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# Introduction to Psychology

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**H**ave you seen the T-shirt slogan “You are so off the island”? Even if you haven’t seen or heard the slogan, you know what it means. You and 5.6 million other Canadians and 50 million Americans were probably tuned into the last episode of Survivor. Even if you didn’t watch the show yourself, you know about Rich and Kelly. You probably also know about Rudy. If you are like millions of other people, the summer of 2000 included watching 16 people begin a 49-day adventure on an island in Borneo. Each week one participant was voted off the island until finally it came down to Kelly and Rich. Rich walked away with a new car and one million dollars—Kelly with \$100 000. Can you honestly say that you didn’t support either Rich or Kelly in the final moments of their island experience? Apart from instantly capturing the fascination of millions of viewers, the show Survivor became a part of our culture. It was, and still is, part of our collective consciousness and knowledge. Even people who did not watch the show, or who tried actively to avoid watching it, could not escape the show’s pres-

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ence either in the media or in people's casual conversations. The evidence lies in the instant recognition of the slogan.

But why were *Survivor* and *Survivor: The Australian Outback* so popular? Why were so many people captivated by the weekly series? We suspect it is because people are simply curious about the behaviours of others; we are curious to see how people behave when facing unusual conditions. We ask ourselves how we may have handled the same conditions and we evaluate the appropriateness of others' responses. And our fascination with real people's lives is not new, but it appears that TV producers have finally realized that people's real lives matter to us.

When you hear the word *psychology*, what is the first thing that comes to mind? Would you say that it is how to handle yourself when on a deserted island hoping to win \$1 000 000? Probably not. Most people's conception of the field of psychology consists of stories about Freud, some vague understanding of psychotherapy, and perhaps some exposure to recent self-help books—likely books about relationships and personal growth. However, the fact is that psychology covers more issues than you expect, including the often simple but sometimes complex situations encountered in our everyday lives (even those of the *Survivor* contestants!).

There are many branches of psychology (to which you will be introduced in this text) and psychologists specializing in different branches look at situations from different perspectives. For example, keeping in mind the show *Survivor*, a social psychologist might investigate whether we perceive ourselves as having better skills or better coping strategies than others when handling extreme situations. On the other hand, a personality psychologist may be interested in whether people who have certain types of personality might be better contestants or may be more successful in handling the types of situations to which the island contestants were exposed.

In contrast, a cognitive psychologist might be more concerned with the problem solving or thought processes that contestants expressed during the show. They may be interested to find out whether we can teach people the problem-solving skills that may help them deal better with the situations they encountered.

It is not possible in this brief introduction to portray the full range of research possibilities that might interest psychologists as well as the ways in which these various research avenues might be investigated. This book, *The World of Psychology*, is designed to expose you to psychological research and to help clarify some of the complexities of this academic discipline.

## Introduction to Psychology

The word *psychology* makes people conjure up images of mental disorders, abnormal behaviour, and adjustment to difficult periods of life. As we pointed out above, however, though psychologists do sometimes study the strange and unusual, they are most often interested in day-to-day events—the normal and commonplace.

Just what is psychology? Psychology has changed over the years and so has its definition. In the late 1800s mental processes were considered to be the appropriate subject matter of psychology. Later there was a movement to restrict psychology to the study of observable behaviour alone. Today the importance of both areas is recognized, and **psychology** is now defined as the scientific study of behaviour and mental processes.

Answer the questions in *Try It!* to see how much you already know about some of the topics we will explore in *The World of Psychology*.

## Try It!

### Test Your Knowledge of Psychology

Indicate whether each statement is true or false.

- 1. Memory is more accurate under hypnosis.
- 2. All people dream during a night of normal sleep.
- 3. As the number of bystanders at an emergency increases, the time it takes for the victim to get help decreases.
- 4. There is no maternal instinct in humans.
- 5. Older adults tend to express less satisfaction with life in general than younger adults do.
- 6. Eyewitness testimony is often unreliable.
- 7. Children with high IQs tend to be less able physically than their peers.
- 8. Creativity and high intelligence do not necessarily go together.
- 9. When it comes to close personal relationships, opposites attract.
- 10. The majority of teenagers have good relationships with their parents.

### Psychology: Science or Common Sense?

Students begin their first course in psychology with various expectations about psychology. At first, many of them consider it more common sense than science. Will you be studying a collection of common-sense notions this semester? Or can we make a valid claim that psychology is a science?

While you were answering the *Try It!* questions, common sense may have led you astray. All the odd-numbered items are false, and all the even-numbered items are true. So common sense, on its own, will not take you very far in your study of psychology.

Many people believe that whether a field of study is a science depends on the nature of its body of knowledge. Physics, for example, is a science, and so is chemistry. But neither qualifies as a science solely because of its subject matter. A science is a science not because of the nature of its body of knowledge, but

because of the approach—the standards, methods, values, and general principles—employed in acquiring that body of knowledge. Psychology is considered a science because it uses the scientific method, which minimizes biases, preconceptions, personal beliefs, and emotions (Christensen, 1997).

### The Goals of Psychology

What are the four goals of psychology?

The goals of psychology are the description, explanation, prediction, and control of behaviour and mental processes. Psychological researchers always seek to accomplish one or more of these goals when they plan and conduct their studies.

The first goal, *description*, is usually the first step in understanding any behaviour or mental process. It is therefore more important in a very new area of research or in the early stages of research. Researchers describe the behaviour or mental process of interest as accurately and as completely as possible. A description tells “what” occurred.

The second goal, *explanation*, requires an understanding of the conditions under which a given behaviour or mental process occurs. An explanation enables researchers to state the causes of the behaviour or mental process. In other words, it tells “why” a given event or behaviour occurred. But researchers do not reach the goal of explanation until their results have been tested, retested, and confirmed. Researchers confirm an explanation by eliminating or ruling out other, competing explanations.

The goal of *prediction* is met when researchers can specify the conditions under which a behaviour or event is likely to occur. If researchers have identified all the prior conditions required for a behaviour or event to occur, they can predict the behaviour or event.

The goal of *control* is accomplished when researchers know how to apply a principle or change a condition to prevent unwanted occurrences or to bring about desired outcomes. A therapy could be designed to prevent anxiety attacks; a technique could be employed to improve one’s memory.

**psychology:** The scientific study of behaviour and mental processes.

## What Is a Theory?

Any science has a well-established body of theory to guide its research, and psychology is no exception. A **theory** is a general principle or set of principles that explains how a number of separate facts are related to one another. A theory enables researchers to fit many separate facts into a larger framework; thus, it imposes order on what otherwise would be a disconnected jumble of data. The value of a theory depends upon how well it accounts for the accumulated research findings in a given area and upon how accurately it can predict new findings.

A theory serves two important functions: (1) it organizes facts—a necessary step toward arriving at a systematic body of knowledge—and (2) it guides research.

## Basic and Applied Research

What is the difference between basic and applied research?

The two main types of research psychologists pursue to accomplish their goals are (1) basic, or pure, research and (2) applied research. The purpose of **basic research** is to seek new knowledge and to explore and advance general scientific understanding. Basic research investigates such topics as the nature of memory, brain function, motivation, emotional expression, and the causes of mental disorders such as schizophrenia, depression, sleep and eating disorders, and so on. Psychologists doing basic research usually seek to accomplish the first three goals—description, explanation, and prediction. Basic research is not intended to solve specific problems, nor is it meant to investigate ways to apply what is learned to immediate real-world problems. Yet very often the findings of basic research are later applied in real-world settings.

**Applied research** is conducted specifically for the purpose of solving practical problems and improving the quality of life. Applied research focuses on such things as methods to improve memory or increase motivation, therapies to treat mental disorders, and ways to decrease stress. Applied psychologists are primarily concerned with the fourth goal—control—because it specifies ways and means of changing behaviour. You will learn more about some fields of applied psychology later in this text.

## Descriptive Research Methods

The goals of psychological research—description, explanation, prediction, and control—are typically accomplished in stages. In the early stages of research, descriptive methods are usually the most appropriate. **Descriptive research methods** yield descriptions rather than identify causes of behaviour. Naturalistic observation, laboratory observation, the case study, and the survey are examples of descriptive research methods.

### Naturalistic Observation: Caught in the Act of Being Themselves

What is naturalistic observation, and what are some of its advantages and limitations?

**Naturalistic observation** is a research method in which researchers observe and record behaviour in its natural setting without attempting to influence or control it. Ethnologists are researchers who study the behaviour patterns of animals in their natural environment. These researchers might observe their subjects through high-powered telescopes or from blinds that they build to conceal themselves.

Often human subjects are not aware that they are being observed. This can be accomplished by means

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**Although naturalistic observation allows researchers to study behaviour in everyday settings, observer bias may cause them to see what they expect to see.**

of one-way mirrors—a technique researchers often use to observe children in nursery schools or special classrooms. You may have seen episodes of *W5*, *20/20*, or *Candid Camera* in which hidden cameras or tape recorders were used to gather information from people “caught in the act of being themselves.”

The major advantage of naturalistic observation is that it allows one to study behaviour in normal settings, where it occurs more naturally and spontaneously. Naturalistic observation may be the only feasible way to study certain phenomena when an experiment would be impossible or unethical—for example, to learn how people react during disasters like earthquakes or fires.

Naturalistic observation has its limitations, however. Researchers must wait for events to occur; they cannot speed the process up or slow it down. And because they have no control over the situation, the researchers cannot reach conclusions about cause-and-effect relationships. Another potential problem in naturalistic observation is observer bias, which is a distortion in researchers’ observations. Observer bias can result when researchers’ expectations about a situation cause them to see what they expect to see or to make incorrect inferences about the behaviour they observe.

### Laboratory Observation: A More Scientific Look at the Subject

Another method of studying behaviour involves observation that takes place not in a natural setting but in the laboratory. There researchers can exert more control and use more precise equipment to measure responses. Much of our knowledge about sleep, for example, has been gained by laboratory observation of subjects who sleep for several nights in a sleep laboratory or sleep clinic.

### The Case Study Method: Studying a Few Subjects in Depth

What is the case study method, and for what purposes is it particularly well-suited?

Another descriptive research method used by psychologists is the **case study**, or case history. In a case study, a single individual or a small number of people are studied in great depth, usually over an extended time. A case study involves

observation, interviews, and sometimes psychological testing. A case study is exploratory in nature, and its purpose is to provide a detailed description of some behaviour or disorder. This method is particularly appropriate for studying people who have uncommon psychological or physiological disorders or brain injuries. Case studies often emerge in the course of treatment of these disorders. You may have read the book or seen the movie *Sybil*, the case study of a young woman who had multiple personalities. Much of what we know about unusual psychological disorders such as multiple personality comes from the in-depth analyses provided by case studies.

Although the case study has been useful in advancing knowledge in several areas of psychology, it has certain limitations. In a case study, researchers cannot establish the cause of observed behaviours. Moreover, because so few people are studied, researchers do not know how generalizable their findings are to larger groups or to different cultures.

### Survey Research: The Art of Sampling and Questioning

What are the methods and purposes of survey research?

Psychologists are interested in many questions that cannot be investigated using naturalistic observation or case studies. With a **survey**, researchers

**theory:** A general principle or set of principles that explains how a number of separate facts are related to one another.

**basic research:** Research conducted for the purpose of advancing knowledge rather than for its practical application.

**applied research:** Research conducted for the purpose of solving practical problems.

**descriptive research methods:** Research methods that yield descriptions of behaviour rather than causal explanations.

**naturalistic observation:** A research method in which researchers observe and record behaviour without trying to influence or control it.

**case study:** An in-depth study of one or a few participants consisting of information gathered through observation, interviews, and perhaps psychological testing.

**survey:** A method whereby researchers use interviews and/or questionnaires to gather information about the attitudes, beliefs, experiences, or behaviours of a group of people.

use interviews and/or questionnaires to gather information about the attitudes, beliefs, experiences, or behaviours of a group of people. Well-designed and carefully conducted surveys have provided much of the information available to us about the incidence of drug use, about the sexual behaviour of particular segments of the population, and about the incidence of various mental disorders.

### Selecting a Sample: There Are More Than Numbers to Consider

What is a representative sample, and why is it essential in a survey? Researchers in psychology rarely conduct experiments or surveys using all members of the group they are studying. For example, researchers studying the sexual behaviour of Canadian women do not attempt to study every woman in Canada. Instead of studying the whole **population** (the entire group of interest), they study a sample. A **sample** is a part of the population that is selected and studied in order to reach conclusions about the entire larger population of interest.

However, researchers must ensure that the sample is representative. A **representative sample** is one that includes important subgroups in the same proportion as they are found in the larger population. That is, it should reflect the ethnic, cultural, and sexual diversity of the target population.

### The Use of Questionnaires

Researchers using the survey method rely on information gathered through questionnaires or interviews, or through some combination of the two. Questionnaires can be completed more quickly and less expensively than interviews.

Many people believe that a survey becomes more accurate when more people answer it. In fact, the number of people who respond to a survey is not the critical element. A researcher can generalize findings from a sample only if it is representative of the entire population of interest. For example, the readers of *Flare* or *The Hockey News* do not represent a cross-section of Canadians. So questionnaires in magazines are not scientific; neither are TV phone-in surveys. Good surveys control wording, context, and format (Schwarz, 1999).

### The Interview: A Better Way

“The best survey research uses the personal interview as the principal method of gathering information” (Kerlinger, 1986, p. 379). Skilled interviewers can gather accurate information by asking well-worded questions to a carefully selected sample of subjects.

When respondents feel comfortable with an interviewer, they feel freer to share personal information. Imagine that you are being interviewed about a sensitive subject such as your sexual behaviour. Will you be equally comfortable and truthful whether the interviewer is male or female? Young, middle-aged, or old? Chinese, black, francophone, or of another ethnic group? Christian or Jewish? Middle class or working class? The validity or truthfulness of responses can be affected by the interviewer’s personal characteristics, which include gender, age, heritage, religion, social class, accent, and vocabulary.

### Advantages and Disadvantages of Survey Research

Surveys, if conducted properly, can provide highly accurate information about large numbers of people and can show changes in attitudes and behaviour over time. Yet large-scale surveys can also be costly and time-consuming. Researchers must have expertise in many areas—in selecting a representative sample, constructing questionnaires, interviewing, and analyzing data.

The major limitation of the survey is that the respondents may provide inaccurate information. Respondents may give false information because of faulty memory or a desire to please the interviewer (saying what they think the interviewer wants to hear). Respondents may have a tendency to present themselves in a good light (“the social desirability response”). They may even deliberately mislead the researcher.

## The Experimental Method: Searching for Causes

What is the main advantage of the experimental method?

Descriptive research methods (naturalistic observation, the case study, and the survey) are all well-suited for satisfying the first goal of psychology—namely,



## Research Methods

- Basic research is designed to solve practical problems. (true/false)
- Researchers using naturalistic observation attempt to control the behaviour being observed. (true/false)
- Much knowledge about sleep and the human sexual response has been gained through
  - naturalistic observation.
  - laboratory observation.
  - the survey.
  - the case study.
- The case study is *not* useful for
  - learning about rare physical and psychological disorders.
  - learning the consequences of rare brain injuries.
  - supplying detailed descriptions of behaviour that can provide the foundation for psychological theories.
  - studying large numbers of people.
- The survey is most useful when we wish to learn about
  - rare psychological and physical disorders.
  - behaviours, beliefs, or attitudes of a large group of people.
  - how people react during natural disasters.
  - how people respond under highly controlled conditions.
- The most accurate surveys are those with the largest number of respondents. (true/false)
- If the sample for a survey is relatively large, it should still be representative. (true/false)

Answers: 1. false 2. false 3. b 4. d 5. b 6. false 7. true

description. From descriptions, researchers may propose possible explanations for the behaviours they study. At some point researchers usually seek to determine the causes of behaviour and various other psychological phenomena.

What, for example, are the causes of depression, insomnia, stress, forgetting, and aggression? The **experimental method**, or the experiment, is the only research method that can be used to identify cause–effect relationships.

An experiment is designed to test a **hypothesis**—a prediction about a cause–effect relationship between two or more conditions or variables. A variable is any condition or factor that can be manipulated, controlled, or measured. One variable of interest to you is the grade you will receive in this psychology course. Another variable that probably interests you is how you should spend your time studying for this course. Do you suppose there is a cause–effect relationship between how you spend your time studying and the grades you will receive?

The answer to that question is yes. In 1990, Woloshyn and Willoughby of Brock University, Wood of Wilfrid Laurier University, and Pressley of the University of Notre Dame conducted an experiment to determine the impact of study strategies on learning factual material, such as that found in textbooks (Woloshyn, Willoughby, Wood, and Pressley, 1990). They wanted to see which of the three study strategies outlined below was most effective. Sixty students

doing the introductory psychology course participated.

- Repetition.* Twenty students were asked to study by reading the information repeatedly, a study technique that many students prefer.
- Imagery.* Another 20 students were asked to generate a mental picture for each fact that they studied. This imagery method allowed them to create any mental picture as long as it contained the material to be learned.

**population:** The entire group of interest to researchers and to which they wish to generalize their findings; the group from which a sample is selected.

**sample:** The portion of any population that is selected for study and from which generalizations are made about the larger population.

**representative sample:** A sample of participants selected from the larger population in such a way that important subgroups within the population are included in the sample in the same proportions as

they are found in the larger population.

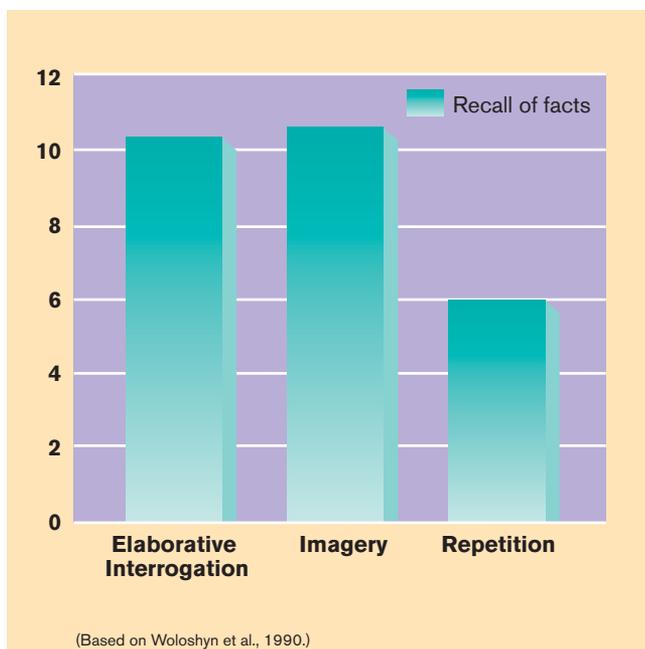
**experimental method:** The research method whereby researchers randomly assign participants to groups and control all conditions other than one or more independent variables, which are then manipulated to determine their effect on some behaviour measured—the dependent variable in the experiment.

**hypothesis:** A prediction about the relationship between two or more variables.

3. *Why questions.* The last 20 students were taught how to answer “why” questions, such as “Why would that fact be true?” The questions encouraged them to draw on their own knowledge to make the facts more meaningful and hence more memorable.

In each case, all students were given the same amount of time and the same facts to study. After they had studied all the facts, students were given a memory test. The only thing that was different among the groups, then, was the type of study strategy that they used.

What were the results? As you might imagine, the participants who were asked to use the more sophisticated strategies, imagery and “why” questions, remembered more than the students who simply repeated the information. However, memory performance of students using imagery was the same as that of students answering “why” questions. The researchers concluded that although many students prefer to study by repeatedly reading the material they are trying to learn, they are much better off creating mental images or answering questions (see Figure 1.1 for results). We hope that these results will guide you in studying for this and other courses.



**FIGURE 1.1**  
Study Strategies and Memory Performance

## Independent and Dependent Variables

What is the difference between the independent variable and the dependent variable?

In all experiments there are two types of variables. First, there are one or more **independent variables**—variables that the researcher manipulates in order to determine whether they cause a change in another behaviour or condition. Sometimes the independent variable is referred to as the *treatment*. In the experiment by Woloshyn et al., there was one independent variable—the study strategy that was assigned.

The second type of variable found in all experiments is the **dependent variable**. It is measured at the end of the experiment and is presumed to vary (increase or decrease) as a result of the manipulations of the independent variable or variables. The dependent variable is presumed to depend on or to be affected by changes in the independent variable. In the study by Woloshyn et al., the dependent variable was memory of the factual information tested at the end of the study.

## Experimental and Control Groups: The Same Except for the Treatment

How do the experimental and control groups differ?

Most experiments are conducted using two or more groups of participants. There must always be at least one **experimental group**—a group of participants who are exposed to the independent variable or the treatment. In the experiment described above, Woloshyn and colleagues used two experimental groups:

Group 2: Imagery

Group 3: “Why” questions

In most experiments it is desirable to have a **control group**—a group that is similar to the experimental group and used for purposes of comparison. The control group is exposed to the same experimental environment as the experimental group but is not given the treatment. The first group in the Woloshyn experiment was not exposed to the independent variable—that is, this group was not taught to use a sophisticated study strategy. Because this group was similar to the experimental group and was exposed to the same

experimental environment, it should be considered a control group. In an experiment, all groups, including the control group, are measured on the dependent variable at the end of the experiment.

### Control in the Experiment: Attempting to Rule Out Chance

By conducting experiments in a laboratory, the experimenters can control the environmental setting to rule out other factors. For example, frustration, pain, and extreme noise or heat can change responses. Researchers carefully control the environment to ensure that these conditions are not present. They vary only the independent variables. That way, they can be reasonably certain that the manipulation of the independent variables is what causes any differences among the groups.

### Generalizing the Experimental Findings: Do the Findings Apply to Other Groups?

What should we conclude from the Woloshyn experiment? Can we conclude that all students should use imagery or ask themselves “why” questions when studying? Before we reach such a conclusion, we should consider several factors:

- The only participants used in this experiment were introductory psychology students. Can we be sure that the same results would have occurred if individuals of other ages or groups had been used?
- The participants in this experiment were not classified according to their level of prior knowledge of the subject they were studying. Would the same results be true for both students who knew a lot in this area and those who did not?

To apply this experiment’s findings to other groups, researchers would have to replicate, or repeat, the experiment using different populations of participants.

### Potential Problems in Experimental Research

If an experiment is properly designed and conducted, the researcher should be able to attribute changes in the dependent variable to the manipulations of the independent variable. But several factors other than

the independent variables can cause changes in the dependent variable, thereby destroying the validity of the experiment. Three of these potential problems are selection bias, the placebo effect, and experimenter bias. Researchers must design experiments to control for these and other problems, which could invalidate the results.

#### Selection Bias: Bias from the Start

What is selection bias, and what technique do researchers use to control for it?

**Selection bias** occurs when participants are assigned to groups in such a way that systematic differences among the groups are present at the beginning of the experiment. If selection bias occurs, differences at the end of the experiment may not reflect the manipulation of the independent variable; rather, they may be due to pre-existing differences in the groups.

To control for selection bias, researchers must use **random assignment**. This involves selecting participants through chance (such as drawing names out of a hat) to ensure that all have an equal probability of being assigned to any of the groups. Random assignment maximizes the likelihood that the groups will be similar at the beginning of the experiment. If there had been pre-existing differences in the level of prior knowledge in the Woloshyn experiment, random assignment would have spread those differences across the groups.

**independent variable:** In an experiment, the factor or condition that the researcher manipulates in order to determine its effect on another behaviour or condition known as the dependent variable.

**dependent variable:** The variable that is measured at the end of an experiment and that is presumed to vary as a result of manipulations of the independent variable.

**control group:** In an experiment, a group that is similar to the experimental group and that is exposed to the same experimental environment but is not exposed to the independent

variable; used for purposes of comparison.

**selection bias:** The assignment of participants to experimental or control groups in such a way that systematic differences among the groups are present at the beginning of the experiment.

**random assignment:** In an experiment, the assignment of participants to experimental and control groups through a chance procedure, which guarantees that all participants have an equal probability of being placed in any of the groups; a control for selection bias.

### *The Placebo Effect: The Power of Suggestion (for the Participant)*

What is the placebo effect, and how do researchers control for it?

Another factor that can influence the outcome of an experiment is the **placebo effect**. This occurs when the response to a treatment is due to the person's expectations rather than to the actual treatment itself. Suppose a drug is prescribed for a patient, and the patient reports improvement. The improvement could be a direct result of the drug, or it could be the result of the patient's expectation that the drug will work. Studies have shown that remarkable improvement in patients can sometimes be attributed solely to the power of suggestion—the placebo effect.

The researcher must use a control group to test whether results in an experiment are due to the treatment or to the placebo effect. So people in the control group are given a fake treatment. In drug experiments the control group is usually given a **placebo**—a harmless substance such as a sugar pill or an injection of saline solution. To control for the placebo effect, researchers do not let participants know whether they are in the *experimental* group (receiving the treatment) or in the *control* group (receiving the placebo). If getting the real drug or treatment results in a significantly greater improvement than receiving the placebo, the improvement can be attributed to the drug rather than to the power of suggestion.

But what about the expectations of those who conduct the experiments—the researchers or confederates (the experimenters or anyone else associated with the study) themselves?

### *Experimenter Bias: The Power of Suggestion (for the Experimenter)*

What is experimenter bias, and how is it controlled?

The expectations of the experimenter are a third factor that can influence the outcome of an experiment.

**Experimenter bias** occurs when researchers' preconceived notions or expectations cause them to find what they expect to find. A researcher's expectations can be communicated to the participants, perhaps unintentionally, through tone of voice, gestures, and facial expressions. These communications can influence the participants' behaviour. Expectations can also influence a researcher's interpretation of the

experiment's results, even if no influence occurred during the experiment. When the interpretation supports the researcher's expectations in this way, it is called the *self-fulfilling prophecy*.

To control for experimenter bias, researchers must not know which participants are assigned to the experimental and control groups. The identities of both the experimental and control participants are coded, and their identities are not revealed to the researcher until after the research data are collected and recorded. (Obviously, someone assisting the researcher must know which participants are in which group.) When neither the participants nor the experimenters know which participants are getting the treatment and which are in the control group, the **double-blind technique** is being used. The double-blind technique is the most powerful procedure for studying cause–effect relationships.

### **Advantages and Limitations of the Experimental Method**

The overwhelming advantage of the experiment is its ability to reveal cause–effect relationships. This is possible because researchers are able to exercise strict control over the experimental setting. This allows them to rule out factors other than the independent variable as possible reasons for differences in the dependent variable. But often, the more control the experimenter exercises, the more unnatural and contrived the research setting becomes, and the less generalizable the findings will be to the real world. When participants know that they are taking part in an experiment, they may behave differently than they would in a more natural setting. When a natural setting is considered to be an important factor in a study, researchers may run a field experiment (i.e., an experiment conducted in a real-life setting). The advantage of field studies is that participants behave more naturally. For example, in many studies, the researchers cannot control for background noise, amount of sunlight, temperature, and other environmental variables. These variables are, however, assumed to be less important.

A major limitation of the experimental method is that in many areas of interest to researchers, an experiment is either unethical or impossible. Some treatments cannot be given to humans because their physical or psychological health would be endangered, or their rights violated.

Remember It!



## The Experimental Method

- The experimental method is the *only* research method that can be used to identify cause–effect relationships between variables. (true/false)
- Which of the following statements is *not* true about a control group?
  - It should be similar to the experimental group.
  - It is exposed to the independent variable.
  - At the end of the experiment, it is measured on the dependent variable.
  - It is used for purposes of comparison.
- Match the description with the appropriate term.
 

____ 1) A prediction about a relationship between two variables	a. independent variable
____ 2) Any condition that can be manipulated, measured, or controlled	b. variable
____ 3) The variable measured at the end of the experiment	c. hypothesis
____ 4) The variable manipulated by the researcher	d. dependent variable
- The placebo effect occurs when a participant responds according to
  - the hypothesis.
  - the actual treatment.
  - how other subjects behave.
  - his or her expectations.
- The results of an experiment can be influenced by the expectations of either the participants or the researcher. (true/false)
- Random assignment is used to control for
  - experimenter bias.
  - the placebo effect.
  - selection bias.
  - subject bias.

Answers: 1. true. 2. b. 3. 1) c. 2) b. 3) d. 4) a. 4. d. 5. true. 6. c.

## Other Research Methods

### The Correlational Method: Discovering Relationships, Not Causes

What is the correlational method, and when is it used? We know that researchers are interested in finding the results and causes of various psychological phenomena. Does stress cause illness? Does arguing with friends cause a decline in the number of friendships? Does heavy marijuana use cause students to lose interest in school and get lower grades? Researchers would like to have answers to these questions, but none of them can be researched by the experimental method. It is often illegal and always unethical to assign

**placebo (pluh-SEE-bo) effect:** The phenomenon that occurs when a person's response to a treatment (or response to the dependent variable in an experiment) is due to expectations regarding the treatment rather than to the treatment itself.

**placebo:** Some inert substance, such as a sugar pill or an injection of saline solution, given to the control group in an experiment as a control for the placebo effect.

**experimenter bias:** A phenomenon that occurs when the researcher's preconceived notions in some way influence the participants' behaviour and/or the interpretation of experimental results.

**double-blind technique:** An experimental procedure in which neither the participants nor the experimenters know who is in the experimental and control groups until the results have been gathered; a control for experimenter bias.

humans randomly to experimental conditions that could be harmful. Also, individuals have features that the experimenter cannot manipulate, such as age and sex. Since people cannot be arbitrarily assigned an age, researchers instead look at the relationships between age and other factors.

To find out whether arguing with friends causes a decline in the number of friendships, no researcher would randomly assign students to an experimental study that would require those in the experimental groups to consistently argue with their friends. Can you imagine being asked to argue with all your friends for two years, for the good of scientific progress?

Much of our knowledge of the effects on human health of marijuana, cigarette smoking, stress, and even relationships has been gained through experiments on animals or through other research methods. When for ethical or practical reasons an experimental study cannot be performed to determine cause–effect relationships, the **correlational method** is usually used. This method determines the correlation, or relationship, between two characteristics, events, or behaviours—that is, the degree of association between the two variables under consideration. A group is selected for study, and the variables of interest are measured for each participant in the study. The variables might be the amount of marijuana used and grade-point average. Then the researcher applies a statistical formula to obtain a correlation coefficient.

### The Correlation Coefficient: How Variables Relate

What is a correlation coefficient?

A **correlation coefficient** is a numerical value indicating the degree and direction of the relationship between two variables. A correlation coefficient ranges from + 1.00 (a perfect positive correlation) to .00 (no relationship) to –1.00 (a perfect negative correlation). The sign of a correlation coefficient (+ or –) indicates whether the two variables vary in the same or opposite directions. A positive correlation indicates that two variables vary in the same direction; in other words, an increase in the value of one variable is associated with an increase in the value of the other variable. Or, a decrease in the value of one variable is associated with a decrease in the value of the other. There is a positive though weak correlation between stress and illness, for exam-

ple. When stress increases, illness is likely to increase; when stress decreases, illness tends to decrease.

A negative correlation means that an increase in the value of one variable is associated with a decrease in the value of the other variable. Think of a negative correlation as a seesaw—when one variable goes up, the other goes down. There is a negative correlation between the number of cigarettes people smoke and the number of years they can expect to live. The more people smoke, the shorter their life expectancy.

The number in a correlation coefficient indicates the relative *strength* of the relationship between two variables—the higher the number, the stronger the relationship. Examples of variables that are *not* correlated are grade-point average and height, and illness and shoe size.

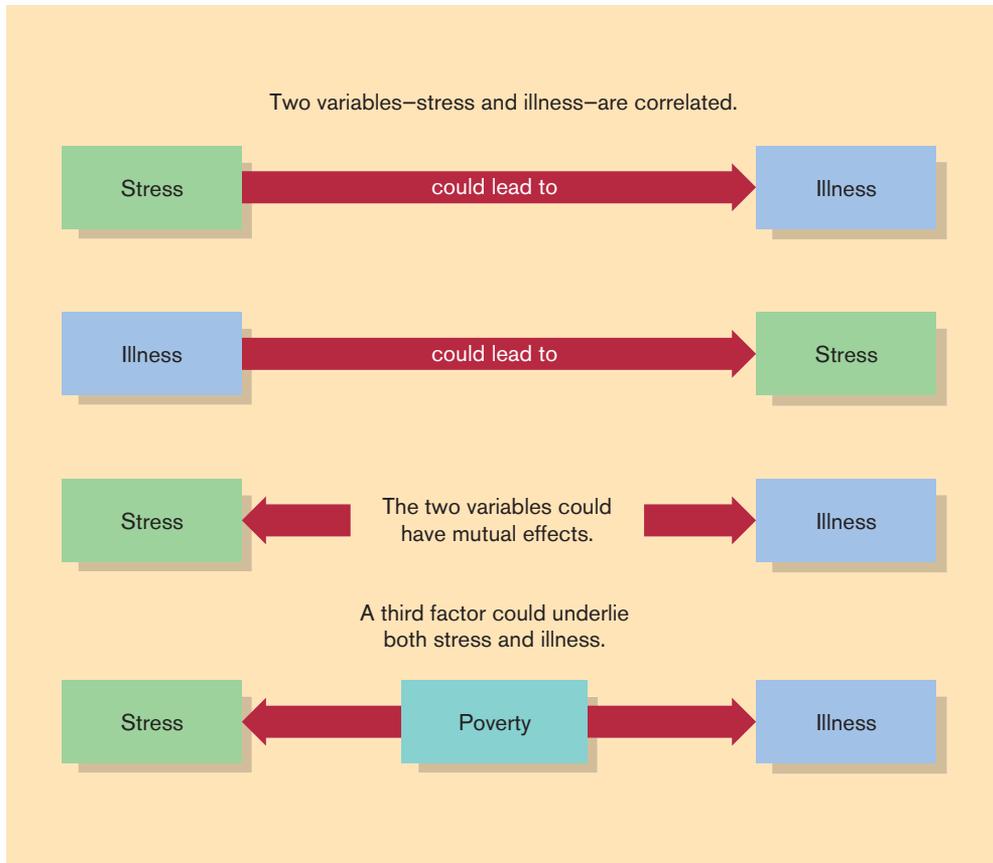
### Correlation and Prediction

Correlations are useful in making predictions. The stronger the relationship between the variables, the better the prediction. A perfect correlation (+ 1.00 or –1.00) would enable you to make completely accurate predictions.

The fact that there is a correlation between two variables does not necessarily mean that one variable causes the other. Only the experimental method allows us to reach conclusions about cause and effect. When two variables such as stress and illness are correlated, we cannot conclude that stress makes people sick. It might be that illness causes stress, or that a third factor such as poverty or poor general health increases susceptibility to both illness and stress, as shown in Figure 1.2.

### Psychological Tests: Assessing the Participant

Psychologists have developed a wide range of tests for measuring intelligence, scholastic achievement, aptitudes, creativity, vocational interests, personality traits, and psychiatric problems. Depending on where you live in Canada, you may have taken some of these tests while in school—an IQ test, the Canadian Test of Cognitive Abilities, or the WISC-R, to name three. Psychological tests are used in a variety of situations—in schools, in the workplace, and in therapeutic settings. They are used to evaluate or compare individuals, to measure changes in behav-



**FIGURE 1.2**  
**Correlation Does Not Prove Causation** A correlation between two variables does not prove that a cause-effect relationship exists between them. There is a correlation between stress and illness, but that does not mean that stress necessarily causes illness. Both stress and illness may result from another factor, such as poverty or poor general health.

our, and to make predictions about behaviour. Test results also provide information that can be used in educational decision making, personnel selection, and vocational guidance. But these psychological tests, and all other tests, are useless unless they are both reliable and valid.

**Reliability** refers to the consistency of a test. A reliable test will yield nearly the same score time after time as the same person is tested and then retested. **Validity** is the test's ability to measure what it is intended to measure. Just as a clock is a valid instrument for measuring time but not speed, so a psychological test must be able to measure accurately and adequately the specific area it is designed to measure—achievement or vocational aptitude, for example.

Psychologists often use testing in conjunction with their research. Tests may be administered as part of a case study. And in an experiment, the dependent variable might be the score on a psychological test. For example, an educational psychologist who is experimenting with a new educational program might use

an achievement test to compare the performances of experimental and control subjects.

Tests are also used in correlation studies. To determine the correlation between high school and university grades, researchers might statistically compare the actual high school grades of participants with their university grades. Review & Reflect 1.1 summarizes the different research methods discussed in this chapter.

**correlational method:** A research method used to establish the relationship (correlation) between two characteristics, events, or behaviours.

**correlation coefficient:** A numerical value that indicates the strength and direction of the relationship between two variables; ranges from +1.00 (a perfect positive correlation)

to -1.00 (a perfect negative correlation).

**reliability:** The ability of a test to yield nearly the same scores when the same people are tested and then retested using the same test or an alternative form of the test.

**validity:** The ability of a test to measure what it is intended to measure.

## The Correlational Method

1. A correlation coefficient shows a cause–effect relationship. (true/false)
2. Which of the following describes a negative correlation?
  - a. When the value of one variable goes up, the value of the other variable goes down.
  - b. When the value of one variable goes down, the value of the other goes down.
  - c. When the value of one variable goes up, the value of the other goes up.
  - d. When the value of one variable goes up or down, the value of the other variable remains unchanged.
3. Which of the following correlation coefficients indicates the strongest relationship?
  - a. +.65
  - b. –.78
  - c. .00
  - d. +.25
4. Psychological tests are sometimes used in experiments or correlation studies. (true/false)

Answers: 1. false 2. a 3. b 4. true

### REVIEW & REFLECT 1.1 Research Methods in Psychology

Method	Description	Advantages	Limitations
<b>Naturalistic observation</b>	Researcher observes and records behaviour in its natural setting. Participants may or may not know they are being observed.	Good source of descriptive information. Can provide basis for hypotheses to be tested later. Behaviour studied in everyday setting is more natural.	Researchers' expectations can distort observations (observer bias). Presence of researcher may influence behaviour of participants. Little or no control over conditions.
<b>Laboratory observation</b>	Observation under more controlled conditions where sophisticated equipment can be used to measure responses.	More control than naturalistic observation.	Possible observer bias. Behaviour of participants may be less natural than in naturalistic observation.
<b>Case study</b>	In-depth study of one or a few participants using observation, interviews, psychological testing.	Source of information for rare or unusual conditions or events. Can provide basis for hypotheses to be tested later.	May not be representative of condition or event. Time-consuming. Subject to misinterpretation by researcher.
<b>Survey</b>	Interviews and/or questionnaires used to gather information about attitudes, beliefs, experiences, or behaviours of a group of people.	Can provide accurate information about large numbers of people.	Responses may be inaccurate. Sample may not be representative. Characteristics of interviewer may influence responses.
<b>Experimental method</b>	Random assignment of participants to groups. Manipulation of independent variables and measurement of their effects on the dependent variable.	Enables identification of cause–effect relationships.	Laboratory setting may inhibit natural behaviour of participants. Findings may not be generalizable to the real world. In some cases, experiment is unethical.
<b>Correlational method</b>	Method used to determine the relationship (correlation) between two events, characteristics, or behaviours.	Can assess strength of relationship between variables. Provides basis for prediction.	Does not demonstrate cause and effect.
<b>Psychological tests</b>	Tests used for measuring intelligence, scholastic achievement, aptitudes, vocational interests, personality traits, psychiatric problems.	Provide data for educational and vocational decision making, personnel selection, research, and psychological assessment.	Tests may not be reliable or valid.

## Participants in Psychological Research

### Human Participants in Psychological Research

For practical reasons, most studies with humans in the past 30 years have used college or university students. Students are a convenient group to study, and researchers/professors often encourage their participation by offering pay or points toward a course grade. Psychology studies have also used a disproportionate number of males (Gannon et al., 1992) and whites (Graham, 1992).

Heavy reliance on college and university students presents a problem. Students are a relatively select group in terms of age, socioeconomic status, educational level, and cultural diversity. How generalizable the findings of such studies are to the general population depends on the nature of the specific study. Studies that investigate basic psychological processes such as sensation, perception, and memory are likely to be relatively generalizable, because these processes probably function in similar ways in most adults. But in research on human social behaviour, there is great individual and cultural variation and thus a problem in generalizing the results of studies with college and university students to other segments of the population. (See the discussion of ageism, sexism, and cultural bias in psychological research in the *World of Psychology* box.)

### LINK IT!

[www.sshrc.ca/english/programinfo/policies/ethics.htm](http://www.sshrc.ca/english/programinfo/policies/ethics.htm)

SSHRC Policies: Ethical Conduct for Research Involving Humans

### The Use of Animals in Research

Why are animals used in research?

Where would psychology be today without Pavlov's dogs, Skinner's pigeons, the ubiquitous white rat, and the many other species of animals used to advance scientific knowledge? Psychologists recognize that laboratory animals have been and still are immensely important in research; most psychologists favour their continued use. Animals are used in

7 to 8 percent of psychological experiments; 95 percent of the animals used are rodents (American Psychological Association, 1984).

### LINK IT!

[www.cpa.ca/guide7.html](http://www.cpa.ca/guide7.html)

Guidelines for Use of Animals in Research (Canadian Psychological Association)

Those conducting animal research in Canada are bound by the Canadian Code of Ethics for Psychologists (Canadian Psychological Association, 1988) as well as by the ethical code of the Canadian Council on Animal Care (1989). These documents support the humane treatment of animals. This means that researchers must do everything possible to minimize discomfort, pain, and illness in animal subjects. The Canadian Council on Animal Care is also responsible for checking active laboratories, usually on a three-year cycle. Furthermore, research with animals is supported only when there is a reasonable expectation that valuable knowledge will be obtained.

Many of the marvels of modern medicine would not have been available today without the use of animals in research. Why are animals used in research? There are at least five reasons: (1) They provide a simpler model for studying processes that operate

**Most psychologists recognize that many scientific advances would not have been possible without animal research. Where do you stand on this issue?**

Image omitted due to copyright restrictions.

similarly in humans. (2) Researchers can exercise far more control over animal subjects and thus be more certain of their conclusions. (3) A wider range of medical and other manipulations can be used with animals. (4) It is easier to study the entire life span and multiple generations in some animal species. (5) Animals are cheaper to use and are available at the researcher's convenience. (Of course, researchers also use animals when they want to learn more about the animals themselves.)

Nevertheless, controversy has long surrounded the use of animals in research. Animal rights advocates are becoming more militant in their efforts to stop animal research. They have broken into research laboratories, freed laboratory animals, destroyed research records, and wrecked laboratory equipment and other property. One animal rights group has demanded that all animal research studies be stopped immediately. Many activists are also against using animals for food, clothing, or any other purpose.

## WORLD OF PSYCHOLOGY

### Avoiding Ageism, Sexism, and Cultural Bias in Psychological Research

In planning and conducting psychological inquiries, researchers need to consider many factors besides scientific methodology. For example, they must be sensitive to human differences and show respect for the dignity of human participants. Several researchers have cited evidence of bias in psychological research. Our awareness of biases makes us more careful when designing and interpreting studies.

For example, ageism is a continuing source of bias. This is seen both in the language used in psychological research (Schaie, 1993) and in clinicians' preferences for younger clients (Zivian et al., 1992, 1994). Titles of research papers on aging often focus on loss, deterioration, decline, and dependency. According to Schaie, "Most research on adulthood shows that differences between those in their 60s and those in their 80s are far greater than those between 20- and 60-year-olds" (1993, p. 50). These observations demonstrate how important it is to guard against descriptions or conclusions that imply that all members of a group are defined by deterioration, forgetfulness, and deficits. The research with Canadian clinicians also makes it clear that clinicians should

be sensitive to how they select clients. Overall, clinicians preferred younger clients over middle-aged clients, and middle-aged clients over senior clients (Zivian et al., 1992). These preferences may make it more difficult for older adults to get psychological assistance. The researchers suggest that "education about, exposure to, and experience with psychotherapy with older adults" would probably help moderate these preferences.

Research also suggests that familiarity with clients' cultural heritage and gender issues facilitates effective counselling (Malone, 2000) and research investigations (Darou, Kurtness, & Hum, 2000). Seven out of eight researchers were expelled from a Cree community because their research techniques were too rigid and insensitive to traditional Cree values (Darou et al., 2000). The lack of flexibility on the part of the researchers not only had a negative impact on the community, but it had the potential to restrict their ability to investigate a unique population and, hence, limit our understanding of this group. Fortunately, one researcher was able to employ a design that was sensitive to the cultural expectations of the community while maintaining scientific

standards. In a similar way, greater awareness of cultural orientations, expectations, and traditional techniques (such as healing techniques within Native communities) makes clinicians more effective counsellors for their clients (Malone, 2000).

Inequities regarding gender issues have aroused concern among psychologists and researchers in psychology. In 1984, two Canadian researchers, Connie Stark-Adamec and Meredith Kimball, wrote a position paper that highlighted the possible harm that sexism could cause to psychological research. In their view, sexism is present when there exists "the premise that men, and the behaviour patterns characteristic of males, are superior to and more representative of the human experience than women or behaviour characteristics of females" (1984, p. 24). Fortunately, gender bias in the selection of research participants has decreased over the last decade (Ader & Johnson, 1994). In addition, there is a growing body of literature that advocates for a greater awareness of gender, culture, and age issues in order to promote more effective research and counselling.

## Ethics in Research: First and Foremost

What are some ethical guidelines governing the use of human participants in research?

In 1991, the Canadian Psychological Association adopted a new set of ethical standards governing research with humans (with recent proposed changes; Hadjistavropoulos & Malloy, 2000). These standards safeguard the rights of experimental participants while supporting the goals of scientific inquiry. Participation must be voluntary, and there must be respect for confidentiality. Moreover, participants must be free to withdraw from the study at any time. At a more local level, colleges and universities usually have ethics committees that must approve any research studies proposed by professors or students.

Can studies that use deception be justified on scientific grounds? Many psychologists believe they can be. Others are against deception in any circumstances. Diane Baumrind (1985) opposes research using deception because of the potential harm to the participants.

She also believes that such practices will damage the reputation of psychology and psychologists and cause people to lose confidence in the profession.

Even so, deception is used in many research studies, particularly in the field of social psychology. Today the Canadian Psychological Association's code of ethical standards allows deception

1. If it is justified by the value of the potential findings, in circumstances where equally effective procedures that do not involve deception cannot be used;
2. If participants are not deceived about “physical risks, discomfort, or unpleasant emotional experiences” that might affect their willingness to participate; *and*
3. If participants are debriefed as soon as possible after the experiment.

The debriefing sessions are designed to provide participants with information about the nature of the research and to clear up any misconceptions they may have had about what occurred during the study. Researchers want to erase any harmful effects of the deception and to ensure that participants understand that no other participants were actually harmed.

## IT HAPPENED IN CANADA



### Ethics of Government Data Collection

Psychologists are not the only ones who have to be sensitive to ethical issues when they conduct research or gather information. In May 2000, several newspapers reported that the Canadian Ministry of Human Resources had collected a computer database that held over 2000 pieces of information about every Canadian citizen (Ayed, 2000; Stone, 2000). Labelled the “Big Brother Database,” the data include personal information, such as ethnicity, education, marital status, family disabilities, and tax, employment, and medical records, among other things. The Privacy Commissioner raised serious concerns that the government, or anyone else, who accessed the data could potentially misuse the information. Above all, from an ethical perspective, critics are concerned that the government is quietly tracking the lives of Canadians without their knowledge, without the right to do so. The government defended creating the database by pointing to the advantages of planning potential labour shortages and other trends, and also indicated that the personal information was masked to ensure that anyone using the database could not link it to a specific person. In your opinion, has the federal Ministry of Human Resources acted unethically?

## LINK IT!

[www.cpa.ca/ethics.html](http://www.cpa.ca/ethics.html)

Canadian Code of Ethics for Psychologists

## The Historical Progression of Psychology: Exploring the Different Perspectives

If we were to trace the development of psychology from the beginning, we would need to stretch far back to the earliest pages of recorded history, even beyond the early Greek philosophers, such as Aristotle and Plato. People have always had questions about human nature and human behaviour. For centuries these questions were considered to be in the realm of philosophy.

## LINK IT!

[serendip.brynmawr.edu/Mind/Table.html](http://serendip.brynmawr.edu/Mind/Table.html)

Mind and Body: René Descartes to William James

## Research Participants and Ethics

- Which of the following groups has *not* been overrepresented as participants in psychological research?
  - whites
  - males
  - females
  - university students
- Psychologists are required to debrief participants thoroughly after a research study when the study
  - violates participants' privacy.
  - deceives participants about the true purpose of the research.
  - exposes participants to unreasonable risk or harm.
  - wastes taxpayers' money on trivial questions.
- Investigators use animals in psychological research to learn more about humans. (true/false)
- The Canadian Psychological Association has guidelines for ethical treatment for human participants but not for animal subjects. (true/false)
- Which of the following has *not* been identified as a source of bias in psychological research, according to the text?
  - age
  - gender
  - race
  - religion

1. Answers: 1. c 2. b 3. true 4. false 5. d

## Wilhelm Wundt: The Founding of Psychology

What was Wilhelm Wundt's contribution to psychology?

It was not until experimental methods were applied to the study of psychological processes that psychology became recognized as a formal academic discipline. Three German physiologists—Ernst Weber, Gustav Fechner, and Hermann von Helmholtz—were the first to apply experimental methods to the study of psychological processes. In so doing, they profoundly influenced the early development of psychology.

Although a number of early researchers contributed to the new field of psychology, Wilhelm Wundt is generally thought of as the founder of psychology. His psychological laboratory in Leipzig, Germany, founded in 1879, is considered the “birthplace” of psychology as a formal academic discipline. However, the studies and experiments that Wundt, his associates, and his students performed in that early laboratory were very different from psychology as we know it today.

For Wundt, the subject matter of psychology was experience—the actual, immediate, conscious experiences of individuals. Wundt believed that mental experiences could be reduced to basic elements, just as the early chemists were able to describe water as

## IT HAPPENED IN CANADA

### Our History Highlights



Psychology has been an active discipline in Canada since 1838, when the first course in psychology was offered at Dalhousie University. A significant milestone for the advancement of psychology in Canada was the founding of the Canadian Psychological Association in 1939. In conjunction with the American Psychological Association, the Canadian Psychological Association serves as the governing body, providing ethical guidelines and research initiatives. For more milestones in Canadian psychology, check the inside cover of your text!

composed of the basic elements of hydrogen and oxygen (H<sub>2</sub>O). In other words, Wundt was searching for the structure of conscious experience.

Wundt and his associates conducted experiments on reaction times and on attention span. They also studied the perception of a variety of visual (sight), tactile (touch), and auditory (hearing) stimuli, including rhythm patterns.

## Titchener and Structuralism: Psychology's Blind Alley

What were the goals and methods of structuralism, the first school of psychology?

Wundt's most famous student, Edward Bradford Titchener, introduced psychology to North America. Although Titchener differed from Wundt on some points, he pursued similar goals. He gave the name **structuralism** to this first school of thought in psychology, which aimed at analyzing the basic elements, or the structure, of conscious mental experience.

Structuralism was most severely criticized for its primary method, introspection. Introspection was not objective, even though it involved observation, measurement, and experimentation. When different introspectionists were exposed to the same stimulus, such as the click of a metronome, they often reported different experiences. And when the same person was exposed to exactly the same stimulus at different times, he or she often reported somewhat different experiences. Structuralism was not considered a viable school of thought for long. Later schools of thought in psychology were established partly in reaction against structuralism, which collapsed as an approach when Titchener died.

## Functionalism: The First North American School of Psychology

What was the goal of the early school of psychology known as functionalism?

As structuralism was losing its influence in the early 1900s, a new school of psychology called *functionalism* was taking shape. **Functionalism** was concerned not with the structure of consciousness but with how mental processes function—that is, with how humans and animals use mental processes in adapting to their environment.

An influential book by Charles Darwin, *On the Origin of Species by Means of Natural Selection* (1859), had a strong impact on the leading proponents of functionalism. Darwin's ideas about evolution and the continuity of species were largely responsible for the increasing use of animals in psychological experiments.

Another British thinker (and a cousin of Darwin) was Sir Francis Galton, who did pioneering work in the study of individual differences and the role of

genetic inheritance in mental abilities. He also made a significant contribution in the areas of measurement and statistics.

Darwin's and Galton's ideas contributed much to the new school of functionalism. The American psychologist William James (1842–1910) was an advocate of functionalism, even though he did much of his writing before this school of psychology appeared. James's best-known work is his highly regarded *Principles of Psychology*, published more than 100 years ago (1890). James taught that mental processes are fluid and that they have continuity rather than a rigid or fixed structure (which is what the structuralists suggested). James spoke of the “stream of consciousness,” which he said functioned to help humans adapt to their environment.

Functionalism broadened the scope of psychology to include the study of behaviour as well as mental processes. It also included the study of children, animals, and people who were mentally impaired. These groups had not been studied by the structuralists because they could not be trained to use introspection. Functionalists also established the subfield of applied psychology—for example, the psychology of education, the workplace, and individual differences.

## LINK IT!

[www.emory.edu/EDUCATION/mfp/james.html](http://www.emory.edu/EDUCATION/mfp/james.html)

An award-winning William James site.

## Gestalt Psychology: The Whole Is More Than Just the Sum of Its Parts

What is the emphasis of Gestalt psychology?

Several schools of thought arose in part as a reaction against structuralism. Gestalt psychology was one of these. This school appeared in Germany in 1912, at around the same time that Watson was launching behaviourism. The

**structuralism:** The first formal school of psychology, aimed at analyzing the basic elements, or structure, of conscious mental experience through the use of introspection.

**functionalism:** An early school of psychology that was concerned with how mental processes help humans and animals adapt to their environments; developed as a reaction against structuralism.

Gestalt psychologists objected to the central idea of structuralism—that we can best understand conscious experience by reducing it to its basic elements. **Gestalt psychology** emphasized that individuals perceive objects and patterns as whole units, and that the whole thus perceived is more than just the sum of its parts. The German word *Gestalt* roughly means “whole, form, or pattern.”

The leader of the Gestalt psychologists was Max Wertheimer (1880–1943), who introduced a famous experiment demonstrating the *phi* phenomenon. Perhaps you have seen flashing neon lights that you perceive as figures moving back and forth. Actually, the separate lights are being flashed on and off with precision timing: this is the *phi* phenomenon. We perceive wholes or patterns, not collections of separate and independent sensations. For the Gestaltists, the *phi* phenomenon proved that perceptions do not all arise from independent sensations, as the structuralists contended.

Other prominent Gestalt psychologists were Kurt Koffka and Wolfgang Köhler. Gestalt psychologists are still influential in the psychology of perception, which will be discussed in Chapter 3.

## LINK IT!

[www.enabling.org/ia/gestalt/gerhards/](http://www.enabling.org/ia/gestalt/gerhards/)  
Society for Gestalt Theory and its  
Applications (GTA)

## Behaviourism: Never Mind the Mind

How did behaviourism differ from previous schools of psychology?

Psychologist John B. Watson (1878–1958) looked at the study of psychology as defined by the structuralists and functionalists and disliked virtually everything he saw. In Watson’s view, the study of mental processes, the concepts of mind and consciousness, and the primary investigative technique of introspection were not scientific. Watson pointed out that each person’s introspection is strictly individual. He further maintained that self-reflection and internal pondering cannot be observed, verified, understood, or communicated in objective, scientific terms. He argued that all the strictly subjective techniques and concepts in psychology must be thrown

out. He did not deny the existence of conscious thought or experience. He simply did not view them as appropriate topics for psychology.

Watson proposed a radically new approach to psychology. This new school of psychology, called **behaviourism**, redefined psychology as the “science of behaviour.” Behaviourism confined itself to the study of behaviour because it was observable and measurable and, therefore, objective and scientific. Behaviourism also emphasized that behaviour is determined primarily by factors in the environment.

## B.F. Skinner: Continuing the Behaviourist Tradition

Behaviourism soon became the most influential school of thought in North American psychology. It is still a major force in modern psychology, in large part because of the profound influence of B.F. Skinner (1904–1990).

Skinner agreed with Watson that concepts such as mind, consciousness, and feelings were neither objective nor measurable and, therefore, were not the appropriate subject matter of psychology. Furthermore, Skinner argued that these concepts were not needed to explain behaviour. We can explain behaviour, he maintained, by analyzing conditions that were present before the behaviour occurred and by analyzing the consequences of the behaviour.

Skinner’s research on operant conditioning emphasized the importance of reinforcement in learning and in the shaping and maintaining of behaviour. When a behaviour is reinforced (i.e., followed by pleasant or rewarding consequences), it is more likely to be performed again. Skinner’s work has had a powerful influence on modern psychology.

Behaviourism has been criticized for ignoring inner mental processes such as thoughts and feelings. Many behaviourists today do not take as extreme a view as Skinner and his colleagues did. They still emphasize the study of behaviour, but they are also willing to consider how mental processes explain behaviour.

## LINK IT!

[www.bfskinner.org/](http://www.bfskinner.org/)  
The B.F. Skinner Foundation

## Psychoanalysis: It's What's Deep Down That Counts

What was the role of the unconscious in psychoanalysis, Freud's approach to psychology?

The behaviourists completely ignored unobservable mental forces in their explanations of behaviour. This is precisely where Sigmund Freud (1856–1939) looked in formulating his theory. Freud emphasized that unseen, unconscious mental forces were the key to understanding human nature and behaviour.

Freud developed a theory called **psychoanalysis**. He maintained that human mental life is like an iceberg. The smallest, visible part of the iceberg represents the conscious mental experience of the individual. But underwater, hidden from view, floats a vast store of unconscious impulses, thoughts, wishes, and desires. Although people are not aware of them directly or consciously, it is these unconscious forces that have the largest impact on behaviour.

Freud believed that the unconscious acts as a storehouse for material that threatens the conscious life of the individual—for disturbing sexual and aggressive impulses as well as traumatic experiences that have been repressed or “pushed down” to the unconscious. Once there, rather than resting quietly, the unconscious material festers and seethes.

Freud's psychological theory does not paint a very positive or hopeful picture of human nature. He believed that we do not consciously control our thoughts, feelings, and behaviours, but rather that these are determined by unconscious forces that we cannot see or control.

The overriding importance that Freud placed on sexual and aggressive impulses caused much controversy, both inside and outside the field of psychology. The most notable of Freud's famous students—Carl Jung, Alfred Adler, and Karen Horney—broke away from their mentor and developed their own theories of personality. These three are often referred to as the *neo-Freudians*.

Freud's influence on psychology is not nearly as strong as it once was (Robins et al., 1999). When people think of Freud, most imagine a psychiatrist psychoanalyzing a patient who is lying on a couch. The general public is familiar with such terms as the unconscious, repression, rationalization, and the Freudian slip. Such familiarity has made Freud a larger-than-life figure.

## LINK IT!

[plaza.interport.net/nypsan/freudarc.html](http://plaza.interport.net/nypsan/freudarc.html)  
Sigmund Freud and the Freud Archives

## Humanistic Psychology: Looking at Human Potential

What is the focus of humanistic psychology?

Humanistic psychology emerged in part as a reaction against behaviourism and psychoanalysis. **Humanistic psychology** focuses on the uniqueness of human beings and their capacity for choice, growth, and psychological health. The humanists reject the behaviourist notion that people have no free will and are shaped and controlled strictly by the environment. Humanists also reject Freud's theory that people are determined and driven from within, acting and marching to the dark drums of the unconscious.

Abraham Maslow and other prominent humanistic psychologists, such as Carl Rogers, emphasized a much more positive view of human nature. They maintained that people are innately good and possess free will. Humanists believe that people are capable of making conscious, rational choices that can lead to growth and psychological health.

Maslow proposed a theory of motivation that consists of a hierarchy of needs. He considered the need for self-actualization (developing to one's fullest potential) to be the highest need in this hierarchy. Carl

**Gestalt psychology** (gehSHTALT): The school of psychology that emphasizes that individuals perceive objects and patterns as whole units and that the perceived whole is more than just the sum of its parts.

**behaviourism:** The school of psychology founded by John B. Watson that views observable, measurable behaviour as the appropriate subject matter for psychology and emphasizes the role of environment as a determinant of behaviour.

**psychoanalysis** (SY-ko-ah-NAL-ih-sis): The term Freud used for both his theory of personality and his therapy for the treatment of psychological disorders; the unconscious is the primary focus of psychoanalytic theory.

**humanistic psychology:** The school of psychology that focuses on the uniqueness of human beings and their capacity for choice, growth, and psychological health.

Rogers developed his person-centred therapy and, with other humanists, popularized encounter groups and other techniques that are part of the human potential movement.

### Cognitive Psychology: Focusing on Mental Processes

What is the focus of cognitive psychology?

**Cognitive psychology** is a special branch of psychology that focuses on mental processes such as memory, problem solving, concept formation, reasoning and decision making, language, and perception. Just as behaviourism developed in part as a reaction against the focus on mental processes that was characteristic of structuralism and functionalism, so cognitive psychology grew and developed partly in response to strict behaviourism. Ironically, several psychologists who were behaviourists during the 1950s provided the greatest impetus to the development of cognitive psychology (Viney, 1993).

Cognitive psychologists see humans not as passive recipients who are pushed and pulled by envi-

ronmental forces, but as active participants who seek out experiences, who alter and shape them, and who use mental processes to transform information in the course of their own cognitive development.

Pervasive in the research of cognitive psychology is the information-processing approach. According to this approach, our brain processes information in sequential stages, or levels, much as a computer does. "Increasingly, parallel processing models are developed in addition to stage models of processing" (Haberlandt, 1997, p. 2). Indeed, some cognitive psychologists have extended their study of problem solving, decision making, and other human mental processes to artificial intelligence. In this research, sophisticated computers are used to simulate the intellectual processes of the human brain.

Moreover, unlike the early behaviourists, psychologists today *can* observe some mental processes directly. Thanks to modern brain-imaging techniques, such as the PET scan, and sophisticated computer technology, researchers can observe the action (behaviour) of specific clusters of brain cells (neurons) as they carry out various mental processes (Raichle, 1994b). Such men-

## Historical Perspectives in Psychology

1. Match the description with the appropriate school of psychology.

- \_\_\_ 1) the scientific study of behaviour
- \_\_\_ 2) the perception of whole units or patterns
- \_\_\_ 3) the unconscious
- \_\_\_ 4) analysis of the basic elements of conscious mental experience
- \_\_\_ 5) the uniqueness of human beings and their capacity for conscious choice and growth
- \_\_\_ 6) the function of conscious mental experience
- \_\_\_ 7) the study of mental processes

2. Match the major figures with the appropriate school of psychology.

- \_\_\_ 1) James
- \_\_\_ 2) Freud
- \_\_\_ 3) Watson and Skinner
- \_\_\_ 4) Wundt and Titchener
- \_\_\_ 5) Maslow and Rogers

- a. Gestalt psychology
- b. structuralism
- c. functionalism
- d. psychoanalysis
- e. humanistic psychology
- f. behaviourism
- g. cognitive psychology

- a. behaviourism
- b. structuralism
- c. functionalism
- d. psychoanalysis
- e. humanistic psychology

Answers: 1. 1) f 2) a 3) d 4) b 5) e 6) c 7) g. 2. 1) c 2) d 3) a 4) b 5) e.

**REVIEW & REFLECT 1.2****Traditional and Modern Schools of Thought in Psychology**

School	Description	School	Description
<b>Structuralism</b> Wilhelm Wundt Edward Titchener	The first formal school of psychology. Focused on analyzing the basic elements or structures of conscious mental experience through the use of introspection.	<b>Behaviourism</b> John Watson B. F. Skinner	Views observable, measurable behaviour rather than internal mental processes as the appropriate subject matter of psychology. Stresses the roles of learning and the environment in determining behaviour.
<b>Functionalism</b> William James	The first North American school of psychology. Concerned with the study of mental processes and their role in facilitating adaptation to the environment. Broadened the scope of psychology to include the study of behaviour as well as mental processes, and the study of children, people who are mentally impaired, and animals.	<b>Psychoanalysis</b> Sigmund Freud	Emphasizes the role of unconscious mental forces and conflicts in determining behaviour.
<b>Gestalt psychology</b> Max Wertheimer Kurt Koffka Wolfgang Köhler	Emphasizes that individuals perceive objects and patterns as whole units. The perceived whole is more than just the sum of its parts and is not best understood by analysis of its elemental parts (as suggested by the structuralists).	<b>Humanistic psychology</b> Abraham Maslow Carl Rogers	Focuses on the uniqueness of human beings and their capacity for choice, growth, and psychological health. Called the “third force in psychology” (behaviourism and psychoanalysis being the other two forces).
		<b>Cognitive psychology</b>	Focuses on mental processes such as memory, problem solving, reasoning, decision making, language, and perception. Uses information-processing approach.

tal activities as thinking, remembering, solving a problem, listening to a melody, speaking, viewing images and colours, and so on, have all been “observed,” and this has provided a rich field of knowledge that cognitive psychologists use in their work.

**LINK IT!**

[web.psych.ualberta.ca/%7Emike/Pearl\\_Street/Dictionary/dictionary.html](http://web.psych.ualberta.ca/%7Emike/Pearl_Street/Dictionary/dictionary.html)

University of Alberta Cognitive Science Dictionary

[www.psych.purdue.edu/~coglab/](http://www.psych.purdue.edu/~coglab/)

Cognitive Psychology Online Lab: “The purpose of this site is to help acquaint you with some of the influential research in cognitive psychology and give you the opportunity to experience these experiments yourself.”

Review & Reflect 1.2 summarizes the various traditional and modern schools of thought in psychology.

**Psychology Today****Perspectives in Psychology: Recent Views on Behaviour and Thinking**

Modern psychologists are not easily categorized by specific schools of thought. There are no structuralists roaming the halls of psychology departments, and to our knowledge there are no professors who call themselves functionalists. Today, rather than discussing schools of psychology, it is more appropriate to refer to psychological perspectives—points of view used for explaining people’s behaviour and thinking, whether normal or abnormal. Psychologists need not limit themselves to only one perspective or approach.

**cognitive psychology:** A speciality that studies mental processes such as memory, problem solving, reasoning, decision making, language, perception, and other forms of cognition; often uses the information-processing approach.

Some take an eclectic position, choosing a combination of approaches to explain a particular behaviour or psychological problem.

### *Biological Perspective: It's What's Inside That Counts*

What is the focus of the biological perspective?

Psychologists who adopt the **biological perspective** emphasize biological processes and heredity as the keys to understanding behaviour and thinking. To explain thinking, emotion, and behaviour—both normal and abnormal—biologically oriented psychologists study the structures of the brain and central nervous system, the functioning of the neurons, the delicate balance of neurotransmitters and hormones, and the impact of genes. For example, we know that having too many or too few different neurotransmitters in the brain is related to various mental disorders such as schizophrenia and depression. Some drugs now being used to treat some of these disorders are designed to restore the brain's biochemical balance.

Researchers and theorists who adopt the biological perspective are often referred to as physiological psychologists, psychobiologists, or neuropsychologists. The continuing development of medical technology in recent decades has spurred the research efforts of physiological psychologists. Many important findings in psychology have resulted from their work.

### *Evolutionary Perspective: Adapting to the Environment*

What is the focus of the evolutionary perspective?

The **evolutionary perspective** focuses on how humans have evolved and adapted behaviours required for survival in the face of various environmental pressures over the long course of evolution (Nesbitt, 1990). Evolutionary psychologists study how inherited tendencies and dispositions in humans influence a wide range of behaviours. For example, they tell us much about the way we select mates, the level of intellectual performance we demonstrate, and the reason why we help others of our species. However, most evolutionary psychologists recognize that our genes alone do not control our destiny: our inherited tendencies are *not* set in concrete.

### *Sociocultural Perspective: The Cultural Impact of Our World*

What is the focus of the sociocultural perspective?

The **sociocultural perspective** emphasizes social and cultural influences on human behaviour. In the same way that someone who is quoted out of context is misunderstood, we may misinterpret the actions or gestures of those from other cultures if we do not understand the cultural context in which they occur. Writers such as Kenneth Gergen et al. (1996) assert that we are in “desperate need” of culturally sensitive research about people's behaviour in areas such as health, “birth control, child abuse, drug addiction, ethical and religious conflict, and the effects of technology on society” (p. 502).

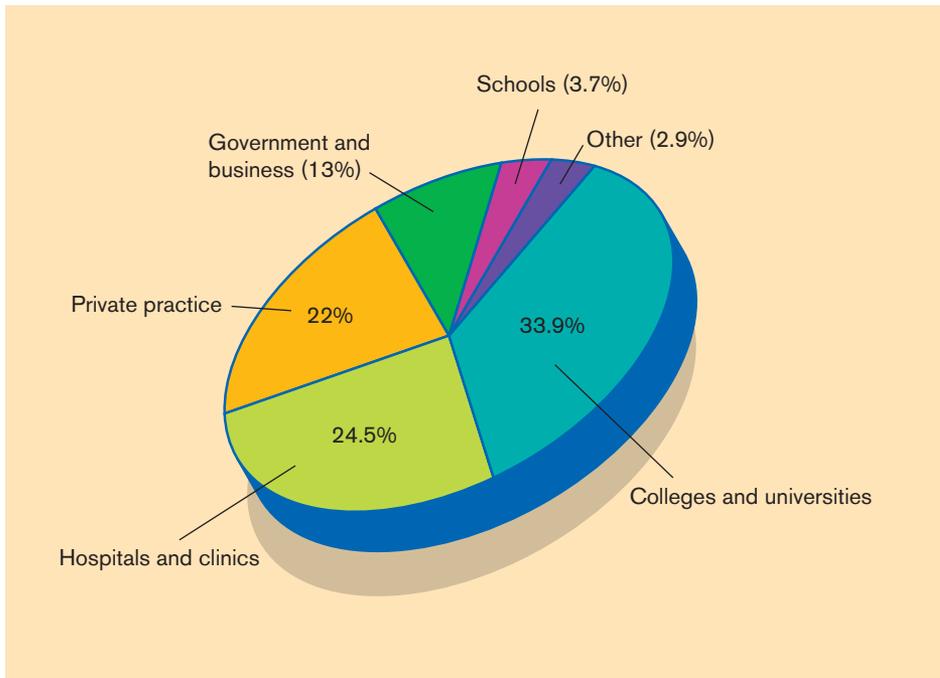
### *Psychologists at Work*

What are some specialties in psychology, and in what settings are they employed?

We know that psychologists have many different orientations toward the practice of psychology. Some teach at colleges and universities; others have private clinical practices and counsel patients. Psychologists work in hospitals and other medical facilities, in elementary and secondary schools, and in business and industry. Wherever you

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**Psychologists work in a wide range of settings**

**FIGURE 1.3****Where Psychologists Work**

Psychologists work in a variety of settings. About 34 percent of psychologists work in colleges and universities, 24.5 percent work in hospitals and clinics, and 22 percent are in private practice. (Data from Howard et al., 1986.)

### REVIEW & REFLECT 1.3 Modern Perspectives in Psychology

Perspective	Emphasis
<b>Biological</b>	The role of biological processes and structures, as well as heredity, in explaining behaviour.
<b>Psychoanalytic</b>	The role of unconscious motivation and early childhood experiences in determining behaviour and thought.
<b>Behavioural</b>	The role of environment in shaping and controlling behaviour.
<b>Cognitive</b>	The importance of mental processes—perception, thinking, and memory—that underlie behaviour.
<b>Humanistic</b>	The importance of the individual's subjective experience as a key to understanding behaviour.
<b>Evolutionary</b>	The role of inherited tendencies that have proven adaptive in humans.
<b>Sociocultural</b>	The effect of society and culture on behaviour.

find human activity, you will likely find psychologists. Figure 1.3 shows the settings in which psychologists work. And Review & Reflect 1.3 outlines the modern perspectives in psychology.

With so much information available about psychology, it is important to become a good consumer of that information. The *Apply It!* box tells you how to go about doing this.

**biological perspective:** A perspective that emphasizes biological processes and heredity as the keys to understanding behaviour.

**evolutionary perspective:** A perspective that focuses on how humans have evolved behaviours required for survival against various environmental pressures

over the long course of evolution.

**sociocultural perspective:** A perspective that emphasizes social and cultural influences on human behaviour and stresses the importance of understanding those influences when we interpret the behaviour of others.

## Recent Perspectives in Psychology

Match the psychological perspective with its major emphasis.

- |   |                   |
|---|-------------------|
| ___ 1) the role of biological processes and heredity                        | a. psychoanalytic |
| ___ 2) the role of learning and environmental factors                       | b. biological     |
| ___ 3) the role of mental processes   | c. behavioural    |
| ___ 4) the role of the unconscious and early-childhood experiences          | d. cognitive      |
| ___ 5) the importance of the individual's own subjective experience         | e. humanistic     |
| ___ 6) the role of social and cultural influences                           | f. evolutionary   |
| ___ 7) the role of inherited tendencies that have proven adaptive in humans | g. sociocultural  |

Answers: 1)

b 2) c 3) d 4) a 5) e 6) g 7) f

## Being a Good Consumer of Psychological Research

If someone asked you where to buy a car, you wouldn't send him or her to a junkyard. Similarly, in psychology you must be a wise consumer in order to get accurate information—become a critical thinker.

Some publications are more scientifically respectable than others—*Science News* and *Psychology Today* are more credible than the *National Enquirer* and the *Toronto Sun*. Science writers have more experience

reading and understanding research and usually give more accurate reports of psychological research than general reporters do. Science writers tend to write more objectively than non-science writers and are less likely to suggest that the researchers' findings are the last word on the subject. General reporters, on the other hand, are much more likely to make sweeping statements and extreme claims: "The most important study of our time," "Amazing new cure," "Dramatic new results show..."

To evaluate the information, James Bell suggests, you must be able to answer three key questions: "Who says so? What do they say? How do they know?" (1991, p. 36).

To critically evaluate research, you need to know who conducted the study and the methodology used. You need a description of the participants—their number, how they were selected, whether they were human or animal, and, if they were human, information such as their age, gender, and other characteristics that are relevant to evaluating the researcher's conclusions.

Critical thinkers are those who determine whether the methodology used in the research would enable the authors to reach their conclusions, whether those conclusions are logical, whether they are supported by the data, and whether there are alternative explanations for the findings.

Critical thinkers understand the difference between scientific and non-scientific research evidence. Testimonials and accounts of personal experience are non-scientific evidence. Testimonials most often appeal to emotions rather than to intellect.

Critical thinkers carefully consider the biases of the writers or researchers. Do they have "axes to grind"? Are they expressing information that can be confirmed as factual, or are they merely expressing their opinion?

Finally, critical thinkers do not accept the results of one study as definitive evidence. They want to know whether the research has been replicated and what other studies have been published on the subject. As a critical thinker, you would not modify your life on the basis of one study that you read.

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## KEY TERMS

applied research, p. 6	experimental group, p. 10	psychoanalysis, p. 23
basic research, p. 6	experimental method, p. 9	psychology, p. 4
behaviourism, p. 22	experimenter bias, p. 12	random assignment, p. 11
biological perspective, p. 26	functionalism, p. 21	reliability, p. 15
case study, p. 7	Gestalt psychology, p. 22	representative sample, p. 8
cognitive psychology, p. 24	humanistic psychology, p. 23	sample, p. 8
control group, p. 10	hypothesis, p. 9	selection bias, p. 11
correlation coefficient, p. 14	independent variable, p. 10	sociocultural perspective, p. 26
correlational method, p. 14	naturalistic observation, p. 6	structuralism, p. 21
dependent variable, p. 10	placebo, p. 12	survey, p. 7
descriptive research methods, p. 6	placebo effect, p. 12	theory, p. 6
double-blind technique, p. 12	population, p. 8	validity, p. 15
evolutionary perspective, p. 26		

## THINKING CRITICALLY

### Evaluation

Consider the three major forces in psychology: behaviourism, psychoanalysis, and humanistic psychology. Which do you like most? Which do you like least? Explain.

### Point/Counterpoint

This chapter discussed the issue of deception in research. Prepare convincing arguments to support each of these opinions:

- Deception is justified in research studies.
- Deception is *not* justified in research studies.

### Psychology in Your Life

In this chapter you've learned something about experimental research and survey research. How will this new knowledge affect the way you evaluate research studies in articles you read or in reports you hear in the future?

## SUMMARY & REVIEW

### Introduction to Psychology

What are the four goals of psychology?

The four goals of psychology are the description, explanation, prediction, and control of behaviour and mental processes.

What is the difference between basic and applied research?

Basic research is conducted to advance knowledge rather than to discover any practical application. Applied research is conducted for the purpose of solving practical problems.

### Descriptive Research Methods

What is naturalistic observation, and what are some of its advantages and limitations?

In naturalistic observation, researchers observe and record the behaviour of participants in a natural setting without attempting to influence or control it. The limitations include the researcher's lack of control over the observed situation and the potential for observer bias.

What is the case study method, and for what purposes is it particularly well suited?

The case study is an in-depth study of one or several participants through observation, interview, and sometimes psychological testing. It is particularly appropriate for studying people who have rare psychological or physiological disorders.

What are the methods and purposes of survey research?

The survey is a research method in which investigators use interviews and/or questionnaires to gather information about the attitudes, beliefs, experiences, or behaviours of a group of people.

What is a representative sample, and why is it essential in a survey?

A representative sample is a sample of participants selected from the population of interest in such a way that important subgroups within the whole population are included in the same proportions in the sample. A sample must be representative for the findings to be applied to the larger population.

## The Experimental Method: Searching for Causes

What is the main advantage of the experimental method?

The experimental method is the only research method that can be used to identify cause–effect relationships.

What is the difference between the independent variable and the dependent variable?

In an experiment, an independent variable is a condition or factor manipulated by the researcher to determine its effect on the dependent variable. The dependent variable, measured at the end of the experiment, is presumed to vary as a result of the manipulations of the independent variable.

How do the experimental and control groups differ?

The experimental group is exposed to the independent variable. The control group is similar to the experimental group and is exposed to the same experimental environment but is *not* exposed to the independent variable.

What is selection bias, and what technique do researchers use to control for it?

Selection bias occurs when there are systematic differences among the groups before the experiment begins. Random assignment—assignment of participants to groups by means of a chance procedure—maximizes the probability that groups are similar at the beginning of the experiment.

What is the placebo effect, and how do researchers control for it?

The placebo effect occurs when a person's expectations influence the outcome of a treatment or experiment. To control for the placebo effect, the researcher must ensure that the participants do not know whether they are members of the experimental group (receiving the treatment) or the control group (receiving the placebo).

What is experimenter bias, and how is it controlled?

Experimenter bias occurs when the researcher's expectations affect the outcome of the experiment. Its control is the double-blind technique, in which neither the experimenters nor the participants know which participants are in an experimental group and which are in a control group.

## Other Research Methods

What is the correlational method, and when is it used?

The correlational method is used to determine the correlation or relationship between two variables. It is often used when an experimental study cannot be conducted because it is either impossible or unethical.

What is a correlation coefficient?

A correlation coefficient is a numerical value that indicates the strength and direction of the relationship between two variables.

## Participants in Psychological Research

Why are animals used in research?

Animals are used because they provide a simpler model for studying similar processes in humans; because researchers can exercise more control over animals and use a wider range of medical and other manipulations; because it is easier to study the entire lifespan (and even several generations in some species); and because animals are readily available and more economical to study.

What are some ethical guidelines governing the use of human participants in research?

Participation in research must be strictly voluntary; there must be respect for confidentiality; participants must be free to withdraw from the study at any time; and participants must be debriefed as soon as possible after they participate.

## The Historical Progression of Psychology: Exploring the Different Perspectives

What was Wilhelm Wundt's contribution to psychology?

Wundt, considered the founder of psychology, established the first psychological laboratory in 1879 and launched the study of psychology as a formal academic discipline.

What were the goals and methods of structuralism, the first school of psychology?

Structuralism's main goal was to analyze the basic elements or structures of conscious mental experience through the use of introspection.

What was the goal of the early school of psychology known as *functionalism*?

Functionalism was concerned with how mental processes help humans and animals adapt to their environment.

What is the emphasis of Gestalt psychology?

Gestalt psychology emphasizes that individuals perceive objects and patterns as whole units and that the perceived whole is more than just the sum of its parts.

How did behaviourism differ from previous schools of psychology?

Behaviourism, the school of psychology founded by John B. Watson, views observable, measurable behaviour as the only appropriate subject matter for psychology. Behaviourism also emphasizes the environment.

What was the role of the unconscious in psychoanalysis, Freud's approach to psychology?

According to Freud's theory of psychoanalysis, our thoughts, feelings, and behaviour are determined primarily by the unconscious—the part of the mind that we cannot see and cannot control.

What is the focus of humanistic psychology?

Humanistic psychology focuses on the uniqueness of human beings and their capacity for choice, growth, and psychological health.

What is the focus of cognitive psychology?

Cognitive psychology focuses on mental processes such as memory, problem solving, concept formation, reasoning and decision making, language, and perception.

## Psychology Today

What is the focus of the biological perspective?

The biological perspective emphasizes biological processes and heredity as the keys to understanding behaviour.

What is the focus of the evolutionary perspective?

The evolutionary perspective looks at inherited tendencies that have proved adaptive in humans.

What is the focus of the sociocultural perspective?

The sociocultural perspective emphasizes the role of cultural and social influences on behaviour.

What are some specialties in psychology, and in what settings are they employed?

There are clinical and counselling psychologists, physiological psychologists, experimental psychologists, developmental psychologists, educational and school psychologists, and social psychologists, as well as industrial and organizational psychologists.

Psychologists are found in many different settings—in colleges and universities, elementary and secondary schools, medical settings, business and industry, and private practice.