Successful essays may include the following arguments:

Examples to support their assertions; definitions alone are not sufficient.

An essay composed of complete sentences. Students should provide specific details and perspectives should be discussed in the context of the question rather than abstractly.

Successful essays may include the following arguments:

- A psychodynamic theorist might say that Qing's unconscious mind is troubled, causing her conscious behaviors to be negatively affected.
- A behavioral theorist might say that Qing has been conditioned to associate painting with positive emotions and sensations.
- A sociocultural theorist might say that Qing is struggling to adapt to the norms, values, and expectations of American society because they differ from Chinese norms, values, and expectations.
- A cognitive theorist might say that Qing's academic troubles are linked to problems she is having with memory, intelligence, or language learning.
- A biopsychological theorist might say that Qing's behavior is caused by hormonal changes or biologically inherited tendencies.

Information about sensory processes should be discussed in the context of the question rather than abstractly.

Successful essays may include the following arguments:

- Jonah's poor eyesight is most likely due to the age-related hardening of the lenses in his eyes. His lenses are no longer flexible, so he is not able to perform the process of visual accommodation.
- Alana most likely has red-green colorblindness: Either the red cones or the green cones in her eyes are not functioning.
- Jonah and Alana may be experiencing tinnitus, a ringing in the ears that can result from exposure to loud noises.
- Rory's nausea and dizziness may be symptoms of motion sickness, which occurs when the vestibular sense is not coordinated with the other senses.

**Chapter 2**

Practice Quiz page 58
1. b 2. c 3. a 4. e 5. b 6. c
Practice Quiz page 65
1. a 2. c 3. d 4. a 5. b
Practice Quiz page 73
1. d 2. c 3. a 4. e 5. a
Practice Quiz page 81
1. c 2. a 3. a 4. e 5. c 6. d
Test pages 86–87
Part II: Students must answer all parts of the question in a concise, clearly organized essay composed of complete sentences. Students should provide specific details and examples to support their assertions; definitions alone are not sufficient. Information about sensory processes should be discussed in the context of the question rather than abstractly.

Successful essays may include the following arguments:

- A bicyclist might use the occipital lobe to read road signs and to navigate because this area of the brain processes visual information.
- A bicyclist might use the temporal lobe to process street noises and to avoid danger because this area of the brain processes sound and language.
- A bicyclist might use the frontal lobe to solve problems like roadblocks or a flat tire because this area of the brain processes higher thinking, like decision making, memory, and planning.
- A bicyclist might use the parietal lobe to control the bike because this area of the brain contains the somatosensory cortex, which processes information from the skin for touch and body position.

**Chapter 3**

Practice Quiz page 93
1. b 2. e 3. c 4. e
Practice Quiz page 101
1. a 2. e 3. a 4. c 5. b
Practice Quiz page 114
1. e 2. b 3. b 4. a 5. c
Practice Quiz pages 124–125
1. b 2. e 3. b 4. c 5. d
Test pages 128–129
Part II: Students must answer all parts of the question in a concise, clearly organized essay composed of complete sentences. Students should provide specific details and examples to support their assertions; definitions alone are not sufficient. Information about sensory processes should be discussed in the context of the question rather than abstractly.

Successful essays may include the following arguments:

- Alpa likely became addicted to cocaine because she was not able to sustain the feelings of happiness and energy levels after the effects of the cocaine had worn off.
- Alpa's friends may have noticed that she is no longer giving as much effort at work or with her relationships because cocaine causes users to disregard the consequences of their actions.
- Alpa's friends may have also noticed that Alpa was compulsively using the drug and had lost control of herself.
- Cocaine use can cause convulsions and death.
1.9 What is the correlational technique, and what does it tell researchers about relationships?
- Correlation is a statistical technique that allows researchers to discover and predict relationships between variables of interest.
- Positive correlations exist when increases in one variable are matched by increases in the other variable, whereas negative correlations exist when increases in one variable are matched by decreases in the other variable.
- Correlations cannot be used to prove cause-and-effect relationships.

1.10 How are operational definitions, independent and dependent variables, experimental and control groups, and random assignment used in designing an experiment?
- Experiments are tightly controlled manipulations of variables that allow researchers to determine cause-and-effect relationships.
- The independent variable in an experiment is the variable that is deliberately manipulated by the experimenter to see if related changes occur in the behavior or responses of the participants and is given to the experimental group.
- The dependent variable in an experiment is the measured behavior or responses of the participants.
- The control group receives either a placebo treatment or nothing.
- Random assignment of participants to experimental groups helps to control for individual differences both within and between the groups that might otherwise interfere with the experiment's outcome.

1.11 How do the placebo and experimenter effects cause problems in an experiment, and how can single-blind and double-blind studies control for these effects?
- Experiments in which the subjects do not know if they are in the experimental or control groups are single-blind studies, whereas experiments in which neither the experimenters nor the subjects know this information are called double-blind studies.

Classic Studies in Psychology: Teresa Amabile and the Effect of Extrinsic Reward on Creativity

1.12 What are some basic elements of Amabile's creativity experiment?
- Dr. Teresa Amabile's experiment explored the relationship of rewards and creativity by promising a reward to one group of children for being creative (the experimental group) and not to a second group of children, who were being creative for fun (the control group).
- Her conclusion was that external rewards have a negative effect on creativity.

Ethics of Psychological Research

1.13 What are some ethical concerns that can occur when conducting research with people and animals?
- Ethical guidelines for doing research with human beings include the protection of rights and well-being of participants, informed consent, justification when deception is used, the right of participants to withdraw at any time, protection of participants from physical or psychological harm, confidentiality, and debriefing of participants at the end of the study.
- Animals in psychological research make useful models because they are easier to control than humans, they have simpler behavior, and they can be used in ways that are not permissible with humans.

Critical Thinking

1.14 What are the basic principles of critical thinking, and how can critical thinking be useful in everyday life?
- Critical thinking is the ability to make reasoned judgments. The four basic criteria of critical thinking are that there are few concepts that do not need to be tested, evidence can vary in quality, claims by experts and authorities do not automatically make something true, and keeping an open mind is important.
- Faulty reasoning and a failure to use critical thinking can lead to belief in false systems such as palmistry and graphology.

Applying Psychology to Everyday Life: Stereotypes, Athletes, and Test Performance

- Athletes were given an intellectual test either before or after being exposed to a stereotyping question designed to increase their awareness of negative stereotypes toward student athletes. Those exposed to the stereotyping question before taking the intellectual test scored much lower than those who were exposed to the question after taking the test, implying that obvious negative stereotypes in higher education may be an important cause of the tendency of student athletes to underperform in academics.

TEST YOURSELF: PREPARING FOR THE AP* EXAM


PART I: MULTIPLE-CHOICE QUESTIONS
Directions for Part I: Read each of the questions or incomplete sentences below. Then choose the response that best answers the question or completes the sentence.

1. Which early theorist developed his perspective on psychology by basing it on Darwin's "survival of the fittest" doctrine?
   a. Wilhelm Wundt
   b. William James
   c. John Watson
   d. Sigmund Freud
   e. Max Wertheimer

2. "The whole is greater than the sum of the parts" is a statement associated with the perspective of _______.
   a. introspectionism
   b. functionalism
   c. psychoanalysis
   d. Gestalt psychology
   e. evolutionary psychology
CHAPTER SUMMARY

What Is Psychology?

1.1 What defines psychology as a field of study and what are psychology's four primary goals?
- Psychology is the scientific study of behavior and mental processes.
- The four goals of psychology are description, explanation, prediction, and control.

Psychology Then: The History of Psychology

1.2 How did structuralism and functionalism differ, and who were the important people in these early fields?
- In 1879 psychology began as a science of its own in Germany with the establishment of Wundt's psychology laboratory. He developed the technique of objective introspection.
- Titchener, a student of Wundt, brought psychology in the form of structuralism to America. Structuralism died out in the early twentieth century. Margaret F. Washburn, Titchener's student, was the first woman to receive a Ph.D. in psychology in 1894 and published The Animal Mind.
- William James proposed a countering point of view called functionalism, that stressed the way the mind allows us to adapt.
- Functionalism influenced the modern fields of educational psychology, evolutionary psychology, and industrial/organizational psychology.
- Some noted early psychologists were women and other minorities, such as Margaret Washburn, Mary Whiton Calkins, Francis Cecil Sumner, Kenneth and Mamie Clark, and Jorge Sanchez.

1.3 What were the basic ideas and who were the important people behind the early approaches known as Gestalt, psychoanalysis, and behaviorism?
- Wertheimer and others studied sensation and perception, calling the new perspective Gestalt (an organized whole) psychology.
- Freud proposed that the unconscious mind controls much of our conscious behavior in his theory of psychoanalysis.
- Watson proposed a science of behavior called behaviorism, which focused only on the study of observable stimuli and responses.
- Watson and Rayner demonstrated that a phobia could be learned by conditioning a baby to be afraid of a white rat.

1.4 What are the basic ideas behind the seven modern perspectives, as well as the important contributions of Skinner, Maslow, and Rogers?
- Modern Freudians such as Anna Freud, Jung, and Adler changed the emphasis in Freud's original theory into a kind of neo-Freudianism.
- Skinner's operant conditioning of voluntary behavior became a major force in the twentieth century. He introduced the concept of reinforcement to behaviorism.

1.5 How does a psychiatrist differ from a psychologist, and what are the other types of professionals who work in the various areas of psychology?
- Psychiatrists are medical doctors who provide diagnosis and therapy for persons with mental disorders, whereas psychoanalysts are psychiatrists or psychologists with special training in the theory of psychoanalysis.
- Psychiatric social workers are social workers with special training in the influence of the environment on mental illness.
- Psychologists have academic degrees and can do counseling, teaching, and research and may specialize in any one of a large number of areas within psychology.
- There are many different areas of specialization in psychology, including clinical, counseling, developmental, social, and personality as areas of work or study.

1.6 Why is psychology considered a science, and what are the steps in using the scientific method?
- The scientific method is a way to determine facts and control the possibilities of error and bias when observing behavior. The five steps are perceiving the question, forming a hypothesis, testing the hypothesis, drawing conclusions, and reporting the results.

1.7 How are naturalistic and laboratory settings used to describe behavior, and what are some of the advantages and disadvantages associated with these settings?
- Naturalistic observations involve watching animals or people in their natural environments but have the disadvantage of lack of control.
- Laboratory observations involve watching animals or people in an artificial but controlled situation, such as a laboratory.

1.8 How are case studies and surveys used to describe behavior, and what are some drawbacks to each of these methods?
- Case studies are detailed investigations of one subject, whereas surveys involve asking standardized questions of large groups of people that represent a sample of the population of interest.
- Information gained from case studies cannot be applied to other cases. People responding to surveys may not always tell the truth or remember information correctly.

1.9 Humanism, which focuses on free will and the human potential for growth, was developed by Maslow and Rogers, among others, as a reaction to the deterministic nature of behaviorism and psychoanalysis.
- Cognitive psychology is the study of learning, memory, language, and problem solving.
- Biopsychology emerged as the study of the biological bases of behavior.
- The principles of evolution and the knowledge we currently have about evolution are used in this perspective to look at the way the mind works and why it works as it does. Behavior is seen as having an adaptive or survival value.
Applying Psychology to Everyday Life: Stereotypes, Athletes, and Test Performance

It seems that many people have a negative stereotype of student athletes—that they are graded and promoted on the basis of their ability on the athletic field and not on the basis of classroom performance. Evidence does exist for poorer performance on academic tests of athletes when compared to nonathletes in college (National Collegiate Athletic Association, 2002; Purdy et al., 1982; Upthegrove et al., 1999). If you are an athlete, can that negative stereotype actually have a negative impact on your test performance? Wesleyan University researchers Matthew Jameson, Robert Diehl, and Henry Danso have some evidence that such stereotypes can have just that kind of negative impact (Jameson et al., 2007).

In their experiment, 72 male college athletes were given an intellectual test. Half of the athletes answered a brief questionnaire before taking the test, whereas the other half received the same questionnaire after taking the test. The questionnaire asked three questions, with the third question being, “Rate your likelihood of being accepted to the university without the aid of athletic recruiting.” This item was designed to bring the negative stereotype of athletes (“dumb jocks”) to the forefront of students’ minds, creating a “high threat” for that stereotype.

The results? Those students who answered the “high threat” question before the intellectual test scored significantly lower on that test than those who answered the question after the test. The researchers also found a correlation between the students’ exposure to the “high threat” stereotype condition and accuracy on the intellectual test: The more students believed that they got into college primarily because of their ability in sports (based on their rating of that third question), the worse they performed on the subsequent test. Jameson and colleagues concluded that obvious negative stereotypes in higher education may be an important cause of the tendency of college athletes to underperform in academics.

Questions for Further Discussion

1. In this experiment, which group was the experimental group and which was the control? What was the independent variable? The dependent variable?
2. What might educators do to try to prevent the effect of the “dumb jock” negative stereotype on student athletes?
guidelines for research with humans

- Rights and well-being of participants must be weighed against the study's value to science
- Participants must be allowed to make an informed decision about participating (informed consent)
- Deception must be justified
- Participants may withdraw from the study at any time
- Participants must be protected from risks or told explicitly of risks
- Investigator must debrief participants, telling the true nature of the study and expectations of results
- Data must remain confidential

Ethics of Psychological Research
(psychedelic scientists have a primary goal of protecting the health and welfare of their animal or human participants)

- Any animal research is also covered by ethical considerations; primary focus is on avoiding any unnecessary pain or suffering
- Some research questions are important but can be difficult or dangerous to answer with human participants
- Animals are easier to control
- Animals have shorter lives; easier to study long-term effects

Because of these ethical considerations, research with animals

Critical Thinking

- There are very few "truths" in the world that do not need to be subjected to testing
- All evidence is not equal in quality
- Just because someone is considered to be an authority or to have a lot of expertise does not make everything that person claims automatically true
- Critical thinking requires an open mind

Critical Thinking Application: Helps Protect Against Pseudopsychologies

- Pseudopsychologies are ways of explaining human behavior that are not based on scientific evidence and have little value other than entertainment

Practice Quiz: Preparing for the AP* Exam

Sections: Read each of the questions or incomplete sentences below. Then choose the response that best answers the question completes the sentence.

Which of the following is not a common ethical rule of psychological research?

a. Data must remain confidential.
b. Participants must give informed consent.
c. Participants may withdraw from the study at any time.
d. Deception cannot be used in any studies on human beings.
e. The rights and well-being of the participants must come first.

According to the American Psychological Association's research guidelines, participants in an experiment must

a. Remain blind to their experimental condition
b. Be debriefed about the purpose of the study
c. Receive monetary payment in exchange for participation
d. Complete the entire experiment once they have begun it
e. Give a written endorsement of the study before the results are published

Which of the following is not a reason why scientists use animals in research?

a. Animals' lives are easier to control than humans' lives are.
b. It is easier to see the effect of manipulations in animals than in humans.
c. Long-term effects are more immediately visible in animals than in humans.
d. Researchers are allowed to treat animals in ways that they cannot treat people.
e. Results of experiments on animals are consistently stronger than results of experiments on humans.

4. Dr. Hirose is a member of an institutional review board. In her capacity as a board member, Dr. Hirose is responsible for

a. Judging completed research studies to approve or reject their conclusions
b. Judging research studies in progress to determine the level of bias present
c. Judging whether candidates should receive doctoral degrees in psychology
d. Judging proposed research studies according to safety and ethics guidelines
e. Judging completed research papers for inclusion in national professional journals

(continued)
I guess I understand about the importance of critical thinking—there seems to be a lot of people out there who will fall for anything.

**Pseudopsychologies** systems of explaining human behavior that are not based on or consistent with scientific evidence.

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**Pseudopsychologies: Why Do People Fall for Fakery?**

I guess I understand about the importance of critical thinking—there seems to be a lot of people out there who will fall for anything.

Actually, you might be surprised by the people who fall for the dumbest-sounding scams. Intelligent, well-educated people often fall prey to faulty reasoning, just like everyone else does. Con artists and scammers know the flaws in human nature pretty well, and that's how they survive.

Some of the easiest things to fall for are the pseudopsychologies, systems of explaining human behavior that are not based on scientific evidence and that have no real value other than being entertaining (Bunge, 1984). Because people like to try to understand themselves, they often participate in these activities.

One false system is *palmistry*, or the reading of palms. There is overwhelming evidence that the lines of the palm have absolutely no relationship to personality and cannot predict the future (Ben-Shakhar et al., 1986; Dean et al., 1992), yet many people still believe that palm readers are for real. What about handwriting? Surely one's personality would be revealed in handwriting? The pseudopsychology called *graphology*, or the analysis of personality through handwriting, even has respectable companies using handwriting analysis to select prospective employees, yet graphologists score close to zero on tests of accuracy in personality measurement (Ben-Shakhar et al., 1986).

Astrology is another popular pseudopsychology that attempts to predict the future and explain personality by using the positions of the stars and planets at the moment of birth. But does it work? Here's an example of critical thinking applied to astrology:

1. **Are astrologers' charts up-to-date?** The basic astrological charts were designed over 3,000 years ago. The stars, planets, and constellations are no longer in the same positions in the sky, due to changes in the rotation of the Earth's axis over long periods of time—over 24 degrees in just the last 2,000 years (Dean & Kelly, 2000; Kelly, 1980). So a Gemini is really a Cancer and will be a Leo in another 2,000 years.

2. **What exactly is so important about the moment of birth?** Why not the moment of conception? What happens if a baby is born by cesarean section and not at the time it would have been born naturally? Is that person's whole life screwed up?

3. **Why would the stars and planets have any effect on a person? Is it gravity?** The body mass of the doctor who delivers the baby has a far greater gravitational pull on the infant's body than the moon does. (Maybe people should use skinny obstetricians?)

Research also shows no connection between astrological signs and personality, careers, skills, marriage rates, divorce rates, or even physical characteristics (Dean & Kelly, 2000; Kelly, 1980). Studies of thousands of predictions by astrologers showed that only a very small percentage of those predictions actually came true (Dean & Kelly, 2000), and the ones that did come true were very vague or easily guessed from current events ("I predict that a famous star will have plastic surgery this year.")

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Explore phrenology. Can your skull explain certain personality traits? www.mypychlab.com
Wouldn't you like to know how to evaluate claims like these and possibly save yourself some time, effort, and money? That's exactly the kind of "real-world" problem that critical thinking can help sort out. (Listen on MyPsychLab)

THE CRITERIA FOR CRITICAL THINKING

1.4 What are the basic principles of critical thinking, and how can critical thinking be useful in everyday life?

According to Beyer (1995), critical thinking means making reasoned judgments. The word reasoned means that people's judgments should be logical and well thought out. There are four basic criteria* for critical thinking that people should remember when faced with statements about the world around them (Gill, 1991; Shore, 1990):

1. There are very few "truths" that do not need to be subjected to testing. Although people may accept religious beliefs and personal values on "faith," everything else in life needs to have supporting evidence. Questions that can be investigated empirically should be examined using established scientific methods. One shouldn't accept anything at face value but should always ask, "How do you know that? What is the evidence?"

2. All evidence is not equal in quality. One of the most important steps in critical thinking and one that is often overlooked is evaluating how evidence is gathered before deciding that it provides good support for some idea. For example, there are poorly done experiments, incorrect assumptions based on correlations rather than experiments, and studies in which there was either no control group or no attempt made to control for placebo effects or experimenter effects.

3. Just because someone is considered to be an authority or to have a lot of expertise does not make everything that person claims automatically true. One should always ask to see the evidence rather than just take some expert's word for anything. How good is the evidence? Are there other alternative explanations? For example, Linus Pauling, a famous and respected scientist, made claims about the benefits of vitamin C for curing the common cold. Although research is beginning to support the idea that vitamin C may help fight cancer, research has also found that even larger doses of this vitamin don't cure the common cold (Padayatty & Levine, 2001).

4. Critical thinking requires an open mind. Although it is good to be a little skeptical, people should not close their minds to things that are truly possible. At the same time, it's good for people to have open minds but not so open that they are gullible** and apt to "swallow anything." Critical thinking requires a delicate balance between skepticism and willingness to consider possibilities—even possibilities that disagree with previous judgments or beliefs. For example, scientists have yet to find any convincing evidence that there was once life on Mars. That doesn't mean that scientists totally dismiss the idea of life on Mars, just that there is no convincing evidence yet. I don't believe that there are Martians on Mars, but if I were shown convincing evidence, I would have to be willing to change my thinking—as difficult as that might be.

*Criteria: standards on which a judgment or decision may be based.
**Gullible: easily fooled or cheated.
5. **Participants must be protected from risks or told explicitly of risks.** For example, if researchers are using any kind of electrical equipment, care must be taken to ensure that no participant will experience a physical shock from faulty electrical equipment.

6. **Investigators must debrief participants, telling the true nature of the study and expectations of results.** This is important in all types of studies but particularly in those involving a deception.

7. **Data must remain confidential.** Freud recognized the importance of confidentiality, referring to his patients in his books and articles with false names. Likewise, psychologists and other researchers today tend to report only group results rather than results for a single individual, so that no one could possibly be recognized (American Psychological Association, 2002).

Psychologists also study animals to find out about behavior, often drawing comparisons between what the animals do and what people might do under similar conditions.

*But why not just study people in the first place?*

Some research questions are extremely important but difficult or impossible to answer by using human participants. Animals live shorter lives, so looking at long-term effects becomes much easier. Animals are also easier to control—the scientist can control diet, living arrangements, and even genetic relatedness. The white laboratory rat has become a recognized species different from ordinary rats, bred with its own kind for many decades until each white rat is essentially a little genetic "twin" of all the others. Animals also engage in much simpler behavior than humans do, making it easier to see the effects of manipulations. But the biggest reason that researchers use animals in some research is that animals can be used in ways that researchers could never use people. For example, it took a long time for scientists to prove that the tars and other harmful substances in tobacco cause cancer because they had to do correlational studies with people and experiments only with animals. There's the catch—researchers can do many things to animals that they can't do to people. That might seem cruel at first, but when you think that without animal research there would be no vaccines for deadly diseases, no insulin treatments for diabetics, no transplants, and so on, then the value of the research and its benefits to humankind far outweigh the hazards to which the research animals are exposed.

There are also ethical considerations when dealing with animals in research, just as there are with humans. With animals, though, the focus is on avoiding exposing them to any *unnecessary* pain or suffering. So if surgery is part of the study, it is done under anesthesia. If the research animal must die in order for the effects of some drug or other treatment to be examined in an autopsy, the death must be accomplished humanely. Animals are used in only about 7 percent of all psychological studies (Committee on Animal Research and Ethics, 2004).

**Critical Thinking**

*What good is all this focus on science and research going to do for me? I live in the real world, not a laboratory.*

The real world is full of opportunities for scientific thinking. Think about all the commercials on television for miracle weight loss, hair restoration, or herbal remedies for arthritis, depression, and a whole host of physical and mental problems. Wouldn't it be nice to know how many of these claims people should believe?
Ethics of Psychological Research

The study that Dr. Watson did with “Little Albert” and the white rat seems pretty cruel, when you think about it. Do researchers still do that kind of study today?

Actually, as psychology began to grow and more research with people was being done, psychologists began to realize that some protections had to be put in place. No one wanted to be thought of as a “mad scientist,” and if studies were permitted that could actually harm people, the field of psychology might die out pretty quickly. (IN) to Chapter Five: Learning, p. 183; Chapter Fourteen: Social Psychology, pp. 561–564. Scientists in other areas of research were also realizing that ethical treatment of the participants in studies had to be ensured in some way. Ethical treatment means that people who volunteer for a study will be able to expect that no physical or psychological harm should come to them.

1.13 What are some ethical concerns that can occur when conducting research with people and animals?

Universities and colleges (where most psychological research is carried out) usually have institutional review boards, groups of psychologists or other professionals who look over each proposed research study and judge it according to its safety and consideration for the participants in the study. These review boards look at all aspects of the proposed research, from the written materials that explain the research to the potential subjects to the equipment that may be used in the study itself.

THE GUIDELINES FOR DOING RESEARCH WITH PEOPLE

There are quite a few ethical concerns when dealing with human subjects in an experiment or other type of study. Here is a list of the most common ethical guidelines:

1. Rights and well-being of participants must be weighed against the study’s value to science. In other words, people come first, research second.

2. Participants must be allowed to make an informed decision about participation. This means that researchers have to explain the study to the people they want to include before they do anything to them or with them—even children—and it has to be in terms that the participants can understand. If researchers are using infants or children, their parents have to be informed and give their consent. This is known as informed consent. Even in single- or double-blind studies, it is necessary to tell the participants that they may be members of either the experimental or the control group—they just won’t find out which group they were actually in until after the experiment is concluded.

3. Deception must be justified. In some cases, it is necessary to deceive the participants because the study wouldn’t work any other way. The participants have to be told after the study exactly why the deception was important. This is called debriefing.

4. Participants may withdraw from the study at any time. The participants must be allowed to drop out for any reason. Sometimes people get bored with the study, decide they don’t have the time, or don’t like what they have to do, for example. Young children are particularly likely to decide not to play. Researchers have to let them go, even if it means having to get more participants.
is a measure of relationship between two or more variables (anything that can change or vary)
produces a value called the correlation coefficient that represents both direction and strength of relationship
does not prove causation—variables can be related but you cannot assume that one of them causes the other to occur

Finding Relationships
(different ways to find out more than just descriptions of behavior)

experiments
the only research method that will allow researchers to determine the cause of a behavior by deliberately manipulating some variable and measuring changes in the variable of interest

operational definition: specifically names the steps or procedures used to control or measure the variable in the experiment

experimental: gets the independent variable or experimental manipulation
control: receives no treatment or treatment that should not have an effect
placebo effect: participants’ beliefs or expectations about a study can influence their behavior
experimenter effect: experimenter’s biases can affect or influence participants’ behavior

random assignment to conditions is the best way to assure control over extraneous variables or confounding variables, variables that interfere with each other, and/or on the variable of interest

can be controlled through single-blind (participants “blind” to treatment/condition) and double-blind studies where the experimenter measuring the dependent variable does not know the treatment/condition associated with the data

PRACTICE QUIZ: PREPARING FOR THE AP* EXAM

Directions: Read each of the questions or incomplete sentences below. Then choose the response that best answers the question or completes the sentence.

1. Which of the following correlation coefficients would indicate the strongest relationship between two variables?
   a. +0.75
d. –0.25
c. 0
   b. +0.50
e. –0.90

2. In an experiment to test the effects of a new drug designed to enhance memory, the experimenter gives orange juice mixed with the drug to one group of subjects and orange juice mixed with a placebo to the other group. She then measures the memory skills of both groups by means of a memory test. In this study, the independent variable would be ________.
   a. the placebo
b. the presence or absence of the drug in the orange juice
c. the experimenter
d. the participants’ scores on the memory test
e. the participants

3. Dr. MacKenney is conducting a research study that explores the relationship between the temperature of a room in which an exam is taken and the students’ performance on that exam. 50 students take the exam in a 50-degree room, 50 students take the exam in a 70-degree room, and 50 students take the exam in a 90-degree room. When the test is over, he compares the results of each group of students. Which of the following is the dependent variable in this study?
   a. The students’ exam scores
b. The amount of studying each student did in preparation for the exam
c. The temperature of the rooms
d. The distribution of men and women in each of the exam rooms
e. The amount of natural light found in each exam room

4. In which type of study do neither the experimenter nor the participants know who is in the control group and who is in the experimental group?
   a. A correlational study
d. An observational study
b. A single-blind study
e. A triple-blind study
c. A double-blind study

5. Randomly assigning participants to different experimental conditions allows experimenters to ________.
   a. eliminate the effect of observer bias
b. reduce the impact of the experimenter effect
c. generalize an experimental result across all populations
d. control the effects of extraneous variables
e. recruit participants from a variety of different locations and backgrounds

ANSWERS ON PAGE AK-1.
paper. (A collage is just bits of paper or pictures glued onto a poster or paper—no drawing skills are necessary.)

- Her hypothesis was that the girls who created art for an extrinsic (external) reward, such as toys, would be significantly less creative than the girls who created art for its own sake, or who have intrinsic (internal) motivation. On the day of the art party for the experimental group, she showed the children all the materials they would be using and told them that the best three collages would win prizes. This instruction was actually one part of her independent variable because she wanted to manipulate the children into believing that they were creating art for an extrinsic reward.

On a different day, she brought the girls in her control group into the same classroom with the same materials, but she told these children that the prizes she showed them at the beginning would be raffled off by drawing names out of a hat at the end of the party. So these children had the same materials, the same amount of time, and the same prizes—but they were making their collages purely for the fun of it, or because of intrinsic motivation.

At the end of the party for both groups, she actually raffled off the prizes. It wasn't important that the children in the experimental group actually win the prizes with their art, only that they believed that they would.

Now all the basic elements of an experiment were in place: the hypothesis (the prediction), the independent variable (the two different sets of instructions), the experimental group (the ones who were told they could win prizes), and the control group (the ones just having fun). From her hypothesis, Amabile's dependent variable has to be how creative the artwork of the children in both groups actually was, but how could she measure something as subjective as creativity?

This is where cleverness comes in. Amabile got several local artists, art critics, and art teachers to come in after the children were gone. She had taped all of the collages (with all the identifying information on the back and, therefore, invisible) to the walls of the school corridors. Each "judge" rated each piece of artwork for its creativity, and then Amabile collected the ratings for each collage, averaged them, and came up with a "creativity score" that she could analyze with statistics. To Appendix A: Statistics.

Amabile's hypothesis was indeed supported by the results of her study. The judges' scores for the experimental group (who all believed they were competing for prizes) were consistently and significantly lower than the scores for the control group (Amabile, 1982). She concluded that creativity is decreased when reward is in the picture in the form of prizes or money (as her studies with adults have shown).

Questions for Further Discussion

1. In thinking about how researchers control for biases in experiments, why did Dr. Amabile ask several local artists and art critics to judge the collages after the children had gone? (Hint: There are two important effects being controlled by Dr. Amabile's decision.)

2. How might the particular school from which Dr. Amabile selected her participants have been an interfering factor in the experiment?

3. How can parents and educators encourage creativity without the use of external rewards?
For a long time, that was the only type of experiment researchers did in psychology. But researchers Robert Rosenthal and Lenore Jacobson reported in their 1968 book, *Pygmalion in the Classroom*, that when teachers were told that some students had a high potential for success and others a low potential, the students showed significant gains or decreases in their performance on standardized tests depending on which “potential” they were supposed to have (Rosenthal & Jacobson, 1968). Actually, the students had been selected randomly and randomly assigned to one of the two groups, “high” or “low.” Their performances on the tests were affected by the attitudes of the teachers concerning their potential. This study and similar studies after it highlighted the need to have both the experimenter and the research participants be “blind.” So in a double-blind study neither the participants nor the person or persons measuring the dependent variable know who got what. That’s why everything in a double-blind experiment gets coded in some way, so that only after all the measurements have been taken can anyone determine who was in the experimental group and who was in the control group.

**Other Experimental Designs**  In the field of developmental psychology, researchers are always looking for the ways in which a person’s age influences his or her behavior. The problem is that age is a variable that cannot be randomly controlled. In a regular experiment, for example, participants can be randomly assigned to the various conditions: drug or placebo, special instructions or no special instructions, and so on. But participants cannot be randomly assigned to different age groups. It would be like saying, “Okay, these people are now going to be 20, and these others will be 30.”

To get around this problem, researchers use alternative designs (called quasi-experimental designs) that are not considered true experiments because of the inability to randomly assign participants to the experimental and control groups (Gribbons & Herman, 1997). These designs are discussed more fully in Chapter Ten, *Development Across the Life Span*, pp. 386–387.

For a good example of a typical experiment, read the following section about Dr. Teresa Amabile’s experiment in creativity and rewards.

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**Teresa Amabile and the Effect of Extrinsic Reward on Creativity**

1.12 What are the basic elements of Amabile’s creativity experiment?

A very good example of an experiment is a classic study by famed Harvard Business College professor, Dr. Teresa Amabile. Amabile (1982) has made great strides in the study of creativity in both children and adults. In her 1982 study, she randomly selected a group of girls from a local public school. The girls ranged in age from 7 to 11. Dr. Amabile randomly divided them into two groups, an experimental group and a control group. She arranged to have an “art party” at the school after regular class hours and set up an empty classroom as her “laboratory.” In this classroom she placed all the materials the children would need to make collages—poster board, paste, and numerous shapes and colors of construction materials.
Another way that expectations about the outcome of the experiment can influence the results, even when the participants are animals rather than people, is called the **experimenter effect**. It has to do with the expectations of the experimenter, not the participants. As discussed earlier in the section about naturalistic observations, sometimes observers are biased—they see what they expect to see. Observer bias can also happen in an experiment. When the researcher is measuring the dependent variable, it's possible that he or she could give the participants clues about how they are supposed to respond—with body language, tone of voice, or even eye contact. Although not deliberate, it does happen. It could go something like this in the example: You, the Alzheimer's patient, are in the experimenter's office to take your second memory test after trying the drug. The experimenter seems to pay a lot of attention to you and to every answer that you give in the test, so you get the feeling that you are supposed to have improved a lot. So you try harder, and any improvement you show may be caused only by your own increased effort, not by the drug. That's the experimenter effect: The behavior of the experimenter caused the participant to change his or her response pattern.

**Single-Blind and Double-Blind Studies**

Fortunately, there are ways to control for these effects. The classic way to control for the placebo effect is to give the control group an actual placebo—some kind of treatment that doesn't affect behavior at all. In the drug experiment, the placebo would have to be some kind of sugar pill or saline (salt) solution that looks like and is administered just like the actual drug. The participants in both the experimental and the control groups would not know whether or not they got the real drug or the placebo. That way, if their expectations have any effect at all on the outcome of the experiment, the experimenter will be able to tell by looking at the results for the control group and comparing them to the experimental group. Even if the control group improves a little, the drug group should improve significantly more if the drug is working. This is called a **single-blind study** because while the experimenter knows which participant is taking which treatment, the participants are "blind" to the treatment they receive.

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*This elderly woman has Alzheimer's disease, which causes a severe loss of recent memory. If she were given a drug to improve her memory, the researcher could not be certain that any improvement shown was caused by the drug rather than by the elderly woman's belief that the drug would work. The expectations of any person in an experimental study can affect the outcome of the study, a phenomenon known as the placebo effect.*
group that watched the nonviolent cartoon were equally aggressive, they would have to assume that the violent content did not influence their behavior at all.

The Importance of Randomization As mentioned previously, random selection is the best way to choose the participants for any study. Participants must then be assigned to either the experimental group or the control group. Not surprisingly, random assignment of participants to one or the other condition is the best way to ensure control over other interfering, or extraneous, variables. Random assignment means that each participant has an equal chance of being assigned to each condition. If researchers simply looked at the children and put all of the children from one day care center or one pediatrician's recommendations into the experimental group and the same for the control group, they would run the risk of biasing their research. Some day care centers may have more naturally aggressive children, for example, or some pediatricians may have a particular client base in which the children are very passive. So researchers want to take the entire participant group and assign each person randomly to one or the other of the groups in the study. Sometimes this is as simple as picking names out of a hat.

Experimental Hazards: The Placebo Effect and the Experimenter Effect There are a few other problems that might arise in any experiment, even with the use of control groups and random assignment. These problems are especially likely when studying people instead of animals, because people are often influenced by their own thoughts or biases about what's going on in an experiment. For example, say there is a new drug that is supposed to improve memory in people who are in the very early stages of Alzheimer's disease (a form of mental deterioration that occurs in some people as they grow old). Researchers would want to test the drug to see if it really is effective in helping to improve memory, so they would get a sample of people who are in the early stages of the disease, divide them into two groups, give one group the drug, and then test for improvement. They would probably have to do a test of memory both before and after the administration of the drug to be able to measure improvement.

Let me see if I've got this straight. The group that gets the drug would be the experimental group, and the one that doesn't is the control group, right?

Right, and getting or not getting the drug is the independent variable, whereas the measure of memory improvement is the dependent variable. But there's still a problem with doing it this way. What if the researchers do find that the drug group had greater memory improvement than the group that received nothing? Can they really say that the drug itself caused the improvement? Or is it possible that the participants who received the drug knew that they were supposed to improve in memory and, therefore, made a major effort to do so? The improvement may have had more to do with participants' belief in the drug than the drug itself, a phenomenon known as the placebo effect: The expectations and biases of the participants in a study can influence their behavior. In medical research, the control group is often given a harmless substitute for the real drug, such as a sugar pill or an injection of salt water, and this substitute (which has no medical effect) is called the placebo. If there is a placebo effect, the control group will show changes in the dependent variable even though the participants in that group received only a placebo.

random assignment process of assigning subjects to the experimental or control groups randomly, so that each subject has an equal chance of being in either group.

placebo effect the phenomenon in which the expectations of the participants in a study can influence their behavior.

*Phenomenon: an observable fact or event.
names the operations (steps or procedures) that the experimenter must use to control or measure the variables in the experiment. An operational definition of aggressive behavior might be a checklist of very specific actions such as hitting, pushing, and so on that an observer can mark off as the children do the items on the list. If the observers were just told to look for "aggressive behavior," the researchers would probably get half a dozen or more different interpretations of what aggressive behavior is.

The name for the variable that is manipulated in any experiment is the **independent variable** because it is *independent* of anything the participants do. The participants in the study do not get to choose or vary the independent variable, and their behavior does not affect this variable at all. In the preceding example, the independent variable would be the presence or absence of violence in the cartoons.

The response of the participants to the manipulation of the independent variable is a dependent relationship, so the response of the participants that is measured is known as the **dependent variable**. Their behavior, if the hypothesis is correct, should *depend* on whether or not they were exposed to the independent variable, and in the example, the dependent variable would be the measure of aggressive behavior in the children. The dependent variable is always the thing (response of subjects or result of some action) that is measured to see just how the independent variable may have affected it.

**The Groups**  
If researchers do all of this and find that the children's behavior is aggressive, can they say that the aggressive behavior was caused by the violence in the cartoon? No, what has been described so far is not enough. The researchers may find that the children who watch the violent cartoon are aggressive, but how would they know if their aggressive behavior was caused by the cartoon or was just the natural aggressive level of those particular children or the result of the particular time of day they were observed? Those sorts of **confounding variables** (variables that interfere with each other and their possible effects on some other variable of interest) are the kind researchers have to control for in some way. For example, if most children in this experiment just happened to be from a pretty aggressive family background, any effects the violent cartoon in the experiment might have had on the children's behavior could be confused (confounded) with the possible effects of the family background. The researchers wouldn't know if the children were being aggressive because they watched the cartoon or because they liked to play aggressively anyway.

The best way to control for confounding variables is to have two groups of participants: those who watch the violent cartoon, and those who watch a nonviolent cartoon for the same length of time. Then the researchers would measure the aggressive behavior in both groups. If the aggressive behavior is significantly greater in the group that watched the violent cartoon (statistically speaking), then researchers can say that in this experiment, violent cartoon watching caused greater aggressive behavior.

The group that is exposed to the independent variable (the violent cartoon in the example) is called the **experimental group**, because it is the group that receives the experimental manipulation. The other group that gets either no treatment or some kind of treatment that should have no effect (like the group that watches the nonviolent cartoon in the example) is called the **control group** because it is used to *control* for the possibility that other factors might be causing the effect that is being examined. If researchers were to find that both the group that watched the violent cartoon and the
**experiment** a deliberate manipulation of a variable to see if corresponding changes in behavior result, allowing the determination of cause-and-effect relationships.

**operational definition** definition of a variable of interest that allows it to be directly measured.

Explore with a simulation on distinguishing independent and dependent variables. www.mypsychlab.com

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Itself cannot be used to prove causation (Centers for Disease Control and Prevention, 2009). Just because two variables are related to each other, researchers cannot assume that one of them causes the other one to occur. They could both be related to some other variable that is the cause of both. For example, cigarette smoking and life expectancy could be linked only because people who smoke may be less likely to take care of their health by eating right and exercising, whereas people who don't smoke may tend to eat healthier foods and exercise more than smokers do.

To sum up, a correlation will tell researchers if there is a relationship between the variables, how strong the relationship is, and in what direction the relationship goes. If researchers know the value of one variable, they can predict the value of the other. If they know someone's IQ score, for example, they can predict about what score that person should get on the SAT—not the exact score, just a reasonable estimate. Also, even though correlation does not prove causation, it can provide a starting point for examining causal relationships with another type of study, the experiment.

**The Experiment** The only research method that will allow researchers to determine the cause of a behavior is the experiment. In an experiment, researchers deliberately manipulate (change in some purposeful way) the variable they think is causing some behavior while holding all the other variables that might interfere with the experiment's results constant and unchanging. That way, if they get changes in behavior (an effect, in other words), they know that those changes must be due to the manipulated variable. For example, remember the discussion of the steps in the scientific method. It talked about how to study the effects of watching violent cartoons on children's aggressive behavior. The most logical way to study that particular relationship is by an experiment.

First, researchers might start by selecting the children they want to use in the experiment. The best method to do that is through random selection of a sample of children from a "population" determined by the researchers—just as a sample would be selected for a survey. Ideally, researchers would decide on the age of child they wanted to study—say, children who are 3 to 4 years old. Then researchers would go to various day care centers and randomly select a certain number of children of that age. Of course, that wouldn't include the children who don't go to a day care center. Another way to get a sample in the age range might be to ask several pediatricians to send out letters to parents of children of that age and then randomly select the sample from those children whose parents responded positively.

**1.10** How are operational definitions, independent and dependent variables, experimental and control groups, and random assignment used in designing an experiment?

**The Variables** Another important step is to decide on the variable the researchers want to manipulate (which would be the one they think causes changes in behavior) and the variable they want to measure to see if there are any changes (this would be the effect on behavior of the manipulation). Often deciding on the variables in the experiment comes before selection of the participants or subjects. **Explore on MyPsychLab**

In the example of aggression and children's cartoons, the variable that researchers think causes changes in aggressive behavior is the violence in the cartoons. Researchers would want to manipulate that in some way, and in order to do that they have to define the term *violent cartoon*. They would have to find a cartoon that contains violence or make one. Then they would show that cartoon to the participants and try to measure their aggressive behavior afterwards. In measuring the aggressive behavior, they would have to define exactly what they mean by "aggressive behavior" so that it can be measured. This definition is called an **operational definition** because it specifically
she will live a longer life or a shorter one? Does life expectancy go up or down as smoking increases? That's what is meant by the direction of the relationship.

In terms of the correlation coefficient (represented by the small letter \( r \)), the number researchers get from the formula will either be a positive number or a negative number. If positive, the two variables increase in the same direction—as one goes up, the other goes up; as one decreases, the other also decreases. If negative, the two variables have an inverse* relationship. As one increases, the other decreases. If researchers find that the more cigarettes a person smoked, the younger that person was when he or she died, that would mean that the correlation between the two variables is negative. (As smoking goes up, life expectancy goes down—an inverse relationship.)

The strength of the relationship between the variables will be determined by the actual number itself. That number will always range between –1.00 and +1.00. The reason that it cannot be greater than +1.00 or less than –1.00 has to do with the formula and an imaginary line on a graph around which the data points gather, a graph called a scatterplot (see Figure 1.3). If the relationship is a strong one, the number will be closer to +1.00 or to –1.00. A correlation of +.89 for example, would be a very strong positive correlation. That might represent the relationship between scores on the SAT and an IQ test, for example. A correlation of –.89 would be equally strong but negative. That would be more like the correlation researchers would probably find between smoking cigarettes and the age at which a person dies.

Notice that the closer the number is to zero, the weaker the relationship becomes. Researchers would probably find that the correlation coefficient for the relationship between people's weight and the number of freckles they have is pretty close to zero, for example.

Go back to the cigarette thing—if we found that the correlation between cigarette smoking and life expectancy was high, does that mean that smoking causes your life expectancy to be shortened?

Not exactly. The biggest error that people make concerning correlation is to assume that it means one variable is the cause of the other. Remember that correlation does not prove causation. Although adverse health effects from cigarette smoking account for approximately 438,000 deaths each year in the United States alone, correlation by

*Inverse: opposite in order.
CHAPTER I

FINDING RELATIONSHIPS

The methods discussed so far only provide descriptions of behavior. There are really only two methods that allow researchers to know more than just a description of what has happened: correlations and experiments. Correlation is actually a statistical technique, a particular way of organizing numerical information so that it is easier to look for patterns in the information. This method will be discussed here rather than in the statistics appendix found at the back of this text because correlation, like the experiment, is about finding relationships. In fact, the data from the descriptive methods just discussed are often analyzed using the correlational technique. To read more about descriptive and inferential statistics, and to learn how to use statistical concepts in psychological research, be sure to see Appendix A: Statistics.

1.9 What is the correlational technique, and what does it tell researchers about relationships?

Correlations A correlation is a measure of the relationship between two or more variables. A variable is anything that can change or vary—scores on a test, temperature in a room, gender, and so on. For example, researchers might be curious to know whether or not cigarette smoking is connected to life expectancy—the number of years a person can be expected to live. Obviously, the scientists can’t hang around people who smoke and wait to see when those people die. The only way (short of performing a really unethical and lengthy experiment) to find out if smoking behavior and life expectancy are related to each other is to use the medical records of people who have already died. (For privacy’s sake, the personal information such as names and social security numbers would be removed, with only the facts such as age, gender, weight, and so on available to researchers.) Researchers would look for two facts from each record: the number of cigarettes the person smoked per day and the age of the person at death.

Now the researcher has two sets of numbers for each person in the study that go into a mathematical formula to produce a number called the correlation coefficient. The correlation coefficient represents two things: the direction of the relationship and its strength.

Direction: How can a mathematical relationship have a direction?

Whenever researchers talk about two variables being related to each other, what they really mean is that knowing the value of one variable allows them to predict the value of the other variable. For example, if researchers found that smoking and life expectancy are indeed related, they should be able to predict how long someone might live if they know how many cigarettes a person smokes in a day. But which way does that prediction work? If a person smokes a lot of cigarettes, does that mean that he or...
called *courtesy bias*. Researchers must take their survey results with a big grain of salt—*they may not be as accurate as they would like them to be.*

Both the wording of survey questions and the order in which they appear on the survey can affect the outcome. It is difficult to find a wording that will be understood in exactly the same way by all those who read the question. For example, questions can be worded in a way that the desired answer becomes obvious (often resulting in courtesy bias-type answers), or a question that appears at the end of a survey might be answered quite differently than if it had appeared at the beginning.

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**Psychology—The Science**

*psychology uses the scientific method to try to determine facts and reduce uncertainty*

- **scientific method**
  - perceiving the question about some empirical event for which you would like an explanation; can be derived from the goal of description: What is happening here?
  - forming a hypothesis, a tentative explanation about an event
  - testing the hypothesis by collecting data, analyzing results
  - drawing conclusions about investigation’s success or failure to explain event
  - reporting your results; share exactly what, why, and how you did it, which provides means for replication

- **descriptive data collection methods**
  - **naturalistic observation**: observe people or animals in natural environment
  - **laboratory observation**: observe people or animals in laboratory setting
  - **case studies**: individual is studied in greater detail, researchers try to learn everything they can about the individual
  - **surveys**: ask questions about topic researchers are studying via telephone, Internet, or a questionnaire

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**PRACTICE QUIZ: PREPARING FOR THE AP* EXAM**

*Directions: Read each of the questions or incomplete sentences below. Then choose the response that best answers the question or completes the sentence.*

1. A researcher wants to determine whether drivers tend to slow down or speed up when the traffic light in front of them switches from green to yellow. Which of the following research methods would be most appropriate for this study?
   - a. Survey
   - b. Case study
   - c. Laboratory observation

2. In a naturalistic observation, the phenomenon in which the behavior of the subjects being observed changes because they are being watched is called __________.
   - a. courtesy bias
   - b. observer bias
   - c. observer effect
   - d. participant observation
   - e. representative sampling

3. Which of the following helps to control for the effect of observer bias?
   - a. Blind observers
   - b. A single trained observer
   - c. A randomly selected observer
   - d. Randomly selected participants
   - e. Participants who are not aware of the observers

4. The main disadvantage of a case study is that it is not
   - a. biased
   - b. anonymous
   - c. scientifically valid
   - d. applicable to other people or cases
   - e. easily done due to the large number of subjects

5. Which of the following is the best example of a representative sample?
   - a. You ask your fellow students to be participants in a study of memory.
   - b. You ask your relatives to participate in a cognitive psychology experiment.
   - c. You ask people from your religious group to participate in a study of values.
   - d. You choose people shopping in an expensive store to respond to your survey.
   - e. You choose people randomly from the telephone book to respond to your survey.

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*Big grain of salt: a phrase meaning to be skeptical; to doubt the truth or accuracy of something.*
It's pretty certain that anyone who actually answered that ad might already be suffering from some rather extensive brain damage. Case studies are also good ways to study things that are rare, such as multiple personality (now called dissociative identity disorder).

The disadvantage of the case study is that researchers can't really apply the results to other similar people. In other words, they can't assume that if another person had the same kind of experiences growing up that he or she would turn out just like the person in their case study. People are unique and have too many complicating factors in their lives to be that predictable. So what researchers find in one case won't necessarily apply or generalize to others. Another weakness of this method is that case studies are a form of detailed observation and are vulnerable to bias on the part of the person conducting the case study, just as observer bias can occur in naturalistic or laboratory observation.

Surveys Sometimes what psychologists want to know about is pretty personal and potentially embarrassing to research subjects. The only way to find out about very private (covert) behavior is to ask questions.

In the survey method, researchers will ask a series of questions about the topic they are studying. Surveys can be conducted in person in the form of interviews or on the telephone, the Internet, or with a questionnaire. The questions in interviews or on the telephone can vary, but usually the questions in a survey are all the same for everyone answering the survey. In this way, researchers can ask lots of questions and survey literally hundreds of people.

That is the big advantage of surveys, aside from their ability to get at private information. Researchers can get a tremendous amount of data on a very large group of people. Of course, there are disadvantages. One disadvantage is researchers have to be very careful about the group of people they survey. If they want to find out what high school students think about politics, for example, they can't really ask every single high school student in the entire United States. But they can select a representative sample from that group. They could randomly select a certain number of students from several different high schools across the United States, for example. Why randomly? Because the sample has to be representative of the population, which is the entire group in which the researcher is interested. If researchers selected only students from schools in Massachusetts, for example, they would most likely get different opinions on politics than they might get from students attending schools in Oklahoma. But if they survey a lot of high schools and select their participants (people who are part of the study) randomly, they will be more certain of getting answers that a broad selection of students would typically give.

That brings up the other major disadvantage of the survey technique: People aren't always going to give researchers accurate answers. The fact is, people tend to misremember things, distort the truth, and may lie outright—even if the survey is an anonymous questionnaire. Remembering is not a very accurate process sometimes, especially when people think that they might not come off sounding very desirable or socially appropriate. Some people deliberately give the answer they think is more socially correct rather than their true opinion, so that no one gets offended, in a process

*Randomly: in this sense, selected so that each member of the group has an equal chance of being chosen.

**Anonymous: not named or identified.
mall, and the teens wouldn’t know they were being watched. In other cases, researchers might use one-way mirrors, or they might actually become participants in a group, a technique called **participant observation**.

Are there disadvantages? Unfortunately, yes. One of the disadvantages of naturalistic observation is the possibility of **observer bias**. That happens when the person doing the observing has a particular opinion about what he or she is going to see or expects to see. If that is the case, sometimes that person sees only those actions that support that expectation and ignores actions that don’t fit. A way around that is to have **blind observers**: people who do not know what the research question is and, therefore, have no preconceived notions about what they “should” see. It’s also a good idea to have more than one observer, so that the various observations can be compared.

Another disadvantage is that each naturalistic setting is unique and unlike any other. Observations that are made at one time in one setting may not hold true for another time, even if the setting is similar, because the conditions are not going to be exactly the same after time—researchers don’t have that kind of control over the natural world. For example, famed gorilla researcher Diane Fossey had to battle poachers who set traps for the animals in the area of her observations (Mowat, 1988). The presence and activities of the poachers affected the normal behavior of the gorillas she was trying to observe.

**Laboratory Observation** Sometimes observing behavior in animals or people is just not practical in a natural setting. For example, a researcher might want to observe the reactions of infants to a mirror image of themselves and record the reactions with a camera mounted behind the one-way mirror. That kind of equipment might be difficult to set up in a natural setting. In a laboratory observation, the researcher would bring the infant to the equipment, controlling the number of infants and their ages as well as everything else that goes on in the laboratory.

As mentioned previously, laboratory settings have the disadvantage of being an artificial situation that might result in artificial behavior—both animals and people often react differently in the laboratory than they would in the real world. The main advantage of this method is the degree of control that it gives to the observer.

Both naturalistic and laboratory observations can lead to the formation of hypotheses that can later be tested.

### 1.8 How are case studies and surveys used to describe behavior, and what are some drawbacks to each of these methods?

**Case Studies** Another descriptive technique is called the **case study**, in which one individual is studied in great detail. In a case study, researchers try to learn everything they can about that individual. For example, Sigmund Freud based his entire theory of psychoanalysis on his numerous case studies of his patients in which he gathered information about their childhoods and relationships with others from the very beginning of their lives to the present. 

The advantage of the case study is the tremendous amount of detail it provides. It may also be the only way to get certain kinds of information. For example, one famous case study was the story of Phineas Gage, who had a large metal rod driven through his head and suffered a major personality change as a result (Damasio et al., 1994). Researchers couldn’t study that with naturalistic observation, and an experiment is out of the question. Imagine anyone responding to an ad in the newspaper that read:

_Wanted: 50 people willing to suffer nonfatal brain damage for scientific study of the brain. Will pay all medical expenses._
replicate in research, repeating a study or experiment to see if the same results will be obtained in an effort to demonstrate reliability of results.

observer effect tendency of people or animals to behave differently from normal when they know they are being observed.

Another reason for reporting your results is that even if your research gave you the answer you expected, your investigation might have been done incorrectly, or the results might have been a fluke or due to chance alone. So if others can replicate your research (do exactly the same study over again and get the same results), it gives much more support to your findings. This allows others to predict behavior based on your findings as well as use the results of those findings to modify or control behavior, the last two goals in psychology.

This might be a good place to make a distinction between questions that can be scientifically or empirically studied and those that cannot. For example, "What is the meaning of life?" is not a question that can be studied using the scientific or empirical method. Empirical questions are those that can be tested through direct observation or experience. For example, "Has life ever existed on Mars?" is a question that scientists are trying to answer through measurements, experimentation, soil samples, and other methods. Eventually they will be able to say with some degree of confidence that life could have existed or could not have existed. That is an empirical question, because it can be supported or disproved by gathering real evidence. The meaning of life, however, is a question of belief for each person. One does not need proof to believe, but scientists need proof (in the form of objectively gathered evidence) to know.

In psychology, researchers try to find the answers to empirical questions. Questions that involve beliefs and values are best left to philosophy and religion.

**AP** Differentiate types of research with regard to purpose, strengths, and weaknesses.

**AP** Describe how research design drives the reasonable conclusions that can be drawn.

Researcher Jane Goodall watches chimpanzees behave in their natural environment. How might her presence have affected the behavior of the chimpanzees?

There are a number of different ways to investigate the answers to research questions, and which one researchers use depends on the kind of question they want to answer. If they want to simply gather information about what has happened or what is happening, they would want a method that gives them a detailed description.

**Naturalistic Observation** Sometimes all researchers need to know is what is happening to a group of animals or people. The best way to look at the behavior of animals or people is to watch them behave in their normal environment. That's why animal researchers like Jane Goodall went to the areas where chimpanzees lived and watched them eat, play, mate, and sleep in their own natural surroundings. In order to study people, researchers might want to observe them in their workplaces, homes, or on playgrounds. For example, if a researcher wanted to know how adolescents behave with members of the opposite sex in a social setting, she might go to the mall on a weekend night.

What is the advantage of naturalistic observation? It allows researchers to get a realistic picture of how behavior occurs because they are actually watching that behavior. In a more artificial setting, like a laboratory, they might get behavior that is contrived or artificial rather than genuine. Of course, there are precautions that must be taken. In many cases, animals or people who know they are being watched will not behave normally anyway, in a process called the observer effect, so often the observer needs to remain hidden from view. When researching humans, this is often a difficult thing for researchers to do. In the mall setting with the teenagers, a researcher might find that pretending to read a book was a good disguise, especially if she wore glasses to hide her eye movements. Then she would be able to observe teenagers' natural behavior at the
tion called confirmation bias. For example, if a person is convinced that all men with long hair are musicians, that person will tend to notice only those long-haired men who are musicians and ignore all the long-haired men who are plumbers, lawyers, or computer scientists. The scientific method is designed to overcome the tendency to look at only the information that confirms people’s biases by forcing them to actively seek out information that might contradict their biases (or hypotheses). So when you test your hypothesis, you are trying to determine if the factor you suspect has an effect and that the results weren’t due to luck or chance. That’s why psychologists keep doing research over and over—to get more evidence that hypotheses are “supported.”

3. Testing the Hypothesis: The method you use to test your hypothesis will depend on exactly what kind of answer you think you might get. You might make more detailed observations or do a survey in which you ask questions of a large number of people, or you might design an experiment in which you deliberately change one thing to see if that adjustment causes changes in the behavior you are observing. In the example, the best method would probably be an experiment in which you select a group of children, show half of them a cartoon with violence and half of them a cartoon with no violence, and then find some way of measuring aggressive behavior in the two groups.

What do you do with the results of your testing? Of course, testing the hypothesis is all about the goal of getting an explanation for behavior, which leads to the next step.

4. Drawing Conclusions: Once you know the results of your hypothesis testing, you will find that either your hypothesis was supported—which means that your little experiment worked, or your measurements supported your initial observations—or it wasn’t supported, which means that you need to go back to square one and think of another possible explanation for what you have observed. (Could it be that Saturday mornings make children a little more aggressive? Or Saturday breakfasts?)

The results of any method of hypothesis testing won’t be just the raw numbers or measurements. Any data that come from your testing procedure will be analyzed with some kind of statistical method that helps to organize and refine the data. You have come to some conclusion about your investigation’s success or failure, and you want to let other researchers know what you have found.

Why tell anyone what happened if it failed?
Just because one experiment or other study did not find support for the hypothesis does not necessarily mean that the hypothesis is incorrect. Your study might have been poorly designed, or there might have been factors not under your control that interfered with the study. But other researchers are asking the same kinds of questions that you might have asked. They need to know what has already been found out about the answers to those questions so that they can continue investigating and adding more knowledge about the answers to those questions. Even if your own investigation didn’t go as planned, that tells other researchers what not to do in the future. So the final step in any scientific investigation is reporting the results.

5. Report Your Results: At this point, you would want to write up exactly what you did, why you did it, how you did it, and what you found, so that others can learn from what you have already accomplished—or failed to accomplish.
Have you ever played the “airport game”? You sit at the airport (bus terminal, doctor’s office, or any other place where people come and go and you have a long wait) and try to guess what people do for a living based only on their appearance. Although it’s a fun game, the guesses are rarely correct. People’s guesses also sometimes reveal the biases that they may have about certain physical appearances: men with long hair are musicians, people wearing suits are executives, and so on. Like the airport game, psychology is concerned with the study of people and their behavior. Unlike the airport game, though, psychology is about trying to determine facts and reduce uncertainty and bias.

In psychology, researchers want to see only what is really there, not what their biases might want them to see. The way to do that is by using the scientific method, a system for reducing bias and error in the measurement of data.

The first step in any investigation is to have a question to investigate, right? So the first step in the scientific method is this:

1. **Perceiving the Question:** You notice something interesting happening in your surroundings for which you would like to have an explanation. An example might be that you’ve noticed that your younger siblings seem to get a little more aggressive with each other after watching a particularly violent children’s cartoon program on Saturday morning. You wonder if the violence in the cartoon could be creating the aggressive behavior in your siblings. This step is derived from the goal of description: What is happening here?

   Once you have a question, you want an answer. The next logical step is to form a tentative* answer or explanation for the behavior you have seen. This tentative explanation is known as a **hypothesis**.

2. **Forming a Hypothesis:** Based on your initial observations about what’s going on in your surroundings, you form an educated guess about the explanation for your observations, putting it into the form of a statement that can be tested in some way. Going back to the previous example, you might say, “Children who watch violent cartoons will become more aggressive.”

   The next step is testing the hypothesis. People have a tendency to notice only things that agree with their view of the world, a kind of selective percep-

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**Psychology: The Science**

**WHY PSYCHOLOGISTS USE THE SCIENTIFIC METHOD**

In psychology, researchers want to see only what is really there, not what their biases might want them to see. The way to do that is by using the **scientific method**, a system for reducing bias and error in the measurement of data.

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   The next step is testing the hypothesis. People have a tendency to notice only things that agree with their view of the world, a kind of selective percep-

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**scientific method** system of gathering data so that bias and error in measurement are reduced.

**hypothesis** tentative explanation of a phenomenon based on observations.

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*Tentative: something that is not fully worked out or completed as yet.
Psychodynamic
Based on Freud's theory
- focuses on the role of the unconscious mind and its influence on conscious behavior, early childhood experiences, development of sense of self, and other motivations

Behavioral
Based on early work of Watson and later B.F. Skinner
- focuses on how behavioral responses are learned through classical or operant conditioning

Humanistic
Two pioneers are Carl Rogers and Abraham Maslow
- focuses on human potential, free will, and possibility of self-actualization

Cognitive
Has roots in Gestalt psychology
- focuses on memory, intelligence, perception, thought processes, problem solving, language, and learning

Psychology Now: Modern Perspectives
(No one single perspective is used to explain all human behavior and processes)

Sociocultural
- focuses on the behavior of individuals as the result of the presence (real or imagined) of other individuals, as part of groups, or as part of a larger culture

Biopsychological
- focuses on influences of hormones, brain structures and chemicals, disease, etc.; human and animal behavior is seen as a direct result of events in the body

Evolutionary
- focuses on the biological bases for universal mental characteristics, such as why we lie, how attractiveness influences mate selection, the universality of fear, and why we enjoy things like music and dance

Types of Psychological Professionals
(people working in the field of psychology have a variety of training experiences and different focuses)

Psychiatrist
- medical doctor (M.D. or D.O.) who specializes in diagnosis and treatment of psychological disorders; can prescribe medication

Psychoanalyst
- usually a psychiatrist or psychologist who has special training in theories of Freud

Psychiatric Social Worker
- has training in area of social work (M.S.W.) and often has a professional license to practice (L.C.S.W.)

Psychologist
- has a doctorate degree (Ph.D., Psy.D., or Ed.D.) and works with either humans or animals in a variety of settings based on the area of specialization
- must be licensed to practice independently; typically does not prescribe medications but can go through specialized training to do so in some states

Practice Quiz: Preparing for the AP* Exam
Directions: Read each of the questions or incomplete sentences below. Then choose the response that best answers the question or completes the sentence.

1. Which of the following pairs represents the two psychology perspectives that were also part of the historical beginnings of psychology?
   a. Humanism and behaviorism
   b. Behaviorism and psychodynamics
   c. Psychodynamics and humanism
   d. Humanism and cognitive psychology
   e. Cognitive psychology and psychodynamics

2. Elsie suffered a stroke and had to be hospitalized. While in the hospital, she talked in funny, garbled words and seemed to think that she was being held against her will. Which of the following perspectives best explains Elsie's odd behavior?
   a. Behaviorism
   b. Sociocultural psychology
   c. Psychodynamics
   d. Biopsychology
   e. Evolutionary psychology

3. Which perspective would a researcher be taking if she were studying the way children store and retrieve information?
   (continued)
A psychologist has no medical training but has a doctorate degree. (A person with a master's degree might be a counselor, therapist, or researcher but is typically not referred to as a psychologist.) Psychologists undergo intense academic training, learning about many different areas of psychology before choosing an area in which to specialize. Because the focus of their careers can vary so widely, psychologists work in many different vocational settings. Figure 1.2a shows the types of settings in which psychologists work. Although typically psychologists cannot prescribe medications, in some states psychologists can go through special training in the prescription of drugs for certain psychological disorders. Psychologists in the counseling profession must be licensed to practice in their states.

**AREAS OF SPECIALIZATION**

You said not all psychologists do counseling. But I thought that was all that psychologists do—what else is there?

Although many psychologists do participate in delivering therapy to people who need help, there is a nearly equal number of psychologists who do other tasks: researching, teaching, designing equipment and workplaces, and developing educational methods, for example. Also, not every psychologist is interested in the same area of human—or animal—behavior and most psychologists work in several different areas of interest, as shown in Figure 1.2b, Subfields of Psychology.

There are many other areas as well, as psychology can be used in fields such as health, sports performance, legal issues, business concerns, and even in the design of equipment, tools, and furniture. To learn more about psychology's different domains, get a more detailed look at some of the areas in which psychological principles can be applied, and view a listing of careers that can benefit from a degree in psychology, see to Appendix B: Applied Psychology.
et al., 1982). The results of the study bore out the prediction: Men found it harder to forgive a partner's sexual straying and were more likely to break up with the woman than if the infidelity were purely emotional; for women, the opposite results were found. Another study concerning mating found that women seem to use a man's kissing ability to determine his worthiness as a potential mate (Hughes et al., 2007).

**Psychological Professionals and Areas of Specialization**

There are a number of professionals who work in the field of psychology. These professionals have different training, different focuses, and may have different goals from the typical psychologist.

1.5 How does a psychiatrist differ from a psychologist, and what are the other types of professionals who work in the various areas of psychology?

A psychiatrist has a medical (M.D. or D.O.) degree and is a medical doctor who has specialized in the diagnosis and treatment of psychological disorders. Psychiatrists can prescribe medicine in addition to providing therapy and counseling, and they typically work in private practice or hospital settings.

A psychoanalyst is usually either a psychiatrist (M.D.) or a psychologist (Ph.D., Psy.D., or Ed.D.) who has special training in the theories of Sigmund Freud and his method of psychoanalysis. Psychoanalysts, like psychiatrists, usually work in private practice or hospital settings. (Like the term *therapist*, the label of *psychoanalyst* is not protected by federal or state law and anyone—trained or not—may use this label. If you are looking for a therapist of any type, always ask to see the person's credentials.)

A psychiatric social worker is trained in the area of social work and usually possesses a Master of Social Work (M.S.W.) degree, and often has obtained a professional license, such as a Licensed Clinical Social Worker (L.C.S.W.). These professionals focus more on the environmental conditions that can have an impact on mental disorders, such as poverty, overcrowding, stress, and drug abuse. They work out of clinics, hospitals, and social service organizations.
BIOPSYCHOLOGICAL PERSPECTIVE

Biopsychology, or the study of the biological bases of behavior and mental processes, isn’t really as new a perspective as one might think.

In the **biopsychological perspective**, human and animal behavior is seen as a direct result of events in the body. Hormones, heredity, brain chemicals, tumors, and diseases are some of the biological causes of behavior and mental events. 

For example, evidence is mounting for a biological cause (perhaps even genetic) for schizophrenia, a mental disorder involving delusions (false beliefs), hallucinations (false sensory impressions), and extremely distorted thinking (Brzustowicz et al., 2004; Mazia et al., 1997). 

**Evolutionary perspective**

As you’ve seen by now, biology isn’t the only force that determines and drives human behavior. Just as some researchers examine the effects of biological factors (like genetics) on behavior and others examine the effects of environmental factors (like parenting) on behavior, still other researchers examine potential links between human behavior and Charles Darwin’s theory of evolution. The **evolutionary perspective** focuses on the biological bases for universal mental characteristics that all humans share. It seeks to explain general mental strategies and traits, such as why we lie, how attractiveness influences mate selection, why fear of snakes is so universal, and why people like music and dancing, among many others.

In this perspective, the mind is seen as a set of information-processing machines, designed by the same process of natural selection that Darwin (1859) first theorized, allowing human beings to solve the problems faced in the early days of human evolution—the problems of the early hunters and gatherers. For example, evolutionary psychologists (psychologists who study the evolutionary origins of human behavior) would view the human behavior of not eating substances that have a bitter taste (such as poisonous plants) as an adaptive behavior that evolved as early humans came into contact with such bitter plants. Those who ate the bitter plants would die, while those who spit them out survived to pass their “I don’t like this taste” genes on to their offspring, who would pass the genes on to their offspring, and so on, until after a long period of time there is an entire population of humans that naturally avoid bitter-tasting substances.

That explains why people don’t like bitter stuff, like the white part of an orange peel, but that’s really a physical thing. How would the evolutionary perspective help us understand something psychological like relationships?

Relationships between men and women are one of the many areas in which evolutionary psychologists conduct research. For example, in one study researchers surveyed individuals about their relationships with the opposite sex, asking the participants how likely they would be to forgive either a sexual infidelity or an emotional one (Shackelford et al., 2002). Evolutionary theory would predict that men would find it more difficult to forgive a woman who was physically intimate with someone else than a woman who was only emotionally involved with someone because the man wants to be sure that the children the woman bears are his (Geary, 2000). Why put all that effort into providing for children who could be another man’s offspring? Women, on the other hand, should find it harder to forgive an emotional infidelity, as they are always sure that their children are their own, but (in evolutionary terms, mind you) they need the emotional loyalty of the men to provide for those children (Buss et al., 1992; Daly

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biopsychological perspective  
**perspective that attributes human and animal behavior to biological events occurring in the body, such as genetic influences, hormones, and the activity of the nervous system.**

**evolutionary perspective**  
**perspective that focuses on the biological bases of universal mental characteristics that all humans share.**

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*Adaptive: having the quality of adjusting to the circumstances or need; in the sense used here, a behavior that aids in survival.*
of human thinking), the work of Piaget with children, Chomsky’s analysis of Skinner’s views of language, and discoveries in biological psychology all stimulated an interest in studying the processes of thought. The cognitive perspective with its focus on memory, intelligence, perception, thought processes, problem solving, language, and learning has become a major force in psychology. ©  

Within the cognitive perspective, the relatively new field of cognitive neuroscience includes the study of the physical workings of the brain and nervous system when engaged in memory, thinking, and other cognitive processes. Cognitive neuroscientists use tools for imaging the structure and activity of the living brain, such as magnetic resonance imaging (MRI), positron emission tomography (PET), and functional MRI (fMRI). ©  

The emerging field of brain imaging is an important one in the study of cognitive processes.

Another modern perspective in psychology is the sociocultural perspective, which actually combines two areas of study: social psychology, which is the study of groups, social roles, and rules of social actions and relationships; and cultural psychology, which is the study of cultural norms,* values, and expectations. These two areas are related in that they are both about the effect that people have on one another, either individually or in a larger group, such as a culture (Peplau & Taylor, 1997). ©  

The sociocultural perspective is important because it reminds people that how they and others behave (or even think) is influenced not only by whether they are alone, with friends, in a crowd, or part of a group, but also by the social norms, fads, class differences, and ethnic identity concerns of the particular culture in which they live. Cross-cultural research also fits within this perspective. In cross-cultural research, the contrasts and comparisons of a behavior or issue are studied in at least two or more cultures. This type of research can help illustrate the different influences of environment (culture and training) when compared to the influence of heredity (genetics, or the influence of genes on behavior).

For example, in a classic study covered in Chapter Fourteen (pp. 470, 472–474), researchers Darley and Latané (1968) found that the presence of other people actually lessened the chances that a person in trouble would receive help. The phenomenon is called the bystander effect and it is believed to be the result of diffusion of responsibility, which is the tendency to feel that someone else is responsible for taking action when others are present. But would this effect appear in other cultures? Shorey (2001), in his discussion of the brutal beating death of a Somali prisoner in a Canadian military facility while bystanders looked on without acting, suggests that it just might. But is Canadian culture too similar to our own to lead us to this conclusion? Would another culture very different from Western culture show the same effect? This is exactly the kind of question that the sociocultural perspective, using cross-cultural research, asks and attempts to answer.

*cognitiven perspective modern perspective that focuses on memory, intelligence, perception, problem solving, and learning.

cognitive neuroscience study of the physical changes in the brain and nervous system during thinking.

sociocultural perspective perspective that focuses on the relationship between social behavior and culture.
CHAPTER I

BEHAVIORAL PERSPECTIVE

Like psychoanalysis, behaviorism is still also very influential. When its primary supporter, John B. Watson, moved on to greener pastures in the world of advertising, B. F. Skinner became the new leader of the field.

Skinner not only continued research in classical conditioning, but he also developed a theory of how voluntary behavior is learned called operant conditioning (Skinner, 1938). In this theory, behavioral responses that are followed by pleasurable consequences are strengthened, or reinforced. For example, a child who cries and is rewarded by getting his mother’s attention will cry again in the future. Skinner’s work is discussed in much greater depth in Chapter Five.

In addition to the psychodynamic and behavioral perspectives, there are five newer perspectives that have developed within the last 50 years.

HUMANISTIC PERSPECTIVE

One of the newer perspectives, often called the “third force” in psychology, was really a reaction to both psychodynamic theory and behaviorism. In the early to mid-1900s, if you were a psychologist you were either a psychoanalyst or a behaviorist—there weren’t any other major viewpoints to rival those two. Behaviorism was seen as a very “mechanical” theory—stimulus goes in, response comes out, and what happens in the middle is of no interest. The environment determines behavior, and the individual has little input into his or her development. Psychoanalysis wasn’t mechanistic, but in that theory the workings of the physical body (in the form of sexual and aggressive instincts) determine behavior, and the individual, once again, has little to do with his or her own destiny.

Some professionals began to develop a perspective that would allow them to focus on people’s ability to direct their own lives. These theorists wanted to shift the focus to the aspects of human nature that make us uniquely human—our appreciation for beauty, for example. In a very real sense, then, this approach owes far more to the early roots of psychology in the field of philosophy rather than the more scientific fields of medicine and physiology. Humanists held the view that people have free will, the freedom to choose their own destiny. Two of the earliest and most famous founders of this view were Abraham Maslow (1908–1970) and Carl Rogers (1902–1987).

Both Maslow and Rogers emphasized the human potential, the ability of each person to become the best person he or she could be (Maslow, 1968; Rogers, 1961). They believed that studying animals in laboratories (as the behaviorists did) or people with nervous disorders (as the psychoanalysts did) could not lead to a better understanding of this human potential for self-actualization, as Maslow termed it—achieving one’s full potential or ideal self. Today, humanism is still very influential in psychotherapy.

COGNITIVE PERSPECTIVE

Cognitive psychology, which focuses on how people think, remember, store, and use information, became a major force in the field in the 1960s. It wasn’t a new idea, as the Gestalt psychologists had themselves supported the study of mental processes of learning. The development of computers (which just happened to make great models
Psychology Now: Modern Perspectives

1.4 What are the basic ideas behind the seven modern perspectives, as well as the important contributions of Skinner, Maslow, and Rogers?

Even today, there isn’t one single perspective that is used to explain all human behavior and mental processes. There are actually seven modern perspectives, with two of these being holdovers from the early days of the field.

PSYCHODYNAMIC PERSPECTIVE

Freud’s theory is still with us today in use by many professionals in therapy situations. It is far less common today than it was a few decades ago, however, and even those who use his techniques modify them for modern use. In the more modern psychodynamic perspective, the focus is still on the unconscious mind and its influence over conscious behavior and on early childhood experiences, but with an emphasis on sex and sexual motivations and more emphasis on the development of a sense of self and the discovery of other motivations behind a person’s behavior.

Freud had a number of followers who took his original ideas and modified them to their own perspectives. Their students continued to modify those theories until today we have a kind of neo-Freudianism (Freud et al., 1990; Meadow & Clevans, 978). Therapists often speak of Freudian complexes and use much of his terminology in their work with clients. Part of the reason that Freudian concepts are enduring is the lack of any scientific way to test them and, therefore, show them to be either useful or useless. (1) to Chapter Eleven: Theories of Personality, p. 437–443. Nevertheless, despite the lack of testability, Freud’s theory continues to appeal to many modern theorists.

psychodynamic perspective modern version of psychoanalysis that is more focused on the development of a sense of self and the discovery of other motivations behind a person’s behavior than sexual motivations.
CHAPTER I

Questions for Further Thought

1. What difficulties might early women psychologists like Mary Cover Jones have faced in a field and a culture dominated by men?
2. What kinds of behavior or issues might have been thought inappropriate for women to study in the early days of psychology?

Psychology Then: The History of Psychology
(has roots in several disciplines, including philosophy, medicine, and physiology, and has developed through several perspectives)

<table>
<thead>
<tr>
<th>Structuralism</th>
<th>Functionalism</th>
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<tbody>
<tr>
<td>founded by Edward Titchener</td>
<td>founded by William James</td>
</tr>
<tr>
<td>studied nonphysical structure (i.e., thought, experiences, emotions, etc.) of human mind</td>
<td>used objective introspection to study processes that were result of physical sensations</td>
</tr>
<tr>
<td>expanded Wundt's original ideas; believed every experience could be broken down into individual emotions and sensations</td>
<td>first attempt to bring objectivity and measurement to psychology</td>
</tr>
<tr>
<td>applied introspection method to thoughts as well as physical sensations</td>
<td>influenced by Darwin's ideas about natural selection—focused on how the mind allows people to function in the real world</td>
</tr>
<tr>
<td></td>
<td>interested in how behavioral traits could aid in survival</td>
</tr>
<tr>
<td></td>
<td>influenced development of evolutionary psychology</td>
</tr>
<tr>
<td></td>
<td>has elements in educational psychology and industrial/organizational psychology</td>
</tr>
</tbody>
</table>

Gestalt psychology
(founded by Max Wertheimer)
did not believe that psychological events could be broken down into smaller elements; could only be understood as a whole, entire event; has influenced field of cognitive psychology and a form of psychological therapy, Gestalt therapy

Psychoanalysis
(ideas put forth by Sigmund Freud)
stressed importance of early life experiences, the role of the unconscious, and development through stages

Behaviorism
associated with work of John B. Watson, who was greatly influenced by Ivan Pavlov's work in conditioning/learning

wanted to bring focus back on scientific inquiry and believed only way to do so was to focus on observable behavior and ignore "consciousness" issue; early work examined phobias
Watson wanted to prove that all behavior was a result of a stimulus–response relationship such as that described by Pavlov. Because Freud and his ideas about unconscious motivation were becoming a dominant force, Watson felt the need to show the world that a much simpler explanation could be found. Although scaring a baby sounds a little cruel, he felt that the advancement of the science of behavior was worth the baby’s relatively brief discomfort. One of Watson’s graduate students later decided to repeat Watson and Rayner’s study but added training that would “cancel out” the phobic reaction of the baby to the white rat. For more on this research, see the section on Classic Studies in Psychology that follows.

Behaviorism, like psychoanalysis, is still a major perspective in psychology today. It has also influenced the development of other perspectives, such as cognitive psychology.

**Classic Studies in Psychology**

**Psychologist Mary Cover Jones and “Little Peter”**

Mary Cover was born on September 1, 1897. She graduated from Vassar in 1919 with her bachelor's degree. Rosalie Rayner, John B. Watson's graduate assistant and future wife, was a fellow Vassar graduate and a friend. Mary Cover attended one of Watson’s weekend lectures and came away determined to pursue a graduate degree in psychology. Her master's degree was completed in 1920 under the supervision of Watson. In that same year she married another graduate student, Harold Jones (Rutherford, 2000).

Mary Cover Jones was fascinated with the “Little Albert” study and wanted to explore the concept of learned phobias. Beginning with a child known as “Little Peter,” Jones began by duplicating Watson and Rayner’s 1920 study. She was able to create the same kind of phobic reaction in Peter that had developed in Albert, but she used a white rabbit instead of a rat (Jones, 1924).

Once the child was conditioned to fear the rabbit, Jones began a process called counterconditioning, in which the old conditioning (fear of the rabbit) would be replaced, or countered, by new conditioning. Peter was brought into one corner of a room, while the rabbit was placed in the opposite corner. Peter was then given some food (something he liked quite a bit). Although Peter may have been nervous to have the rabbit in the far corner, the food was right in front of him. He began to eat and experienced the pleasurable sensations associated with eating. This pattern was repeated over several sessions, with the rabbit being brought a little closer each time. Eventually, Peter was no longer showing any fear of the rabbit at all.

How did this work? In Watson and Rayner’s original experiment, the white rat was paired with a scary noise. The scary noise caused a fear response, and eventually the rat caused the same fear response because of association with the noise. In Jones’s study, this is exactly how Peter came to fear the rabbit. But then the rabbit was paired with yet another stimulus, food, which causes pleasure, not fear. After enough pairings of the food with the rabbit, the newer association of rabbit/food/pleasure replaced the old association of rabbit/noise/fear. The old fear response had been “countered.”

Mary Cover Jones went on to become one of the early pioneers of behavior therapy. She was also a key figure in the Oakland Growth Study, a study of 200 fifth- and sixth-grade children that followed their development from the beginning of puberty to the end of adolescence. It is her work that is often cited when textbooks talk about the benefits and problems
Freud's ideas are still influential today, although in a somewhat modified form. He had a number of followers in addition to those already named, many of whom became famous by altering his theory to fit their own viewpoint, but his basic ideas are still discussed and debated. \( \text{ } \) to Chapter Eleven: Theories of Personality, pp. 437-443.

Freudian psychoanalysis, the theory and therapy based on Freud's ideas, has been the basis of much modern psychotherapy (a process in which a trained psychological professional helps a person gain insights into and change his or her behavior), but another major and competing viewpoint has actually been more influential in the field of psychology as a whole.

### PAVLOV, WATSON, AND THE DAWN OF BEHAVIORISM

Ivan Pavlov, like Freud, was not a psychologist. He was a Russian physiologist who, working with dogs, had shown that a reflex (an involuntary reaction) such as salivation, which is normally produced by actually having food in one's mouth, could be caused to occur in response to a totally new and formerly unrelated stimulus, such as the sound of a bell. He would ring the bell, give the dogs food, and they would salivate. After several repetitions, the dogs would salivate to the sound of the bell before the food was presented—a learned (or "conditioned") reflexive response (Klein & Mowrer, 1989). This process was called conditioning. \( \text{ } \) to Chapter Five: Learning, p. 177.

In the early 1900s, psychologist John B. Watson had tired of the arguing among the structuralists; he challenged the functionalist viewpoint, as well as psychoanalysis, with his own "science of behavior," or behaviorism (Watson, 1924). Watson wanted to bring psychology back to a focus on scientific inquiry, and he felt that the only way to do that was to ignore the whole "consciousness" issue and focus only on observable behavior—something that could be directly seen and measured. He had read of Pavlov's work and thought that conditioning could form the basis of his new perspective of behaviorism.

#### Of Babies and Rats

Watson was certainly aware of Freud's work and his views on unconscious repression. Freud believed that all behavior stems from unconscious motivation, whereas Watson believed that all behavior is learned. Freud had stated that a phobia, an irrational fear, is really a symptom of an underlying, repressed conflict and cannot be "cured" without years of psychoanalysis to uncover and understand the repressed material.

Watson believed that phobias are learned through the process of conditioning and set out to prove it. He took a baby, known as "Little Albert," and taught him to fear a white rat by making a loud, scary noise every time the infant saw the rat, until finally seeing the rat caused the infant to cry and become fearful (Watson & Rayner, 1920). Even though "Little Albert" was not afraid of the rat at the start, the experiment worked very well—in fact, "Little Albert" became afraid of other white and fuzzy things, including a white rabbit and a sealskin coat.

*This sounds really bizarre—what does scaring a baby have to do with the science of psychology?*

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*Stimulus: anything that causes an organism to have a reaction or response.*
apart, for example, but then you no longer have a CD player—you have a pile of un­
connected bits and pieces. As a melody is made up of individual notes that can only
be understood if the notes are in the correct relationship to one another, so percep­
tion can only be understood as a whole, entire event. Hence, the familiar slogan, “The
whole is greater than the sum of its parts.” The Gestalt psychologists believed that
people naturally seek out patterns (“wholes”) in the sensory information available to
them. See Figure 1.1 for an example of Gestalt perceptual patterns.

1.3 What were the basic ideas and who were the important people behind the
early approaches known as Gestalt, psychoanalysis, and behaviorism?

Wertheimer and others devoted their efforts to studying sensation and perception in
this new perspective, Gestalt psychology. Gestalt (Gesh-TALT) is a German word
meaning “an organized whole” or “configuration,” which fit well with the focus on
studying whole patterns rather than small pieces of them. Today, Gestalt ideas are part
of the study of cognitive psychology, a field focusing not only on perception but also
on learning, memory, thought processes, and problem solving; the basic Gestalt
principles of perception are still taught within this newer field (Ash, 1998; Kohler,
1992; Wertheimer, 1982). 

Gestalt psychology  early perspective
in psychology focusing on perception and
sensation, particularly the perception of
patterns and whole figures.

SIGMUND FREUD’S THEORY OF PSYCHOANALYSIS

It should be clear by now that psychology didn’t start in one place and at one partic­
ular time. People of several different viewpoints were trying to promote their own per­
spective on the study of the human mind and behavior in different places all over the
world. Up to now, this chapter has focused on the physiologists and philosophers who
became interested in psychology, with a focus on understanding consciousness but
little else. The medical profession took a whole different approach to psychology.

What about Freud? Everybody talks about him when they talk about psychology. Are
his ideas still in use?

Sigmund Freud had become a noted physician in Austria while the structural­
ists were arguing, the functionalists were specializing, and the Gestaltists were look­
ing at the big picture. He was a medical doctor—a neurologist, someone who
specializes in disorders of the nervous system—and he and his colleagues had long
sought a way to understand the patients who were coming to them for help.

Freud’s patients suffered from nervous disorders for which he and other doctors
could find no physical cause. Therefore, it was thought, the cause must be in the
mind, and that is where Freud began to explore. He proposed that there is an
unconscious (unaware) mind into which we push, or repress, all of our threatening
urges and desires. He believed that these repressed urges, in trying to surface, created
the nervous disorders in his patients (Freud et al., 1990). 

Freud stressed the importance of early childhood experiences, believing that
personality was formed in the first six years of life; if there were significant problems,
those problems must have begun in the early years.

Some of his well-known followers were Alfred Adler, Carl Jung, and his own
daughter, Anna Freud. Anna Freud began what became known as the ego movement
in psychology that produced one of the most famous psychologists in the study of
personality development, Erik Erikson. 

Psychoanalyst Sigmund Freud walks with
his daughter Anna, also a psychoanalyst.


natural selection, in which physical traits that help an animal adapt to its environment and survive are passed on to its offspring, becoming part of the animal's traits. We'll discuss Darwin and natural selection in more detail later in this chapter.) If physical traits could aid in survival, James thought, why couldn't behavioral traits do the same? Animals and people whose behavior helped them to survive would pass those traits on to their offspring, perhaps by teaching or even by some mechanism of heredity.* (Remember that this was early in the days of trying to understand how heredity worked.) For example, a behavior such as avoiding the eyes of others in an elevator can be seen as a way of protecting one's personal space—a kind of territorial protection that may have its roots in the primitive need to protect one's home and source of food and water from intruders (Manusov & Patterson, 2006) or as a way of avoiding what might seem like a challenge to another person.

One of James's early students was Mary Whiton Calkins, who completed every course and requirement for earning a Ph.D. but was denied that degree by Harvard University because she was a woman. She was allowed to take those classes as a guest only. Calkins eventually established a psychological laboratory at Wellesley College. Her work was some of the earliest research in the area of human memory and the psychology of the self. In 1905, she became the first female president of the American Psychological Association (Futumoto, 1979). Unlike Washburn, Calkins never earned the elusive Ph.D. degree despite a successful career as a professor and researcher (Guthrie, 2004). This might be a good place to point out that women were not the only minority to make contributions in the early days of psychology. In 1920, for example, Francis Cecil Sumner became the first African American to earn a Ph.D. in psychology at Clark University. He eventually became the chair of the psychology department at Howard University and is assumed by many to be the father of African American psychology (Guthrie, 2004). Kenneth and Mamie Clark worked to show the negative effects of school segregation on African American children (Lai, 2002). Hispanic psychologist Jorge Sanchez conducted research in the area of intelligence testing, focusing on the cultural biases in such tests. Since those early days, psychology has seen an increase in all minorities, although the percentages are still far too small when compared to the population at large.

Is functionalism still an important point of view in psychology?

In the new field of psychology, functionalism offered an alternative viewpoint to that of the structuralists. But like so many of psychology's early ideas, it is no longer a major perspective. Instead, we can find elements of functionalism in the modern fields of educational psychology (studying the application of psychological concepts to education) and industrial/organizational psychology (studying the application of psychological concepts to businesses, organizations, and industry), as well as other areas in psychology. (to Appendix B: Applied Psychology. Functionalism also played a part in the development of one of the more modern perspectives, evolutionary psychology, discussed later in this chapter.)

GESTALT PSYCHOLOGY: THE WHOLE IS GREATER THAN THE SUM OF ITS PARTS

Meanwhile, back in Germany, other psychologists were attacking the concepts of psychology in yet another way. Max Wertheimer (VERT-hi-mer), like James, objected to the structuralist point of view, but for different reasons. Wertheimer felt that psychological events such as perceiving** and sensing† could not be broken down into any smaller elements and still be properly understood. You can take a compact disc player

*Heredity: the transmission of traits and characteristics from parent to offspring through the actions of genes.
**Perceiving: becoming aware of something through the senses.
†Sensing: seeing, hearing, feeling, tasting, or smelling something.
For example, Wundt might place an object, such as a rock, into a student's hand and have the student tell him everything that he was feeling as a result of having the rock in his hand—all the sensations stimulated by the rock. This was really the first attempt by anyone to bring objectivity* and measurement to the concept of psychology. This attention to objectivity, together with the establishment of the first true experimental laboratory in psychology, is why Wundt is known as the "father of psychology."

TITCHENER AND STRUCTURALISM IN AMERICA

One of Wundt's students was Edward Titchener (1867–1927), an Englishman who eventually took Wundt's ideas to Cornell University in Ithaca, New York. Titchener expanded on Wundt's original ideas, calling his new viewpoint structuralism because the focus of study was the structure of the mind. He believed that every experience could be broken down into its individual emotions and sensations (Brennan, 2002). Although Titchener agreed with Wundt that consciousness, the state of being aware of external events, could be broken down into its basic elements, Titchener also believed that objective introspection could be used on thoughts as well as on physical sensations. For example, Titchener might have asked his students to introspect about things that are blue rather than actually giving them a blue object and asking for reactions to it. Such an exercise might have led to something like the following: "What is blue? There are blue things, like the sky or a bird's feathers. Blue is cool and restful, blue is calm . . ." and so on.

In 1894, one of Titchener's students at Cornell University became famous for becoming the first woman to receive a Ph.D. in psychology (Goodman, 1980; Guthrie, 2004). Her name was Margaret F. Washburn, and she was Titchener's only graduate student for that year. In 1908 she published a book on animal behavior that was considered an important work in that era of psychology, The Animal Mind (Washburn, 1908).

Structuralism was a dominant force in the early days of psychology, but it eventually died out in the early 1900s, as the structuralists were busily fighting among themselves over just which key elements of experience were the most important. A competing view arose not long after Wundt's laboratory was established, shortly before structuralism came to America.

WILLIAM JAMES AND FUNCTIONALISM

Harvard University was the first school in America to offer classes in psychology in the late 1870s. These classes were taught by one of Harvard's most illustrious instructors, William James (1842–1910). James began teaching anatomy and physiology, but as his interest in psychology developed, he began teaching psychology almost exclusively (Brennan, 2002). His comprehensive textbook on the subject, Principles of Psychology, is so brilliantly written that copies are still in print (James, 1890, 2002).

Unlike Wundt and Titchener, James was more interested in studying the importance of consciousness to everyday life than he was in actually analyzing consciousness. He believed that the scientific study of consciousness itself was not yet possible. Conscious ideas are constantly flowing in an ever-changing stream, and once you start thinking about what you were just thinking about, what you were thinking about is no longer what you were thinking about; it's what you are thinking about, and . . . excuse me, I'm a little dizzy. I think you get the picture, anyway.

Instead, James focused on how the mind allows people to function in the real world—how people work, play, and adapt to their surroundings, a viewpoint he called functionalism. (He was heavily influenced by naturalist Charles Darwin's ideas about

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*Objectivity: expressing or dealing with facts or conditions as they really are without allowing the influence of personal feelings, prejudices, or interpretations.
Not all psychological investigations will try to meet all four of these goals. In some cases, the main focus might be on description and prediction, as it would be for a personality theorist who wants to know what people are like (description) and what they might do in certain situations (prediction). Some psychologists are interested in both description and explanation, as is the case with experimental psychologists who design research to find explanations for observed (described) behavior. Therapists, of course, would be more interested in controlling or influencing behavior and mental processes, although the other three goals would be important in getting to this goal.

Although these goals have not really changed over the years, since psychology's beginnings, the methods of achieving them certainly have changed. In the next section, we'll take a look at the early pioneers in psychology.

Psychology Then: The History of Psychology

IN THE BEGINNING: WUNDT, INTROSPECTION, AND THE LABORATORY

How long has psychology been around?

Psychology is a relatively new field in the realm of the sciences, only about 130 years old. It's not that no one thought about what makes people tick before then; on the contrary, there were philosophers,* medical doctors, and physiologists** who thought about little else. Aristotle, who lived from 384–322 B.C., wrote about the relationship of the soul to the body (with the two being aspects of the same underlying structure) in *De Anima* as well as other works (Durrant, 1993; Everson, 1995). Plato (427–347 B.C.), Aristotle's teacher, felt the soul could exist separately from the body, a view that has become known as dualism (Jackson, 2001). René Descartes, a seventeenth-century French philosopher and mathematician, agreed with Plato and believed that the pineal gland (a small organ at the base of the brain) was the seat of the soul (Kenny, 1968, 1994). Philosophers tried to understand or explain the human mind and its connection to the physical body, while medical doctors and physiologists wondered about the physical connection between the body and the brain. For example, physician and physicist Gustav Fechner is often credited with performing some of the first scientific experiments that would form a basis for experimentation in psychology with his studies of perception (Fechner, 1860), and physician Hermann von Helmholtz (von Helmholtz, 1852, 1863) performed groundbreaking experiments in visual and auditory perception.

It really all started to come together in a laboratory in Leipzig, Germany, in 1879. It was here that Wilhelm Wundt (VILL-helm Voont, 1832–1920), a physiologist, attempted to apply scientific principles to the study of the human mind. In his laboratory, students from around the world were taught to study the structure of the human mind. Wundt believed that the mind was made up of thoughts, experiences, emotions, and other basic elements. In order to inspect these nonphysical elements, students had to learn to think objectively about their own thoughts—after all, they could hardly read someone else's mind. Wundt called this process objective introspection, the process of objectively examining and measuring one's own thoughts and mental activities (Rieber & Robinsor

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*Philosophers: people who seek wisdom and knowledge through thinking and discussion.
**Physiologists: scientists who study the physical workings of the body and its systems.
PSYCHOLOGY'S GOALS

Every science has goals. In physics, the goals concern learning how the physical world works. In astronomy, the goals are to chart the universe and understand both how it came to be and what it is becoming. In psychology, there are four goals that aim at uncovering the mysteries of human and animal behavior: description, explanation, prediction, and control.

Description: What Is Happening? The first step in understanding anything is to give it a name. Description involves observing a behavior and noting everything about it: what is happening, where it happens, to whom it happens, and under what circumstances it seems to happen.

For example, a teacher might notice a young girl in his second-grade classroom who is behaving oddly. She's not turning in her homework, her grades are slipping badly, and she seems to have a very negative attitude toward school. That's what she is doing, observed in her outward behavior and her possible feelings. The description of what she is doing gives a starting place for the next goal: Why is she doing it?

Explanation: Why Is It Happening? To find out why the girl is doing all these things, the teacher would most likely ask the school counselor to administer some tests. Her parents might be asked to take her to a pediatrician to make sure there is no physical illness, such as an allergy. They might also take her to a psychologist to be assessed. In other words, they are trying to understand or find an explanation for her behavior. Finding explanations for behavior is a very important step in the process of forming theories of behavior. A theory is a general explanation of a set of observations or facts. The goal of description provides the observations, and the goal of explanation helps to build the theory.

Theories, especially when strengthened by scientific evidence, help us to explain the world around us. However, when a theory has not been tested, it shouldn't be taken as fact. Researchers may have many different theories about a person's unusual behavior, and all of their theories may be based on careful observation and facts, but until scientific tests are performed, there's no way to tell if any of the theories are correct. A good theory will structure future research by allowing researchers to test whether or not the theory holds true in a variety of situations.

If all the tests seem to indicate the young girl has a learning problem, such as dyslexia (an inability to read at expected levels for a particular age and degree of intelligence), the next step would be trying to predict what is likely to happen if the situation stays the same.

Prediction: When Will It Happen Again? Determining what will happen in the future is a prediction. In the example, the psychologist or counselor would predict (based on previous research into similar situations) that this little girl will probably continue to do poorly in her schoolwork and may never be able to reach her full learning potential. Clearly, something needs to be done to change this prediction, which is the point of the last of the four goals of psychology: changing or modifying behavior.

Control: How Can It Be Changed? The focus of control, or the modification of some behavior, is to change a behavior from an undesirable one (such as failing in school) to a desirable one (such as academic success).

In the example of the young girl, certain learning strategies can be used to help children (or adults) who have dyslexia improve their reading skills (Aylward et al., 2003; Shaywitz, 1996). The psychologist and educators would work together to find a training strategy that works best for this particular girl.
1 Learning objectives

Study Help Note: For each section of every chapter in this text there are numbered learning objectives. These learning objectives represent the key concepts that students should be able to recognize, discuss, analyze, and use after reading the chapter. They appear at the beginning of each chapter, at the beginning of each relevant section in the chapter, and in the chapter summary.

These are your learning objectives for this chapter:

- **1.1** What defines psychology as a field of study and what are psychology's four primary goals?
- **1.2** How did structuralism and functionalism differ, and who were the important people in those early fields?
- **1.3** What were the basic ideas and who were the important people behind the early approaches known as Gestalt, psychoanalysis, and behaviorism?
- **1.4** What are the basic ideas behind the seven modern perspectives, as well as the important contributions of Skinner, Maslow, and Rogers?
- **1.5** How does a psychiatrist differ from a psychologist, and what are the other types of professionals who work in the various areas of psychology?
- **1.6** Why is psychology considered a science, and what are the steps in using the scientific method?
- **1.7** How are naturalistic and laboratory settings used to describe behavior, and what are some of the advantages and disadvantages associated with these settings?
- **1.8** How are case studies and surveys used to describe behavior, and what are some drawbacks to each of these methods?
- **1.9** What is the correlational technique, and what does it tell researchers about relationships?
- **1.10** How are operational definitions, independent and dependent variables, experimental and control groups, and random assignment used in designing an experiment?
- **1.11** How do the placebo and experimenter effects cause problems in an experiment, and how can single-blind and double-blind studies control for these effects?
- **1.12** What are the basic elements of Aronson's creativity experiment?
- **1.13** What are some ethical concerns that can occur when conducting research with people and animals?
- **1.14** What are the basic principles of critical thinking, and how can critical thinking be useful in everyday life?

What Is Psychology?

THE FIELD OF PSYCHOLOGY

Some people believe psychology is just the study of people and what makes them tick. Psychologists do study people, but they study animals, too. What makes people and animals "tick" is what goes on inside their bodies and brains as well as what they do.

1.1 What defines psychology as a field of study and what are psychology's four primary goals?

Psychology is the scientific study of behavior and mental processes. Behavior includes all of our outward or overt actions and reactions, such as talking, facial expressions, and movement. The term mental processes refers to all the internal, covert activity of our minds, such as thinking, feeling, and remembering. Why "scientific"? To study behavior and mental processes in both animals and humans, researchers have to observe them. Whenever a human being is observing anyone or anything, there's always a possibility the observer will see only what he or she expects to see. Psychologists don't want to let these possible biases* cause them to make faulty observations. They want to be as precise and measure as carefully as they can, so they use the scientific method to study psychology.

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*Biases: personal judgments based on beliefs rather than facts.
What Is Psychology?
THE FIELD OF PSYCHOLOGY

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1.1 What defines psychology as a field of study and what are psychology's four primary goals?

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