

Both Hank and his father had schizophrenia. The heritability values for major mental disorders are generally _____ than for common traits.

Answer: higher

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.6.151

Munir and Hassan were brothers, two years apart in age. They lived with their parents and went to the same grade school. They had a(n) _____ environment, which tends to make people similar.

Answer: shared

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 3
Skill Level: Apply What You Know

TB_Q2.6.152

_____ environment is an estimate of the amount of variability in a trait that is due to experiences that are unique to an individual.

Answer: Non-shared

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.8.153

Gene–environment _____ refers to genetic variation among people that influences the environments to which they are exposed.

Answer: correlation

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.9.154

Because of gene–environment _____ , levels of the environment affect individuals with one genetic make-up more than those with another genetic make-up.

Answer: interaction

Learning Objective: LO 2.9 Explain how scientists obtain evidence for gene–environment interactions in humans.
Topic/Concept: Gene–Environment Interactions
Difficulty Level: 2
Skill Level: Understand the Concepts

TB_Q2.10.155

_____ is a mechanism in which chemicals attached to the genes can turn gene expression on or off, based on input from other genes or from the environment.

Answer: Epigenesis

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Difficulty Level: 2
Skill Level: Remember the Facts

TB_Q2.12.156

_____ influences are not present in the child's immediate environment, but can have an effect through the immediate environment.

Answer: Distal

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 1
Skill Level: Remember the Facts

TB_Q2.12.157

_____ influences are environmental influences in the child's immediate surroundings.

Answer: Proximal

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Difficulty Level: 1
Skill Level: Remember the Facts

Short-Answer Questions

TB_Q2.1.158

Other than replicating itself through mitosis and passing on the genetic code through inheritance, the other important function of DNA is to

Answer: provide instructions for producing proteins.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Skill Level: Remember the Facts

TB_Q2.1.159

Why are proteins so important to the body?

Answer: Proteins are the building blocks for the body. They are involved in every bodily function.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Skill Level: Understand the Concepts

TB_Q2.1.160

How do boys and girls differ in their chromosomal make up?

Answer: Boys have and X and a Y chromosome and girls have two X chromosomes.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Skill Level: Apply What You Know

TB_Q2.3.161

How are genotype and phenotype different? Provide an example of each.

Answer: The genotype is a set of one or more genes of an individual and the phenotype is the observable expression of those genes in a given environment of rearing, in terms of the person's physical and psychological make up. For example the PKU genotype contains a recessive allele. The phenotype of PKU varies depending on how much phenylalanine was present in the individual's diet.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Skill Level: Apply What You Know

TB_Q2.3.162

What is dominant- recessive inheritance?

Answer: In dominant-recessive inheritance one of two alleles is dominant, meaning that it is expressed, and the other allele is recessive. Recessive alleles are expressed only when the child inherits one recessive allele from both parents.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.

Topic/Concept: Patterns of Inheritance
Skill Level: Remember the Facts

TB_Q2.4.163

What is the cause of Down syndrome?

Answer: Down syndrome is caused by an extra 21st chromosome.

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Skill Level: Understand the Concepts

TB_Q2.5.164

How are identical twins formed?

Answer: Identical twins are formed when two identical collections of cells in an early phase of development divide into two identical copies of the cells, both of which develop in the mother's womb.

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Skill Level: Apply What You Know

TB_Q2.6.165

Genie and Susie both were interested in music and played in the school band. Behavior geneticists would account for this similarity in what two ways?

Answer: In terms of shared genes as well as a shared environment.

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Skill Level: Apply What You Know

TB_Q2.8.166

Explain what is meant by the transactions between genes and the environment.

Answer: Genes and the environment continuously work together to produce developmental change.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.

Topic/Concept: Gene–Environment Correlations
Skill Level: Understand the Concepts

TB_Q2.8.167

What are the sources of the passive gene–environment correlation?

Answer: The sources of the passive gene–environment correlation are parents, siblings, and other genetically related individuals who are also part of the child's home environment.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Skill Level: Understand the Concepts

TB_Q2.12.168

Sonya loved to eat sweets and food that contained fats. What evolutionary adaptation to early human environments might this reflect?

Answer: When food was scarce, early humans needed to search for ripe fruits and vegetables, which would have a sweeter taste, and sources of fat, such as nuts and meat. These were necessary in order to survive.

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Skill Level: Apply What You Know

Essay Questions

TB_Q2.1.169

Describe the three major functions of DNA.

Feedback:
The DNA sequence is used as a template for making proteins in the cell.
The DNA sequence is duplicated when a cell divides by mitosis, an essential process in the growth of the body.
Each chromosome pair duplicates itself and gamete cells are formed containing one of each pair of chromosomes (23 total) in the sperm cell and the ovum.
These combine during fertilization to produce a zygote with 46 chromosomes that mingle the father's and mother's DNA.

Learning Objective: LO 2.1 Explain the three major functions of genes.
Topic/Concept: The Nature of Chromosomes, Genes, and Sexual Reproduction
Skill Level: Remember the Facts

TB_Q2.2.170

Explain how genes affect behavior using the example of fragile X syndrome.

Feedback:

Genetic level: Fragile X occurs when a gene on the X chromosome is silenced due to a mutation. The gene thus fails to instruct the cell to assemble a particular protein known as FMRP that is used in building the brain.

Neural level: a brain deficiency of FMRP leads to reduced neural activity and widespread low-level impairment of brain areas involved in executive functions and other cognitive processes.

Cognitive level: executive functioning, memory, speech, language and spatial dysfunctions occur leading to poorer performance on tests of these abilities.

Environmental level: the cognitive impairments affect the way the individual selects and responds to environmental stimuli.

Behavioral level: the individual has problems such as hyperarousal, lack of inhibitions on behavior and social anxiety.

Learning Objective: LO 2.2 Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.
Topic/Concept: Understanding the Path from Genes to Behavior: Fragile X Syndrome
Skill Level: Apply What You Know

TB_Q2.3.171

How does dominant-recessive inheritance work?

Feedback:

One of the two alleles is dominant in dominant-recessive inheritance.

This means that the dominant allele is expressed, and the other allele is recessive.

Recessive alleles are expressed only when a child receives one recessive allele from each parent.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Skill Level: Understand the Concepts

TB_Q2.3.172

Peter, a junior high school student, was color blind. Why is Peter, a boy, more likely than a girl to be color blind?

Feedback:
Color blindness is caused by a recessive allele on the X chromosome.
Boys have only one X chromosome, while girls have two.
It is easier to receive the recessive allele on one X chromosome than on both X chromosomes.

Learning Objective: LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.
Topic/Concept: Patterns of Inheritance
Skill Level: Apply What You Know

TB_Q2.4.173

Describe the chromosomal basis of Down syndrome and the physical and behavioral characteristics of typical children with this disorder.

Feedback:
Down syndrome occurs when there is an extra 21st chromosome in the ovum, and an individual is born with 3 instead of two 21st chromosomes.
The physical characteristics include a small head, thick neck, flattened face and distinctive eye shape.
Children have varying degrees of intellectual impairment resulting in slow development of motor, social, and cognitive skills.

Learning Objective: LO 2.4 Describe the cause and the main characteristics of Down syndrome.
Topic/Concept: Chromosomal Errors
Skill Level: Understand the Concepts

TB_Q2.5.174

Explain how the twin design is used to separate influences of genes and environment on human behavior.

Feedback:
Identical twins share 100% of their genes and fraternal twins only 50%.
In comparison studies, if identical twins are more similar on a given physical or psychological trait than fraternal twins that provides evidence that genes make an important contribution to that trait.
Because the environments of identical twins may be more similar than those of fraternal twins, the twins reared apart design is an important method of examining whether identical twins are still more similar than fraternal twins even when raised in different homes and cultural environments.

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Skill Level: Apply What You Know

TB_Q2.5.175

Explain how the adoption design is used to separate influences of genes and environment on human behavior.

Feedback:
A comparison is made between the child's psychological traits and those of the adoptive parent, who shares no genes but raised the child, and the biological parent, who shares 50% of the child's genes but did not raise the child.

A positive correlation between the biological parent and the child on a particular trait indicates a genetic influence.

A positive correlation between the adoptive parent and child on a particular trait indicates an environmental influence.

Learning Objective: LO 2.5 Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.
Topic/Concept: Using Family Resemblance to Study Heredity and Environment
Skill Level: Understand the Concepts

TB_Q2.6.176

Explain the concepts of heritability, shared environment and non-shared environment.

Feedback:

Heritability is the proportion of variation on a trait within a population that is due to genetic variation.

Shared environment is part of the environmental variation, specifically, influences that make children or adults raised in the same environment more similar than people raised in different environments.

Non-shared environment refers to influences that make children or adults raised in the same environment different from one another.

Some of these differences may also be due to error or measurement, which is indistinguishable from non-shared environmental influences.

Learning Objective: LO 2.6 Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.
Topic/Concept: Heritability and Shared and Non-Shared Environment
Skill Level: Understand the Concepts

TB_Q2.7.177

Describe the limitations to behavior genetics studies.

Feedback:
There are three limitations that are important to consider in behavior genetic studies:
1. Genes influence environments.

2. Gene–environment interaction occurs.
3. Environments influence gene expression.

Learning Objective: LO 2.7 Explain limitations involved in estimating hereditary and environmental influences on behavior.
Topic/Concept: Limitations of Behavior Genetic Studies
Skill Level: Apply What You Know

TB_Q2.8.178

Explain and give examples of passive, evocative and active gene-environment correlations.

Feedback:
A passive gene-environment correlation refers to a situation in which children inherit a genotype that is correlated with their family environment.

For example, a child with genes predisposing him to be a strong reader also is likely to have more experiences with books because his parents carry similar genes and they provide experiences with books in the home environment.

An evocative gene-environment correlation refers to a situation in which individuals evoke reactions from other people on the basis of their genotype, thus changing the environment to be more consistent with their genotype.

For example, a physically active child induces her parents to provide her with more exercise and experience with sports.

An active gene-environment correlation refers to a situation in which individuals seek out or create environments that are correlated with their genetic predispositions.

For example, children who are more sociable seek out more occasions for interacting socially with peers or adults, and thus gain in social skills not only because of their genetic tendencies, but the altered environment they experience.

Learning Objective: LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.
Topic/Concept: Gene–Environment Correlations
Skill Level: Apply What You Know

TB_Q2.9.179

Describe research evidence for gene-environment interactions in human behavior.

Feedback:
The two studies by Caspi and colleagues provide such evidence.

In Caspi et al. (2002), adults with low MAOA activity showed a larger effect of degrees of maltreatment in their earlier years on antisocial behavior than individuals with high MAOA activity.

We could say that low MAOA activity is a genetic risk factor for negative effects of maltreatment on antisocial behavior, and high MAOA activity is a genetic protective factor for reduced effects of maltreatment on antisocial behavior.

In Caspi et al. (2003) adults with a short allele in the 5-HTT serotonin transporter gene showed a larger difference in rates of depression as a function of variations in severity of maltreatment in their earlier years than was the case for individuals with either a combination of long and short alleles and individuals with two long alleles.

We could say that two long alleles was a protective genetic factor for negative influences of maltreatment on depression, and two short alleles were a genetic risk factor for negative effects of maltreatment on depression.

Learning Objective: LO 2.9 Explain how scientists obtain evidence for gene–environment interactions in humans.
Topic/Concept: Gene–Environment Interactions
Skill Level: Understand the Concepts

TB_Q2.10.180

Discuss the role of epigenetics in the expression of genes.

Feedback:

Epigenesis is a mechanism in which chemicals such as methyl groups attach to the genes and can control where and when genes get expressed.

The DNA code itself is not altered.

This occurs based on input from other genes, or from the environment.

Biologists and developmental scientists increasingly believe that environmental effects on gene expression may operate partly through epigenesis.

There is some evidence that this may be the case.

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Skill Level: Understand the Concepts

TB_Q2.10.181

Describe evidence from animal and human studies that environments influence gene expression.

Feedback:

Mother rats vary genetically in their tendency to lick and groom their offspring and engage in arched back nursing.

To determine whether differences in offspring behavior were due to genes or environment, the pups of nurturant mother rats were switched to the care of non-nurturant rats and vice versa (cross-fostering).

The results were that the type of mothering mattered more for the behavior of the pups than the genetic predispositions of the rats.

Studies of the baby rats' brains indicated that those raised by less nurturant mothers had reduced protein making activity of genes controlling the brain's system for producing stress hormones.

The experiment showed that differences in early experience can modify gene expression.

Learning Objective: LO 2.10 Describe evidence from animal and human studies that environments influence gene expression.
Topic/Concept: Environmental Influences on Gene Expression
Skill Level: Understand the Concepts

TB_Q2.11.182

Explain why development is viewed as probabilistic in Gottlieb's model. Despite this, why do most human beings develop motor and language skills in a similar way?

Feedback:
Development of a particular behavior is not determined with any certainty by any single factor (from among genetic, neural, cognitive, behavioral and environmental influences).

If all of these factors push development in a particular direction, it is more likely to happen.

We don't see the probabilistic nature of development until one of the factors is strongly out of synch with the others.

For example, in the Caspi study, genetically susceptible individuals had about the same levels of antisocial behavior and depression as less genetically susceptible individuals.

However, when exposed to a grossly abnormal early environment (severe maltreatment), the genetically susceptible individuals were more likely than less susceptible individuals to have behavior problems and mental health issues.

Outcomes are probabilistic because both genes and environment play a role in development, and it is the particular combination that determines outcomes.

Learning Objective: LO 2.11 Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.
Topic/Concept: The Developmental Systems Framework
Skill Level: Apply What You Know

TB_Q2.12.183

Explain and give an example of proximal and distal influences on the trend for American children to be overweight or obese.

Feedback:
Distal influences are outside the immediate environment of the child.

Examples would be tendency for fast food restaurants to offer high fat and high sugar foods in large portions for an economical price and to give free refills of sodas.

Proximal influences are in the immediate environment of the individual.

One family going to the restaurant may read the menu and choose lower fat and lower sugar items.

In this family, the proximal influences overrode the distal influences of the type of menu.

Another family going to the restaurant might give in to their children's desire for higher fat and sugar content, and so the proximal influence tends to reinforce the distal influence of menu type.

Learning Objective: LO 2.12 Explain how the influences of different levels of the external environment might be studied, using the example of obesity.
Topic/Concept: The Developmental Systems Framework
Skill Level: Apply What You Know

Learning Objectives	Remember the Facts	Understand the Concepts	Apply What You Know	Analyze It
LO 2.1: Explain the three major functions of genes.	EOC_2.1, EOM_2.1.1	EOC_2.2		
LO 2.2: Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.	EOM_2.1.2			EOC_2.3
LO 2.3 Explain how genes get passed from generation to generation and produce variability in human development.		EOC_2.5, EOM_2.1.3, EOM_2.1.4		EOC_2.4
LO 2.4: Describe the cause and the main characteristics of Down syndrome.	EOC_2.6, EOM_2.1.5			
LO 2.5: Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.	EOM_2.2.2	EOM_2.2.1		EOC_2.7
LO 2.6: Explain the concepts of heritability and shared and nonshared environment and how their contributions change with age.	EOC_2.10, EOC_2.8	EOC_2.9, EOM_2.2.4		EOM_2.2.3
LO 2.7: Explain limitations involved in estimating hereditary and environmental influences on behavior.		EOC_2.11	EOM_2.2.5	
LO 2.8 Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.		EOC_2.13, EOM_2.3.2	EOC_2.12	EOM_2.3.1

(Continued on next page)

Learning Objectives	Remember the Facts	Understand the Concepts	Apply What You Know	Analyze It
LO 2.9: Explain how scientists obtain evidence for gene–environment interactions in humans.	EOM_2.3.3		EOC_2.14	
LO 2.10: Describe evidence from animal and human studies that environments influence gene expression.	EOC_2.15	EOM_2.3.4, EOM_2.3.5		
LO 2.11: Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.		EOC_2.16, EOM_2.4.1, EOM_2.4.2		
LO 2.12: Explain how the influences of different levels of the external environment might be studied, using the example of obesity.		EOM_2.4.3, EOM_2.4.4	EOC_2.17	EOC_2.18

REVEL QUIZ QUESTIONS

EOM_2.1.1

Which of the following is the process in which a cell duplicates the DNA strand and divides into two cells?

a. Meiosis
b. Gene expression
c. Polygenic inheritance
d. Mitosis

Answer: D
Difficulty: Moderate
Skill: Remember the Facts
Topic: The Dynamic Gene
LO 2.1: Explain the three major functions of genes.

EOM_2.1.2

Fragile X is typical of genetic disorders in that it involves _____.

a. the silencing of a gene that is critical to normal development
b. building up of the X chromosome, causing it to block other chromosomes
c. more severe effects in girls because they have two X chromosomes
d. no noticeable effect on the patient's life, thus making it difficult to diagnose

Answer: A
Difficulty: Moderate
Skill: Remember the Facts
Topic: The Dynamic Gene
LO 2.2: Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.

EOM_2.1.3

For an individual to have the behavioral expression of the disorder PKU, the individual must inherit a recessive combination of alleles and _____.

a. an X-linked trait
b. a neurocognitive deficit
c. be exposed to phenylalanine in the diet
d. be exposed to a negative social environment

Answer: C
Difficulty: Moderate

Skill: Understand the Concepts
Topic: The Dynamic Gene
LO 2.3: Explain how genes get passed from generation to generation and produce variability in human development.

EOM_2.1.4

When many genes act together, this is called _____.

a. polygenic
b. a phenotype
c. mitosis
d. meiosis

Answer: A
Difficulty: Moderate
Skill: Understand the Concepts
Topic: The Dynamic Gene
LO 2.3: Explain how genes get passed from generation to generation and produce variability in human development.

EOM_2.1.5

The increased risk of having a baby with Down syndrome is for mothers who are _____.

a. between the ages of 18 and 24
b. between the ages of 25 and 34
c. over the age of 35
d. white

Answer: C
Difficulty: Moderate
Skill: Remember the Facts
Topic: The Dynamic Gene
LO 2.4: Describe the cause and the main characteristics of Down syndrome.

EOM_2.2.1

One of the problems in determining the meaning of extremely high correlations of the cognitive ability scores of identical twins is that they share genes and a common environment. A design that gets around this limitation is _____.

a. the study of the parents of identical twins
b. the study of identical twins reared apart and reunited
c. the study of fraternal twins reared apart
d. an intervention attempting to raise the cognitive ability of twins

Answer: B
Difficulty: Difficult
Skill: Understand the Concepts
Topic: Genes and Environment in Human Behavior
LO 2.5: Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.

EOM_2.2.2

Which of the following definitions corresponds to the term “segregating genes”?

a. Structures that contain the DNA strands
b. Genes that have different alleles and hence can produce variation among people
c. The fertilized ovum, containing the full complement of chromosomes from mother and father
d. The particular combination of alleles present in an individual

Answer: B
Difficulty: Moderate
Skill: Remember the Facts
Topic: Genes and Environment in Human Behavior
LO 2.5: Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.

EOM_2.2.3

The variability of IQ in children is found to be about half attributable to genetic differences. Approximately_____ is attributable to variation in shared environment, and _____ is attributable to variation in non-shared environment.

a. 48 percent; 52 percent
b. 64 percent; 62 percent
c. 22 percent; 50 percent
d. 25 percent; 15 percent

Answer: D
Difficulty: Difficult
Skill: Analyze It
Topic: Genes and Environment in Human Behavior
LO 2.6: Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.

EOM_2.2.4

Heritability of intelligence _____ with age, and the contribution of shared environment to variations in intelligence _____ with age.

a. increases; also increases
b. decreases; also decreases
c. increases; decreases
d. decreases; increases

Answer: C
Difficulty: Moderate
Skill: Understand the Concepts
Topic: Genes and Environment in Human Behavior
LO 2.6: Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.

EOM_2.2.5

Children of immigrant parents who moved from a country in which nutrition was inadequate often grow up to be taller than their parents. But the taller parents among the immigrant group tend to have taller children. This indicates that _____.

a. height is not heritable
b. the expression of genes depends partly on environment
c. eating adequate amounts of food is a strong genetic trait
d. without adequate nutrition, genes tend not to express at all

Answer: B
Difficulty: Moderate
Skill: Apply What You Know
Topic: Genes and Environment in Human Behavior
LO 2.7: Explain limitations involved in estimating hereditary and environmental influences on behavior.

EOM_2.3.1

Passive gene–environment correlations are _____.

a. likely to increase between childhood and adulthood
b. those in which individuals seek out or create environments correlated with their genetic predispositions
c. present when a child is adopted into a family to which s(he) is not genetically related
d. present from childhood and correlated with the family environment

Answer: D

Difficulty: Difficult
Skill: Analyze It
Topic: Gene Environment Transactions
LO 2.8: Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.

EOM_2.3.2

In the study by Tucker-Drob and Harden (2012), higher cognitive ability at age 2 was correlated with parents providing more cognitive stimulation at age 4, taking into account the parents' tendency to provide cognitive stimulation at age 2. This provides evidence for _____.

a. passive gene–environment effects
b. evocative gene–environment effects
c. active gene–environment effects
d. a pure environmental influence of parents on children

Answer: B
Difficulty: Moderate
Skill: Understand the Concepts
Topic: Gene Environment Transactions
LO 2.8: Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.

EOM_2.3.3

In the studies by Caspi and colleagues shown in Figures 2.6 and 2.7, a gene–environment interaction occurred when levels of maltreatment were associated with different outcomes (in this case, antisocial behavior or depression) for children with different _____.

a. phenotypes
b. gametes
c. personalities
d. genotypes

Answer: D
Difficulty: Moderate
Skill: Remember the Facts
Topic: Gene Environment Transactions
LO 2.9: Explain how scientists obtain evidence for gene–environment interactions in humans.

EOM_2.3.4

Experiments by Meaney and colleagues used a technique called cross-fostering to provide direct evidence that early experience can modify _____ in rats.

a. gene expression
b. selective breeding
c. environment
d. epigenesis

Answer: A
Difficulty: Moderate
Skill: Understand the Concepts
Topic: Gene Environment Transactions
LO 2.10: Describe evidence from animal and human studies that environments influence gene expression.

EOM_2.3.5

One mechanism by which experience can "get under the skin" is epigenesis, in which _____.

a. experience stabilizes and solidifies the way the brain responds to stress
b. experience leads individuals to associate stressful experiences with certain stimuli through classical conditioning
c. experience modifies chemicals that partially control whether genes are expressed
d. experience causes mutations in genes that control whether other genes are expressed

Answer: C
Difficulty: Difficult
Skill: Understand the Concepts
Topic: Gene Environment Transactions
LO 2.10: Describe evidence from animal and human studies that environments influence gene expression.

EOM_2.4.1

In Gottlieb's model, the *probabilistic* aspect of development refers to the idea that the characteristics of organisms at any point in their development (such as the current status of brain development or behavior) _____.

a. are determined by genetic and environmental factors and the interaction of such factors, but not with absolute certainty
b. are determined by genetic mutations that are probabilistic
c. are completely determined by genes operating on brain development
d. are completely determined by the environment operating on behavior

Answer: A
Difficulty: Moderate
Skill: Understand the Concepts
Topic: Developmental and Bioecological Systems Approaches

LO 2.11: Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.

EOM_2.4.2

The developmental systems model includes both the influences of species-typical genes and the influences of _____.

a. the prenatal environment, but not the postnatal environment
b. atypical environmental influences
c. a species-typical rearing environment
d. rare genetic disorders

Answer: C
Difficulty: Moderate
Skill: Understand the Concepts
Topic: Developmental and Bioecological Systems Approaches
LO 2.11: Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.

EOM_2.4.3

Because of the relatively rapid increase in obesity (over the past 30 to 40 years), it is likely that the change stems from changes in the _____.

a. genetic makeup of Americans
b. environment or environmental contexts
c. exosystems of families only
d. microsystems of children only

Answer: B
Difficulty: Easy
Skill: Understand the Concepts
Topic: Developmental and Bioecological Systems Approaches
LO 2.12: Explain how the influences of different levels of the external environment might be studied, using the example of obesity.

EOM_2.4.4

Changes to fast-food restaurants (which now generally display the caloric content of items on the menu) would be considered a _____ influence, whereas a parent who lets the child decide to select an extra-large helping of cheese would be a considered a _____ influence.

a. genotypical; phenotypical
b. microsystem; macrosystem
c. exosystem; macrosystem

d. distal; proximal

Answer: D
Difficulty: Moderate
Skill: Understand the Concepts
Topic: Developmental and Bioecological Systems Approaches
LO 2.12: Explain how the influences of different levels of the external environment might be studied, using the example of obesity.

EOC_2.1

The sex of the offspring is determined _____.

a. at fertilization by the 23rd chromosome pair
b. by genes located on several of the chromosomes
c. by which ovum (X or Y) the sperm penetrates
d. by any of several sperm cells that simultaneously penetrate the ovum

Answer: A
Difficulty: Moderate
Skill: Remember the Facts
Topic: The Dynamic Gene
LO 2.1: Explain the three major functions of genes.

EOC_2.2

When genes switch on or off during development, this specifically refers to _____.

a. whether they cause a disease (off) or not (on)
b. whether there is a disorder (on) or not (off)
c. whether they make proteins (on) or not (off)
d. whether they contain the correct DNA sequence inherited from the parent (on) or not (off)

Answer: C
Difficulty: Moderate
Skill: Understand the Concepts
Topic: The Dynamic Gene
LO 2.1: Explain the three major functions of genes.

EOC_2.3

When an individual has a disorder, such as Fragile X, but the effects of the disorder on the brain are lessened by some factor (such as sex—male or female), these are effects on _____.

a. the environment

b. gene mutation
c. the DNA sequence
d. gene expression

Answer: D
Difficulty: Moderate
Skill: Analyze It
Topic: The Dynamic Gene
LO 2.2: Explain the indirect pathway by which genes affect human behavior, using the example of fragile X syndrome.

EOC_2.4

A dominant gene for a disorder, such as the gene for Huntington's disease, _____.

a. can be inherited only if both parents carry the gene
b. can be inherited only from the father
c. can be inherited only from the mother
d. is expressed regardless of whether the gene from the other parent is dominant or recessive

Answer: D
Difficulty: Easy
Skill: Analyze It
Topic: The Dynamic Gene
LO 2.3: Explain how genes get passed from generation to generation and produce variability in human development.

EOC_2.5

The inheritance pattern in most single-gene disorders in human beings is _____.

a. X-linked
b. dominant
c. recessive
d. via chromosomal errors

Answer: C
Difficulty: Difficult
Skill: Understand the Concepts
Topic: The Dynamic Gene
LO 2.3: Explain how genes get passed from generation to generation and produce variability in human development.

EOC_2.6

The most common cause of Down syndrome is an extra 21st chromosome _____.

a. in the sperm cell
b. in a parent older than 35
c. in a father over 35
d. in the ovum

Answer: D
Difficulty: Easy
Skill: Remember the Facts
Topic: The Dynamic Gene
LO 2.4: Describe the cause and the main characteristics of Down syndrome.

EOC_2.7

The pattern of findings in family studies (higher correlations for IQ scores among relatives that are genetically more similar) _____.

a. generally supports a small role for heredity in human psychological traits
b. generally supports a small role for environment in human psychological traits
c. reveals that neither genes nor environment strongly influence IQ
d. supports the influences of both genes and environment

Answer: D
Difficulty: Difficult
Skill: Analyze It
Topic: Genes and Environment in Human Behavior
LO 2.5: Explain how scientists identify genetic and environmental contributions to complex traits such as IQ.

EOC_2.8

Which term refers to the proportion of variation of a trait (such as IQ) within the population that can be attributed to variation in gene expression?

a. Segregating genes
b. Polygenic inheritance
c. Gene expression
d. Heritability

Answer: D
Difficulty: Easy
Skill: Remember the Facts
Topic: Genes and Environment in Human Behavior
LO 2.6: Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.

EOC_2.9

In many developmental and mental disorders, the heritability is very high (between 70 percent and 90 percent). This means that _____.

a. the shared environment makes up the remaining 10 to 30 percent
b. there is still room for an impact of the environment
c. the non-shared environment generally makes up the remaining 10 to 30 percent
d. the disorder is generally worse than disorders with lower heritability

Answer: B
Difficulty: Moderate
Skill: Understand the Concepts
Topic: Genes and Environment in Human Behavior
LO 2.6: Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.

EOC_2.10

In the Colorado Adoption Study, the correlation in adolescence between the IQ scores of biological parents and adopted-away children was _____ the correlation between adoptive parents and their adopted children.

a. lower than
b. the same as
c. higher than
d. much lower than

Answer: C
Difficulty: Moderate
Skill: Remember the Facts
Topic: Genes and Environment in Human Behavior
LO 2.6: Explain the concepts of heritability and shared and non-shared environment and how their contributions change with age.

EOC_2.11

A child who is adopted by parents who are not frequent readers keeps showing an interest in reading. Eventually, the adoptive parents respond by getting the child a library card and reading along with the child to help him. This is an example of one factor that has been proposed as a limitation to the behavior genetics approach. The factor that best fits here is _____.

a. environmental impact on genetic expression
b. gene–environment interaction
c. high heritability of reading skill and interest
d. gene–environment correlation

Answer: D
Difficulty: Difficult
Skill: Understand the Concepts
Topic: Gene Environment Transactions
LO 2.7: Explain limitations involved in estimating hereditary and environmental influences on behavior.

EOC_2.12

A child impresses her science teacher with her high interest in science and quick learning of science in the classroom. The teacher chooses her as one of only two children from her class that will prepare an exhibit for the district-wide science fair. This most likely represents _____.

a. a passive gene–environment correlation
b. an evocative gene–environment correlation
c. an active gene–environment correlation
d. both evocative and active gene–environment correlations

Answer: D
Difficulty: Difficult
Skill: Apply What You Know
Topic: Gene Environment Transactions
LO 2.8: Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.

EOC_2.13

In the study by Tucker-Drob and Harden (2012), the relationship between parental stimulation at age 2 and child cognitive ability at age 4 was found to be primarily _____.

a. an environmental influence
b. a genetic influence
c. an instance of an evocative gene–environment correlation
d. an instance of gene-expression

Answer: A
Difficulty: Moderate
Skill: Understand the Concepts
Topic: Gene Environment Transactions
LO 2.8: Describe how the three types of gene–environment correlations help explain findings of twin and adoption studies.

EOC_2.14

Suppose scientists identify a gene related to shyness in children, but not in all cases. They find that children with this gene were more likely to withdraw from social situations when subjected to the stress of moving to a new school than when they stayed in the same school. In contrast, children without the gene showed no difference in social withdrawal in the two types of situations. This example fits most closely to the concept of _____.

a. an active gene–environment correlation
b. an evocative gene–environment correlation
c. a gene–environment interaction
d. a strong effect of environment on behavior

Answer: C
Difficulty: Moderate
Skill: Apply What You Know
Topic: Gene Environment Transactions
LO 2.9: Explain how scientists obtain evidence for gene–environment interactions in humans.

EOC_2.15

As demonstrated by Meaney et al. in their experiments with nurturant and non-nurturant rats, one way that epigenesis works is by attaching chemicals called _____ to DNA, which tends to reduce the expression of certain genes.

a. ATCG
b. chromosomes
c. RNA
d. methyl groups

Answer: D
Difficulty: Moderate
Skill: Remember the Facts
Topic: Gene Environment Transactions
LO 2.10: Describe evidence from animal and human studies that environments influence gene expression

EOC_2.16

According to Gottlieb's developmental systems model, the fact that if one twin has schizophrenia, only 41 percent to 65 percent of identical twins have the disorder indicates that _____.

a. genetic influences on schizophrenia are very small
b. the twins must not have shared the gene for schizophrenia

c. the gene (or genes) for schizophrenia could have been turned on by stressful experiences in the environment for one member of a twin pair but not for the other in some cases
d. influences on schizophrenia are not bidirectional, as was previously thought

Answer: C
Difficulty: Easy
Skill: Understand the Concepts
Topic: Developmental and Bioecological Systems Approaches
LO 2.11: Describe how the developmental systems framework explains relationships among genes, the brain, behavior, and environment.

EOC_2.17

A higher rate of obesity is found among poor families living in the inner city. Using Bronfenbrenner's bioecological model, this is likely due to _____.

a. working parents cooking unhealthy food rather than relying on the portion control provided by prepared foods
b. a great interest among children of poor families in playing video games rather than outdoor sports
c. influences at both the microsystem and the exosystem levels
d. genetic differences between poor and middle-class families in proneness to obesity

Answer: C
Difficulty: Easy
Skill: Apply What You Know
Topic: Developmental and Bioecological Systems Approaches
LO 2.12: Explain how the influences of different levels of the external environment might be studied, using the example of obesity.

EOC_2.18

Understanding the interactions between biology and environment is complicated by _____.

a. the interplay of genes and chromosomes
b. the fact that behavior genetics studies have not been as rigorous or complete in measuring genes as they have been in measuring the environment
c. the fact that these two influences are impossibly intertwined and should no longer be studied as influences on development
d. the fact that environmental contexts have multiple levels of potential influence on the child

Answer: D
Difficulty: Moderate
Skill: Analyze It
Topic: Developmental and Bioecological Systems Approaches

LO 2.12: Explain how the influences of different levels of the external environment might be studied, using the example of obesity.