

3

Nature, Nurture, and Human Diversity

CHAPTER OVERVIEW

Chapter 3 is concerned with the ways in which our biological heritage, or nature, interacts with our individual experiences, or nurture, to shape who we are. After a brief explanation of basic terminology, the chapter explores the fields of behavior genetics, which studies twins and adopted children to weigh genetic and environmental influences on behaviors, and molecular genetics, which focuses on the specific genes that influence behavior. The next section discusses psychology's use of evolutionary principles to answer universal questions about human behavior.

The next two sections of the chapter shift the spotlight to focus on environmental influences on behavior. The impact of parents, the prenatal environment, early experience, peers, and culture on the development of the brain and behavior are each discussed in depth. The final section of the chapter explores how genes and environment interact to shape both the biological and social aspects of our gender. In the end, the message is clear: our genes and our experience together form who we are.

NOTE: Answer guidelines for all Chapter 3 questions begin on page 87.

CHAPTER REVIEW

First, skim each section, noting headings and boldface items. After you have read the section, review each objective by answering the fill-in and essay-type questions that follow it. As you proceed, evaluate your performance by consulting the answers beginning on page 87. Do not continue with the next section until you understand each answer. If you need to, review or reread the section in the textbook before continuing.

Introduction (pp. 95–96)

Objective 1: Give examples of differences and of similarities within the human family.

1. Our differences as humans include our _____, _____, and _____ and _____ backgrounds.
2. Our similarities as human beings include our common _____, our shared _____ architecture, our ability to use _____, and our _____ behaviors.
3. A fundamental question in psychology deals with the extent to which we are shaped by our heredity, called our _____, and by our life history, called our _____.

Behavior Genetics: Predicting Individual Differences (pp. 96–107)

David Myers at times uses idioms that are unfamiliar to some readers. If you do not know the meaning of the following words, phrases, or expressions in the context in which they appear in the text, refer to pages 93–94 for an explanation: *To disentangle the threads of heredity and environment, behavior geneticists often use two sets of tweezers; blue-collar families; stories of startling twin similarity; "Mom may be holding a full house while Dad has a straight flush"; yen; the area of a field is more the result of its length or width; sleuth; Blueprints; two-edged sword.*

Objective 2: Describe the types of questions that interest behavior geneticists.

1. Researchers who specifically study the effects of genes on behavior are called _____.
2. The term *environment* refers to every _____ influence.

Objective 3: Define *chromosome*, *DNA*, *gene*, and *genome*, and describe their relationships.

3. The master plans for development are stored in the _____. In number, each person inherits _____ of these structures, _____ from each parent. Each is composed of a coiled chain of the molecule _____.
4. If chromosomes are the "books" of heredity, the "words" that make each of us a distinctive human being are called _____.
5. The complete instructions for making an organism are referred to as the human _____. Human traits are influenced by many genes acting together in _____.

Objective 4: Explain how identical and fraternal twins differ, and cite ways that behavior geneticists use twin studies to understand the effects of environment and heredity.

6. To study the power and limits of genetic influences on behavior, researchers use _____ and _____ studies.
7. Twins who developed from a single egg are genetically _____. Twins who developed from different fertilized eggs are no more genetically alike than siblings and are called _____ twins. In terms of the personality traits of extraversion and neuroticism, identical twins are _____ (more/no more) alike than are fraternal twins.
8. Divorce rates are _____ (more/no more) similar among identical twins than among fraternal twins.

Identify other dimensions that show strong genetic influences.

9. Through research on identical twins raised apart, psychologists are able to study the influence of the _____.

Objective 5: Cite ways that behavior geneticists use adoption studies to understand the effects of environment and heredity.

10. Studies tend to show that the personalities of adopted children _____ (do/do not) closely resemble those of their adoptive parents.
11. Adoption studies show that parenting _____ (does/does not) matter. For example, adopted children often score _____ (higher/lower) than their biological parents on intelligence tests.

Objective 6: Discuss how the relative stability of our temperament illustrates the influence of heredity on development

12. The term that refers to the inborn personality, especially the child's emotional excitability, is _____, which _____ (does/does not) endure over time.
13. From the first weeks of life, _____ babies are more _____, _____, and _____. In contrast, _____ babies are _____, _____, and _____.
14. Faced with a new or strange situation, high-strung infants become _____ (more/less) physiologically aroused than less excitable infants.

Objective 7: Discuss heritability's application to individuals and groups, and explain what we mean when we say genes are self-regulating.

15. The proportion of variation in a trait within a group that is attributable to genes is called its _____.
16. As environments become more similar, heredity as a source of differences becomes _____ (more/less) important.
17. Heritable individual differences _____ (imply/need not imply) heritable group differences.
18. For _____ phenomena, human differences are nearly always the result of both _____ and _____ influences.

Objective 8: Give an example of a genetically influenced trait that can evoke responses in others, and give another example of an environment that can trigger gene activity.

19. Throughout life, we are the product of the _____ of our _____ predispositions and our surrounding _____.
20. Environments trigger activity in _____, and our genetically influenced traits evoke _____ in other people. This may explain why _____ twins recall greater variations in their early family life than do _____ twins.

Objective 9: Identify the potential promise and perils of molecular genetics research.

21. The subfield of biology that investigates the specific genes that influence behavior is _____.
22. Genetic tests can reveal at-risk populations for specific _____.
23. One result of research in this field, genetic screening, allows expectant parents to ascertain, and even choose, the _____ of their offspring. Prenatal screening, however, raises many _____ issues.

Evolutionary Psychology: Understanding Human Nature (pp. 107–113)

If you do not know the meaning of the following words, phrases, or expressions in the context in which they appear in the text, refer to pages 94–95 for an explanation: *cash strapped*; *tight genetic leash*; *Casual, impulsive sex*; *sexual come-on*; *In our ancestral history, females most often sent their genes into the future by pairing wisely, men by pairing widely*; *stick-around dads over likely cads*; *mobile gene machines*.

Objective 10: Describe the area of psychology that interests evolutionary psychologists.

1. Researchers who study natural selection and the adaptive nature of human behavior are called _____.
2. Researchers in this field focus mostly on what makes people so _____ (much alike/different from one another).

Objective 11: State the principle of natural selection, and point out some possible effects of natural selection in the development of human characteristics.

3. According to the principle of _____, _____, traits that contribute to reproduction and survival will be most likely to be passed on to succeeding generations.
4. Genetic _____ are random errors in genetic replication that are the source of all genetic _____.
5. Genetic constraints on human behavior are generally _____ (tighter/looser) than those on animal behavior. The human species' ability to _____ and to _____ in responding to different _____ contributes to our _____, defined as our ability to _____ and _____.

Because of our genetic legacy, we love the tastes of sweets and _____, which we tend to _____, even though famine is unlikely in industrialized societies.

Objective 12: Identify some gender differences in sexuality.

6. The characteristics by which people define *male* and *female* constitute _____. These characteristics are subject to _____ and _____ influences.
7. Compared to females, males are _____ (equally/more/less) likely to engage in casual, impulsive sex, and they are _____ (equally/more/less) likely to initiate sexual activity. This is an example of a _____ difference.
8. Men have a _____ (higher/lower) threshold for perceiving a woman's friendliness as a sexual come-on. This helps explain men's greater sexual _____.

Objective 13: Describe evolutionary explanations for gender differences in sexuality.

9. The _____ explanation of gender differences in attitudes toward sex is based on differences in the optimal strategy by which women and men pass on their _____. According to this view, males and females _____ (are/are not) selected for different patterns of sexuality.
10. Cross-cultural research reveals that men judge women as more attractive if they have a _____ appearance, whereas women judge men who appear _____, _____, and _____ as more attractive.

Objective 14: Summarize the criticisms of evolutionary explanations of human behaviors, and describe the evolutionary psychologists' responses to these criticisms.

11. Critics of the evolutionary explanation of the gender sexuality difference argue that it often works _____ (forward/backward) to propose a _____ explanation.
12. Another critique is that gender differences in sexuality vary with _____ expectations and social and family structures.

13. Gender differences in mate preferences are largest in cultures characterized by greater gender _____ (equality/inequality).
14. Evolutionary psychologists counter the criticisms by noting that the sexes, having faced similar adaptive problems, are more _____ (alike/different) than they are _____ (alike/different). They also note that evolutionary principles offer testable _____.

Parents and Peers (pp. 114–118)

If you do not know the meaning of any of the following words, phrases, or expressions in the context in which they appear in the text, refer to page 95 for an explanation: *while the excess connections are still on call; pathways through a forest; shuffle their gene decks; as a potter molds clay; vapors of a toxic climate are seeping into a child's life.*

Objective 15: Describe some of the conditions that can affect development before birth.

1. Environmental influences begin during the period of _____ development.
2. Even identical twins may differ in this respect, because they may or may not share the same _____.
3. Compared with same-placenta identical twins, twins who develop with different placentas are less similar in their _____ traits.

Objective 16: Describe how experience can modify the brain.

4. Rosenzweig and Krech discovered that rats raised from a young age in enriched environments had _____ (thicker/thinner) cortexes than animals raised in isolation.

Describe the effects of sensory stimulation on neural development.

- Experience shapes the brain by preserving activated _____ connections and allowing unused connections to _____. This process, called _____, results in a massive loss of unused connections by _____.

Objective 17: Explain why we should be careful about attributing children’s successes and failures to their parents’ influence.

- The idea that parents shape their children’s futures came from _____ and _____.
- Parents do influence some areas of their children’s lives, such as their _____, _____, _____, and _____.
- In areas such as _____, the environment siblings share at home accounts for less than _____ percent of their differences.

Objective 18: Evaluate the importance of peer influence on development.

- Experiences with _____ have a powerful effect on how children develop, partly as a result of a “_____ effect” by which kids seek out others with similar attitudes and interests.
- A group of parents can influence the _____ that shapes the peer group through what Judith Harris calls _____ effects.

Cultural Influences (pp. 119–126)

If you do not know the meaning of any of the following words, phrases, or expressions in the context in which they appear in the text, refer to pages 95–96 for an explanation: *cerebral hard drive . . . cultural software; norms grease the social machinery; cultures collide; standoffish.*

Objective 19: Discuss the survival benefits of culture.

- The enduring behaviors, ideas, attitudes, and traditions of a group of people and transmitted from

one generation to the next defines the group’s _____.

- One landmark of human culture is the preservation of _____, which is derived from our mastery of _____, so that we can pass it on to future generations.

Objective 20: Describe some ways that cultures differ.

- All cultural groups evolve their own rules for expected behavior, called _____.
- One such rule involves the buffer zone that people maintain around their bodies, called _____.

Identify several cultural differences in personal space, expressiveness, and pace of life.

Objective 21: Explain why changes in the human gene pool cannot account for culture change over time.

- Cultures change _____ (slowly/rapidly).
- Many changes in Western culture have been driven by the discovery of new forms of _____.
- The speed at which culture changes is much _____ (faster/slower) than the pace of evolutionary changes in the human _____.

Objective 22: Identify some ways a primarily individualist culture differs from a primarily collectivist culture, and compare their effects on personal identity.

- Cultures based on _____ value personal _____ and individual _____. Examples of such cultures occur in the _____,

_____, and _____
_____.

9. In contrast, cultures based on _____ value _____, _____, and _____. Examples of such cultures occur in parts of _____ and _____.

10. Whereas people in _____ cultures value freedom, they suffer more _____, divorce, and _____-related disease.

Objective 23: Describe some ways that child-rearing differs in individualist and collectivist cultures.

11. Whereas most Western parents place more emphasis on _____ (emotional closeness/independence) in their children, many Asian and African parents focus on cultivating _____ (emotional closeness/independence).

12. Children in collectivist cultures grow up with a strong sense of _____.

Objective 24: Describe some ways that humans are similar, despite their cultural differences.

13. In general, differences between groups are _____ (smaller/larger) than person-to-person differences within groups.

Gender Development (pp. 126–134)

If you do not know the meaning of any of the following words, phrases, or expressions in the context in which they appear in the text, refer to page 96 for an explanation: *surface early*; *throws a master switch*; *“tomboyish”*; *initiate dates* . . . *pick up the check*; *With the flick of an apron*.

Objective 25: Identify some biological and psychological differences between males and females.

1. Among your _____ (how many?) chromosomes, _____ (how many?) are unisex.

2. Compared to the average man, an average woman has more _____, less _____, and is a few inches _____. Women are more likely than men to suffer from _____, _____, and _____.

3. Compared to women, men are more likely to commit _____ and to suffer _____. They are also more likely to be diagnosed with _____, _____, _____, and _____.

Objective 26: Summarize the gender gap in aggression.

- 4. Aggression is defined as _____ or _____ behavior that is _____ to hurt someone.
- 5. Throughout the world, men are more likely than women to engage in _____, _____, and _____.
- 6. The aggression gender gap pertains to _____ rather than _____ aggression.

Objective 27: Describe some gender differences in social power.

- 7. Compared to women, men are perceived as being more _____, _____, and _____. As leaders, they tend to be more _____, while women are more _____.
- 8. Compared to men, women are perceived as being more _____, _____, and _____.
- 9. These perceived differences occur _____ (throughout the world/only in certain cultures).

Objective 28: Discuss gender differences in connectiveness, or the ability to “tend and befriend.”

10. According to Carol Gilligan, women are more concerned than men in making _____ with others.
11. This difference is noticeable in how children _____, and it continues throughout the teen and adult years. Girls play in groups that are _____ and less _____ than boys' groups.
12. Because they are more _____, women are likely to use conversation to _____, while men are likely to use conversation to _____.
13. Women tend and befriend—for example, they turn to others for _____, especially when coping with _____.

Objective 29: Explain how biological sex is determined, and describe the role of sex hormones in biological development and gender differences.

14. The twenty-third pair of chromosomes determines the developing person's _____. The mother always contributes a(n) _____ chromosome. When the father contributes a(n) _____ chromosome, the testes begin producing the hormone _____. In about the _____ (what week?), this hormone initiates the development of external male sex organs.
15. Genetically female infants who were exposed to excess testosterone during prenatal development develop _____-appearing genitals. Behaviorally, until adolescence, they tend to act in more aggressive “_____” ways than do most girls.
16. Sex chromosomes control _____ that influence the brain's wiring. In adulthood, part of the _____ lobe, an area involved in _____ fluency, is thicker in women. Part of the brain's _____ lobe, a key area for _____ perception, is thicker in men.

Objective 30: Discuss the relative importance of environment on the development of gender roles, and describe two theories of gender typing.

17. Our expectations about the way men and women behave define our culture's _____.
18. Gender roles _____ (are/are not) rigidly fixed by evolution, as evidenced by the fact that they vary across _____ and over _____. For instance, in _____ societies there tends to be minimal division of labor by sex; by contrast, in _____ societies, women remain close to home while men roam freely, herding cattle or sheep.
19. Our individual sense of being male or female is called our _____. The degree to which we exhibit traditionally male or female traits and interests is called _____.
20. According to _____ theory, children learn gender-linked behaviors by observing others and being rewarded or punished. When their families discourage traditional gender-typing, children _____ (do/do not) organize themselves into “boy worlds” and “girl worlds.”
21. Another theory, called _____ theory, combines _____ theory with _____. According to this theory, children learn from their _____ what it means to be male or female and adjust their behavior accordingly.

Reflections on Nature and Nurture (pp. 134–137)

If you do not know the meaning of any of the following words, phrases, or expressions in the context in which they appear in the text, refer to page 105 for an explanation: *won the day*; *boggles the mind*.

Objective 31: Describe the biopsychosocial approach to development.

1. As _____ becomes more and more irrelevant to power and status, gender roles are _____ (converging/diverging).
2. We are the product of both _____ and _____, but we are also a system that is _____.
3. The principle that we should prefer the simplest of competing explanations for a phenomenon is called _____.
4. _____
 - a. schizophrenia is caused by genes.
 - b. schizophrenia is influenced by genes.
 - c. environment is unimportant in the development of schizophrenia.
 - d. identical twins are especially vulnerable to mental disorders.
5. Of the following, the best way to separate the effects of genes and environment in research is to study:
 - a. fraternal twins.
 - b. identical twins.
 - c. adopted children and their adoptive parents.
 - d. identical twins raised in different environments.

PROGRESS TEST 1

Multiple-Choice Questions

Circle your answers to the following questions and check them with the answers beginning on page 89. If your answer is incorrect, read the explanation for why it is incorrect and then consult the appropriate pages of the text (in parentheses following the correct answer).

1. Dr. Ross believes that principles of natural selection help explain why infants come to fear strangers about the time they become mobile. Dr. Ross is most likely a(n):
 - a. behavior geneticist.
 - b. molecular geneticist.
 - c. evolutionary psychologist.
 - d. molecular biologist.
2. A pair of adopted children or identical twins reared in the same home are most likely to have similar:
 - a. temperaments.
 - b. personalities.
 - c. religious beliefs.
 - d. emotional reactivity.
3. Collectivist cultures:
 - a. give priority to the goals of their groups.
 - b. value the maintenance of social harmony.
 - c. foster social interdependence.
 - d. are characterized by all of the above.
4. If a fraternal twin becomes schizophrenic, the likelihood of the other twin developing serious mental illness is much lower than with identical twins. This suggests that:
 - a. nurturing; youthful
 - b. youthful and fertile; mature and affluent
 - c. slender; muscular
 - d. exciting; dominant
5. Through natural selection, the traits that are most likely to be passed on to succeeding generations are those that contribute to:
 - a. reproduction.
 - b. survival.
 - c. aggressiveness.
 - d. a. and b.
6. Which of the following is *not* true regarding gender and sexuality?
 - a. Men more often than women attribute a woman's friendliness to sexual interest.
 - b. Women are more likely than men to cite affection as a reason for first intercourse.
 - c. Men are more likely than females to initiate sexual activity.
 - d. Gender differences in sexuality are noticeably absent among gay men and lesbian women.
7. Evolutionary psychologists attribute gender differences in sexuality to the fact that women have:
 - a. greater reproductive potential than do men.
 - b. lower reproductive potential than do men.
 - c. weaker sex drives than men.
 - d. stronger sex drives than men.
8. According to evolutionary psychology, men are drawn sexually to women who seem _____, while women are attracted to men who seem _____.
 - a. nurturing; youthful
 - b. youthful and fertile; mature and affluent
 - c. slender; muscular
 - d. exciting; dominant
9. Unlike _____ twins, who develop from a single fertilized egg, _____ twins develop from separate fertilized eggs.
 - a. fraternal; identical
 - b. identical; fraternal
 - c. placental; nonplacental
 - d. nonplacental; placental