1: Thinking Critically With Psychological Science

CHAPTER OVERVIEW

Chapter 1 explains the limits of intuition and common sense in reasoning about behavior and mental processes. To counteract our human tendency toward faulty reasoning, psychologists adopt a scientific attitude that is based on curiosity, skepticism, humility, and critical thinking. Chapter 1 also explains how psychologists, using the scientific method, employ the research strategies of description, correlation, and experimentation in order to objectively describe, predict, and explain behavior.

The next section discusses how statistical reasoning is used to help psychologists describe data and to generalize from instances. To describe data, psychologists often rely on measures of central tendency such as the mean, median, and mode, as well as variation measures such as the range and standard deviation. Statistical reasoning also helps psychologists determine when it is safe to generalize from a sample to the larger population.

Chapter 1 concludes with a discussion of several questions people often ask about psychology, including why animal research is relevant, whether laboratory experiments are ethical, whether behavior varies with culture and gender, and whether psychology's principles don't have the potential for misuse.

Chapter 1 introduces a number of concepts and issues that will play an important role in later chapters. Pay particular attention to the strengths and weaknesses of descriptive and correlational research. In addition, make sure that you understand the method of experimentation, especially the importance of control conditions and the difference between independent and dependent variables. Finally, you should be able to discuss three important principles concerning populations and samples, as well as the concept of significance in testing difference.

NOTE: Answer guidelines for all Chapter 1 questions begin on page 31.

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 31. 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.

The Need for Psychological Science (pp. 19–26)

David Myers at times uses idioms that are unfamiliar to some readers. 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 introduction to this chapter and in this section, refer to pages 38–40 for an explanation: *to remedy their own woes; winnow sense from nonsense; dresses it in jargon; bull's eye; "Out of sight, out of mind"; "Absence makes the heart grow fonder"; familiarity breeds contempt; drop a course; lackluster predictions; hard-headed curiosity; leap of faith; the proof is in the pudding; auras; crazy-sounding ideas; arena of competing ideas; so much the worse for our ideas; "The rat is always right"; the spectacles of our preconceived ideas; gut feelings; debunked; "play the tape"; sift reality from illusion.*

Objective 1: Define *hindsight bias,* and explain how it can make research findings seem like mere common sense.

1. The tendency to perceive an outcome that has occurred as being obvious and predictable is called the _____ _____ . This phenomenon is _____ (rare/common) in _____ (children/adults/both children and adults).
2. Because it is _____ (after the fact/usually wrong), this tendency makes a research findings seem like mere common sense.

Objective 2: Describe how overconfidence contaminates our everyday judgments.

3. Our everyday thinking is also limited by _____ in what we think we know, which occurs because of our _____ to seek information that confirms our judgments.
4. Most people are _____ (better/worse/equally wrong) in predicting their social behavior.

Objective 3: Explain how the scientific attitude encourages critical thinking.

5. The scientific approach is characterized by the attitudes of _____ , _____ , and _____ .
6. Scientific inquiry thus encourages reasoning that examines assumptions, discerns hidden values, evaluates evidence, and assesses conclusions, which is called _____ _____ .

Objective 4: Describe how psychological theories guide scientific research.

7. Psychologists use the _____ _____ to guide their study of behavior and mental processes. They make _____ and form _____ , which are _____ based on new _____ .
8. An explanation using an integrated set of principles that organizes and predicts behaviors or events is a _____ . Testable predictions that allow a scientist to evaluate a theory are called _____ . These predictions give direction to _____ .
9. In order to prevent theoretical biases from influencing scientific observations, research must be reported precisely—using clear _____ _____ of all concepts—so that others can _____ the findings.
10. The test of a useful theory is the extent to which it effectively _____ observations and implies clear _____ .
11. Psychologists conduct research using _____ methods _____ , and _____ methods.

Description (pp. 26–30)

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 40 for an explanation: *Numbers are numbing; Anecdotes are often more startling; a thimbleful; snapshot of the opinions.*

Objective 5: Identify an advantage and a disadvantage of using case studies to study behavior and mental processes.

1. The research strategy in which one or more individuals is studied in depth in order to reveal universal principles of behavior is the _____ _____ .
2. Although case studies can suggest _____ for further study, a potential problem with this method is that any given individual may be _____ .

Objective 6: Identify the advantages and disadvantages of using surveys to study behavior and mental processes, and explain the importance of wording effects and random sampling.

3. The method in which a group of people is questioned about their attitudes or behavior is the _____ .

4. An important factor in the validity of survey research is the _____ of questions.
5. The tendency to overestimate others' agreement with us is the _____ _____ _____ .
6. Surveys try to obtain a _____ sample, one that will be representative of the _____ being studied. In such a sample, every person _____ (does/does not) have a chance of being included.
7. Large, representative samples _____ (are/are not) better than small ones.
8. We are more likely to overgeneralize from select samples that are especially _____ .

Objective 7: Identify an advantage and a disadvantage of using naturalistic observation to study behavior and mental processes.

9. The research method in which people or animals are directly observed in their natural environments is called _____ _____ .
10. Case studies, surveys, and naturalistic observation do not explain behavior; they simply _____ it.
11. Using naturalistic observation, researchers have found that people are more likely to laugh in _____ situations than in _____ situations. Also, using observations of walking speed and the accuracy of public clocks, researchers have concluded that the pace of life _____ (varies/does not vary) from one culture to another.

Correlation (pp. 30–36)

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 40 for an explanation: *naked eye; flipped a coin; "cold hands" . . . "hot hands."*

Objective 8: Describe positive and negative correlations, and explain how correlational measures can aid the process of prediction.

1. When changes in one factor are accompanied by changes in another, the two factors are said to be _____ , and one is thus able to _____ the other. The mathematical expression of this relationship is called a _____ _____ .
2. Graphs called _____ are often used to depict the relationship between two sets of scores.
3. If two factors increase or decrease together, they are _____ _____ . If, however, one decreases as the other increases, they are _____ _____ . Another way to state the latter is that the two variables relate _____ .
4. A negative correlation between two variables does not indicate the _____ or _____ of the relationship. Nor does correlation prove _____ ; rather, it merely indicates the possibility of a _____ - _____ relationship.

If your level of test anxiety goes down as your time spent studying for the exam goes up, would you say these events are positively or negatively correlated? Explain your reasoning.

Objective 9: Explain why correlational research fails to provide evidence of cause-effect relationships.

5. A correlation between two events or behaviors means only that one event can be _____ from the other.

6. Because two events may both be caused by some other _____, a correlation does not mean that one _____ the other. For this reason, correlation thus does not enable _____.

Objective 10: Describe how people form illusory correlations.

7. A perceived correlation that does not really exist is an _____ _____.

8. People are more likely to notice and recall events that _____ their beliefs. This error in thinking helps explain many _____ beliefs.

Objective 11: Explain the human tendency to perceive order in random sequences.

9. Another common tendency is to perceive order in _____ _____.

10. Patterns and streaks in random sequences occur _____ (more/less) often than people expect, and they _____ (do/do not) appear random.

Experimentation (pp. 36–39)

If you do not know the meaning of the following word in the context in which it appears in the text, refer to page 40 for an explanation: *recap*.

Objective 12: Explain how experiments help researchers isolate cause and effect.

1. To isolate _____ and _____, researchers _____ control for other _____.

2. Research studies have found that breast-fed infants _____ (do/do not) grow up with higher intelligence scores than those of infants who are bottle-fed with cow's milk. To study cause-effect relationships, psychologists conduct _____. Using this method, a researcher _____ the factor of interest, while _____ _____ other factors.

3. If a _____ changes when an _____ factor is varied, the researcher knows the factor is having an _____.

Objective 13: Explain why the double-blind procedure and random assignment build confidence in research findings.

4. Researchers sometimes give certain participants a pseudotreatment, called a _____, and compare their behavior with that of participants who receive the actual treatment. When merely thinking that one is receiving a treatment produces results, a _____ _____ is said to occur.

5. When neither the subjects nor the person collecting the data knows which condition a subject is in, the researcher is making use of the _____-_____ _____.

6. An experiment must involve at least two conditions: the _____ condition, in which the experimental treatment is present, and the _____ condition, in which it is absent.

7. Experimenters rely on the _____ _____ of individuals to the experimental conditions.

Objective 14: Explain the difference between an independent and a dependent variable.

8. The factor that is being manipulated in an experiment is called the _____ variable.

The measurable factor that may change as a result of these manipulations is called the _____ variable.

9. The aim of an experiment is to _____ a(n) _____ variable, _____ the _____ variable, and _____ all other _____ .

Explain at least one advantage of the experiment as a research method.

Statistical Reasoning (pp. 39–44)

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 40–41 for an explanation: *Off the top-of-the-head estimates; national income cake; gauges; data are "noisy."*

Objective 15: Explain the importance of statistical principles, and give an example of their use in everyday life.

1. Researchers use _____ to help them see and interpret their observations.

Objective 16: Explain how bar graphs can misrepresent data.

2. Once researchers have gathered their _____ , they must _____ them. One simple way of visually representing data is to use a _____ _____ . It is important to read the _____ _____ and note the _____ to avoid being mislead by misrepresented data.

Objective 17: Describe the three measures of central tendency, and tell which is most affected by extreme scores.

3. The three measures of central tendency are the _____ , the _____ , and the _____ .
4. The most frequently occurring score in a distribution is called the _____ .
5. The mean is computed as the _____ _____ of all the scores divided by the _____ of scores.
6. The median is the score at the _____ percentile.
7. When a distribution is lopsided, or _____ , the _____ (mean/median/mode) can be biased by a few extreme scores.

Objective 18: Describe two measures of variation.

8. Averages derived from scores with _____ (high/low) variability are more reliable than those with _____ (high/low) variability.
9. The measures of variation include the _____ and the _____ _____ .
10. The range is computed as the _____ _____ .
11. The range provides a(n) _____ (crude/accurate) estimate of variation because it _____ (is/is not) influenced by extreme scores.
12. The standard deviation is a _____ (more accurate/less accurate) measure of variation than the range. Unlike the range, the standard deviation _____ (takes/does not take) into consideration information from each score in the distribution.

Objective 19: Identify three principles of making generalizations from samples.

13. It is safer to generalize from a _____ sample than from a _____ sample.
14. Averages are more reliable when they are based on scores with _____ (high/low) variability.
15. Small samples provide a _____ (more/less) reliable basis for generalizing than large samples.

Objective 20: Explain how psychologists decide whether differences are meaningful.

16. Tests of statistical _____ are used to estimate whether observed differences are real—that is, to make sure that they are not simply the result of _____ variation. The differences are probably real if the sample averages are _____ and the difference between them is _____ (relatively small/relatively large).
17. Statistical significance does not necessarily indicate the importance or _____ significance of a difference or result.

Frequently Asked Questions About Psychology (pp. 44–50)

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 41 for an explanation: *plunge in; To understand how a combustion engine works . . . .; screen; color "the facts."*

Objective 21: Explain the value of simplified laboratory conditions in discovering general principles of behavior.

1. In laboratory experiments, psychologists' concern is not with specific behaviors but with the underlying theoretical _____ . As an example, researchers have found that people who flexibly cope with _____ stresses also cope flexibly with _____ _____ .
2. Psychologists conduct experiments on simplified behaviors in a laboratory environment in order to gain _____ over the many variables present in the "real world." In doing so, they are able to test _____ _____ of behavior that also operate in the real world.

Objective 22: Discuss whether psychological research can be generalized across cultures and genders.

3. Culture refers to shared _____ , _____ , _____ , and _____ that one generation passes on to the next.
4. Although specific attitudes and behaviors vary across cultures, the underlying _____ are the same. For instance, throughout the world people diagnosed with _____ exhibit the same _____ malfunction. Likewise, similarities between the _____ far outweigh differences.

Objective 23: Explain why psychologists study animals, and discuss the ethics of experimentation with both animals and humans.

5. Many psychologists study animals because they are fascinating. More important, they study animals because of the _____ (similarities/differences) between humans and other animals. These studies have led to treatments for human _____ and to a better understanding of human functioning.
6. Some people question whether experiments with animals are _____ . They wonder whether it is right to place the _____ of humans over those of animals.
7. Opposition to animal experimentation also raises the question of what _____ should protect the well-being of animals.

Describe the goals of the ethical guidelines for psychological research.

Objective 24: Describe how personal values can influence psychologists' research and its application, and discuss psychology's potential to manipulate people.

8. Psychologists' values _____ (do/do not) influence their theories, observations, and professional advice.
9. Although psychology _____ (can/cannot) be used to manipulate people, its purpose is to _____ .
10. (Thinking Critically) The viewpoint called _____ questions scientific objectivity, arguing that most scientific concepts are merely _____ constructs. Psychological scientists _____ (agree/disagree) on whether there is, in fact, a "real world" of psychological principles that science can reveal.
11. (Thinking Critically) People who serve on juries in capital punishment cases _____ (do/do not) represent the greater population. They are _____ (more/less) likely to be minorities and women.
12. (Thinking Critically) States with a death penalty _____ (have/do not have) lower homicide rates.

PROGRESS TEST 1

Multiple-Choice Questions

Circle your answers to the following questions and check them with the answers beginning on page 33. 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. After detailed study of a gunshot wound victim, a psychologist concludes that the brain region destroyed is likely to be important for memory functions. Which type of research did the psychologist use to deduce this?
   a. the case study
   b. a survey
   c. correlation
   d. experimentation

2. In an experiment to determine the effects of exercise on motivation, exercise is the:
   a. control condition.
   b. intervening variable.
   c. independent variable.
   d. dependent variable.

3. In order to determine the effects of a new drug on memory, one group of people is given a pill that contains the drug. A second group is given a sugar pill that does not contain the drug. This second group constitutes the:
   a. random sample.
   b. experimental group.
   c. control group.
   d. test group.

4. Theories are defined as:
   a. testable propositions.
   b. factors that may change in response to manipulation.
   c. statistical indexes.
   d. principles that help to organize, predict, and explain facts.

5. A psychologist studies the play behavior of third-grade children by watching groups during recess at school. Which type of research is being used?
   a. correlation
   b. case study
   c. experimentation
   d. naturalistic observation

6. To ensure that other researchers can repeat their work, psychologists use:
   a. control groups.
   b. random assignment.
   c. double-blind procedures.
   d. operational definitions.

7. The scientific attitude of skepticism is based on the belief that:
   a. people are rarely candid in revealing their thoughts.
   b. mental processes can't be studied objectively.
   c. the scientist's intuition about behavior is usually correct.
   d. ideas need to be tested against observable evidence.

8. Which of the following is *not* a basic research technique used by psychologists?
   a. description
   b. replication
   c. experimentation
   d. correlation

9. Psychologists' personal values:
   a. have little influence on how their experiments are conducted.
   b. do not influence the interpretation of experimental results because of the use of statistical techniques that guard against subjective bias.
   c. can bias both scientific observation and interpretation of data.
   d. have little influence on investigative methods but a significant effect on interpretation.

10. If shoe size and IQ are negatively correlated, which of the following is true?
    a. People with large feet tend to have high IQs.
    b. People with small feet tend to have high IQs.
    c. People with small feet tend to have low IQs.
    d. IQ is unpredictable based on a person's shoe size.

11. Which of the following would be best for determining whether alcohol impairs memory?
    a. case study
    b. naturalistic observation
    c. survey
    d. experiment

12. Well-done surveys measure attitudes in a representative subset, or _____, of an entire group, or _____.
    a. population; random sample
    b. control group; experimental group
    c. experimental group; control group
    d. random sample; population

13. What is the mean of the following distribution of scores: 2, 3, 7, 6, 1, 4, 9, 5, 8, 2?
    a. 5
    b. 4
    c. 4.7
    d. 3.7

14. What is the median of the following distribution of scores: 1, 3, 7, 7, 2, 8, 4?
    a. 1
    b. 2
    c. 3
    d. 4

15. What is the mode of the following distribution: 8, 2, 1, 1, 3, 7, 6, 2, 0, 2?
    a. 1
    b. 2
    c. 3
    d. 7

16. In generalizing from a sample to the population, it is important that:
    a. the sample is representative of the population.
    b. the sample is large.
    c. the scores in the sample have low variability.
    d. all of the above are observed.

17. When a difference between two groups is "statistically significant," this means that:
    a. the difference is statistically real but of little practical significance.
    b. the difference is probably the result of sampling variation.
    c. the difference is not likely to be due to chance variation.
    d. all of the above are true.

18. A lopsided set of scores that includes a number of extreme or unusual values is said to be:
    a. symmetrical.
    b. normal.
    c. skewed.
    d. dispersed.

19. Juwan eagerly opened an online trading account, believing that his market savvy would allow him to pick stocks that would make him a rich day trader. This belief best illustrates:
    a. the false consensus effect.
    b. illusory correlation.
    c. hindsight bias.
    d. overconfidence.

20. Which of the following is the measure of central tendency that would be most affected by a few extreme scores?
    a. mean
    b. range
    c. median
    d. mode

Matching Items

Match each term and concept with its definition or description.

Terms

_____ 1. culture
_____ 2. median
_____ 3. placebo effect
_____ 4. hindsight bias
_____ 5. mode
_____ 6. range
_____ 7. standard deviation
_____ 8. scatterplot
_____ 9. mean
_____ 10. measures of central tendency
_____ 11. measures of variation
_____ 12. false consensus effect
_____ 13. critical thinking
_____ 14. illusory correlation

Definitions or Descriptions

a. the mean, median, and mode
b. the difference between the highest and lowest scores
c. the arithmetic average of a set of scores
d. the range and standard deviation
e. the most frequently occurring score
f. the middle score in a distribution
g. a graphed cluster of dots depicting the values of two variables
h. a measure of variation based on every score
i. shared ideas and behaviors passed from one generation to the next
j. "I-knew-it-all-along" phenomenon
k. reasoning that does not blindly accept arguments
l. experimental results caused by expectations alone
m. overestimating others' agreement with us
n. false perception of a relationship between two variables

PROGRESS TEST 2

Progress Test 2 should be completed during a final chapter review. Answer the following questions after you thoroughly understand the correct answers for the section reviews and Progress Test 1.

Multiple-Choice Questions

1. Which of the following research methods does *not* belong with the others?
   a. case study
   b. survey
   c. naturalistic observation
   d. experiment

2. To prevent the possibility that a placebo effect or researchers' expectations will influence a study's results, scientists employ:
   a. control groups.
   b. experimental groups.
   c. random assignment.
   d. the double-blind procedure.

3. Which statement about the ethics of experimentation with people and animals is *false*?
   a. Only a small percentage of animal experiments use shock.
   b. Allegations that psychologists routinely subject animals to pain, starvation, and other inhumane conditions have been proven untrue.
   c. The American Psychological Association and the British Psychological Society have set strict guidelines for the care and treatment of human and animal subjects.
   d. Animals are used in psychological research more often than they are killed by humane animal shelters.

4. In an experiment to determine the effects of attention on memory, memory is the:
   a. control condition.
   b. intervening variable.
   c. independent variable.
   d. dependent variable.

5. One reason researchers base their findings on representative samples is to avoid the false consensus effect, which refers to our tendency to:
   a. overestimate the extent to which others share our belief.
   b. falsely perceive a relationship between two events when none exists.
   c. underestimate errors in our judgment.
   d. make all of the above reasoning errors.

6. Which of the following *best* describes the hindsight bias?
   a. Events seem more predictable before they have occurred.
   b. Events seem more predictable after they have occurred.
   c. A person's intuition is usually correct.
   d. A person's intuition is usually not correct.

7. The procedure designed to ensure that the experimental and control groups do not differ in any way that might affect the experiment's results is called:
   a. variable controlling.
   b. random assignment.
   c. representative sampling.
   d. stratification.

8. Illusory correlation refers to:
   a. the perception that two negatively correlated variables are positively correlated.
   b. the perception of a correlation where there is none.
   c. an insignificant correlation.
   d. a correlation that equals –1.0.

9. In generalizing from a sample to the population, it is important that:
   a. the sample be representative.
   b. the sample be nonrandom.
   c. the sample not be too large.
   d. all of the above be true.

10. The strength of the relationship between two vivid events will most likely be:
    a. significant.
    b. positive.
    c. negative.
    d. overestimated.

11. Which of the following is true, according to the text?
    a. Because laboratory experiments are artificial, any principles discovered cannot be applied to everyday behaviors.
    b. No psychological theory can be considered a good one until it produces testable predictions.
    c. Psychology's theories reflect common sense.
    d. Psychology has few ties to other disciplines.

12. Which type of research would allow you to determine whether students' college grades accurately predict later income?
    a. case study
    b. naturalistic observation
    c. experimentation
    d. correlation

13. In a test of the effects of air pollution, groups of students performed a reaction-time task in a polluted or an unpolluted room. To what condition were students in the unpolluted room exposed?
    a. experimental
    b. control
    c. randomly assigned
    d. dependent

14. In order to study the effects of lighting on mood, Dr. Cooper had students fill out questionnaires in brightly lit or dimly lit rooms. In this study, the independent variable consisted of:
    a. the number of students assigned to each group.
    b. the students' responses to the questionnaire.
    c. the room lighting.
    d. the subject matter of the questions asked.

15. What is the mode of the following distribution of scores: 2, 2, 4, 4, 4, 14?
    a. 2
    b. 4
    c. 5
    d. 6

16. What is the mean of the following distribution of scores: 2, 5, 8, 10, 11, 4, 6, 9, 1, 4?
    a. 2
    b. 10
    c. 6
    d. 15

17. What is the median of the following distribution: 10, 7, 5, 11, 8, 6, 9?
    a. 6
    b. 7
    c. 8
    d. 9

18. Which of the following is the measure of variation that is most affected by extreme scores?
    a. mean
    b. standard deviation
    c. mode
    d. range

19. The set of scores that would likely be most representative of the population from which it was drawn would be a sample with a relatively:
    a. large standard deviation.
    b. small standard deviation.
    c. large range.
    d. small range.

20. If a difference between two samples is not statistically significant, which of the following can be concluded?
    a. The difference is probably not a true one.
    b. The difference is probably not reliable.
    c. The difference could be due to sampling variation.
    d. All of the above can be concluded.

Matching Items

Match each term with its definition or description.

Terms

_____ 1. hypothesis
_____ 2. theory
_____ 3. independent variable
_____ 4. dependent variable
_____ 5. experimental condition
_____ 6. control condition
_____ 7. case study
_____ 8. survey
_____ 9. replication
_____ 10. random assignment
_____ 11. experiment
_____ 12. double-blind

Definitions or Descriptions

a. an in-depth observational study of one person
b. the variable being manipulated in an experiment
c. the variable being measured in an experiment
d. the "treatment-absent" condition in an experiment
e. testable proposition
f. repeating an experiment to see whether the same results are obtained
g. the process in which research participants are selected by chance for different groups in an experiment
h. an explanation using an integrated set of principles that organizes and predicts observations
i. the research strategy in which the effects of one or more variables on behavior are tested
j. the "treatment-present" condition in an experiment
k. the research strategy in which a representative sample of individuals is questioned
l. experimental procedure in which neither the research participant nor the experimenter knows which condition the participant is in

PSYCHOLOGY APPLIED

Answer these questions the day before an exam as a final check on your understanding of the chapter's terms and concepts.

Multiple-Choice Questions

1. You decide to test your belief that men drink more soft drinks than women by finding out whether more soft drinks are consumed per day in the men's dorm than in the women's dorm. Your belief is a(n) _____ , and your research prediction is a(n) _____ .
    a. hypothesis; theory
    b. theory; hypothesis
    c. independent variable; dependent variable
    d. dependent variable; independent variable

2. Your roommate is conducting a survey to learn how many hours the typical college student studies each day. She plans to pass out her questionnaire to the members of her sorority. You point out that her findings will be flawed because:
    a. she has not specified an independent variable.
    b. she has not specified a dependent variable.
    c. the sample will probably not be representative of the population of interest.
    d. of all the above reasons.

3. The concept of control is important in psychological research because:
   a. without control over independent and dependent variables, researchers cannot describe, predict, or explain behavior.
   b. experimental control allows researchers to study the influence of one or two independent variables on a dependent variable while holding other potential influences constant.
   c. without experimental control, results cannot be generalized from a sample to a population.
   d. of all the above reasons.

4. Martina believes that high doses of caffeine slow a person's reaction time. In order to test this belief, she has five friends each drink three 8-ounce cups of coffee and then measures their reaction time on a learning task. What is wrong with Martina's research strategy?
   a. No independent variable is specified.
   b. No dependent variable is specified.
   c. There is no control condition.
   d. There is no provision for replication of the findings.

5. A researcher was interested in determining whether her students' test performance could be predicted from their proximity to the front of the classroom. So she matched her students' scores on a math test with their seating position. This study is an example of:
   a. experimentation.
   b. correlational research.
   c. a survey.
   d. naturalistic observation.

6. Your best friend criticizes psychological research for being artificial and having no relevance to behavior in real life. In defense of psychology's use of laboratory experiments you point out that:
   a. psychologists make every attempt to avoid artificiality by setting up experiments that closely simulate real-world environments.
   b. psychologists who conduct basic research are not concerned with the applicability of their findings to the real world.
   c. most psychological research is not conducted in a laboratory environment.
   d. psychologists intentionally study behavior in simplified environments in order to gain greater control over variables and to test general principles that help to explain many behaviors.

7. A professor constructs a questionnaire to determine how students at the university feel about nuclear disarmament. Which of the following techniques should be used in order to survey a random sample of the student body?
   a. Every student should be sent the questionnaire.
   b. Only students majoring in psychology should be asked to complete the questionnaire.
   c. Only students living on campus should be asked to complete the questionnaire.
   d. From an alphabetical listing of all students, every tenth (or fifteenth, e.g.) student should be asked to complete the questionnaire.

8. If eating saturated fat and the likelihood of contracting cancer are positively correlated, which of the following is true?
   a. Saturated fat causes cancer.
   b. People who are prone to develop cancer prefer foods containing saturated fat.
   c. A separate factor links the consumption of saturated fat to cancer.
   d. None of the above is necessarily true.

9. To say that "psychology is a science" means that:
   a. psychologists study only observable behaviors.
   b. psychologists study thoughts and actions with an attitude of skepticism and derive their conclusions from direct observations.
   c. psychological research should be free of value judgments.
   d. all of the above are true.

10. Rashad, who is participating in a psychology experiment on the effects of alcohol on perception, is truthfully told by the experimenter that he has been assigned to the "high-dose condition." What is wrong with this experiment?
    a. There is no control condition.
    b. Rashad's expectations concerning the effects of "high doses" of alcohol on perception may influence his performance.
    c. Knowing that Rashad is in the "high-dose" condition may influence the experimenter's interpretations of Rashad's results.
    d. Both b. and c. are correct.

11. A friend majoring in anthropology is critical of psychological research because it often ignores the influence of culture on thoughts and actions. You point out that:
    a. there is very little evidence that cultural diversity has a significant effect on specific behaviors and attitudes.
    b. most researchers assign participants to experimental and control conditions in such a way as to fairly represent the cultural diversity of the population under study.
    c. it is impossible for psychologists to control for every possible variable that might influence research participants.
    d. even when specific thoughts and actions vary across cultures, as they often do, the underlying processes are much the same.

12. The scientific attitude of humility is based on the idea that:
    a. researchers must evaluate new ideas and theories objectively rather than accept them blindly.
    b. scientific theories must be testable.
    c. simple explanations of behavior make better theories than do complex explanations.
    d. researchers must be prepared to reject their own ideas in the face of conflicting evidence.

13. Which of the following procedures is an example of the use of a placebo?
    a. In a test of the effects of a drug on memory, a participant is led to believe that a harmless pill actually contains an active drug.
    b. A participant in an experiment is led to believe that a pill, which actually contains an active drug, is harmless.
    c. Participants in an experiment are not told which treatment condition is in effect.
    d. Neither the participants nor the experimenter knows which treatment condition is in effect.

14. If height and body weight are positively correlated, which of the following is true?
    a. There is a cause-effect relationship between height and weight.
    b. As height increases, weight decreases.
    c. Knowing a person's height, one can predict his or her weight.
    d. All of the above are true.

15. The football team's punter wants to determine how consistent his punting distances have been during the past season. He should compute the:
    a. mean.
    b. median.
    c. mode.
    d. standard deviation.

16. Joe believes that his basketball game is always best when he wears his old gray athletic socks. Joe is a victim of the phenomenon called:
    a. statistical significance.
    b. overconfidence.
    c. illusory correlation.
    d. hindsight bias.

17. Esteban refuses to be persuaded by an advertiser's claim that people using their brand of gasoline average 50 miles per gallon. His decision probably is based on:
    a. the possibility that the average is the mean, which could be artificially inflated by a few extreme scores.
    b. the absence of information about the size of the sample studied.
    c. the absence of information about the variation in sample scores.
    d. all of the above.

18. Bob scored 43 out of 70 points on his psychology exam. He was worried until he discovered that most of the class earned the same score. Bob's score was equal to the:
    a. mean.
    b. median.
    c. mode.
    d. range.

19. The four families on your block all have annual household incomes of $25,000. If a new family with an annual income of $75,000 moved in, which measure of central tendency would be most affected?
    a. mean
    b. median
    c. mode
    d. standard deviation

20. Dr. Salazar recently completed an experiment in which she compared reasoning ability in a sample of females and a sample of males. The means of the female and male samples equaled 21 and 19, respectively, on a 25-point scale. A statistical test revealed that her results were not statistically significant. What can Dr. Salazar conclude?
    a. Females have superior reasoning ability.
    b. The difference in the means of the two samples is probably due to chance variation.
    c. The difference in the means of the two samples is reliable.
    d. None of the above is true.