CHAPTER 1
OVERVIEW OF PSYCHOLOGICAL RESEARCH

Synopsis

The purpose of this chapter is to introduce students to psychological research and get them involved in research at the onset of the course. Near the beginning of the chapter the student is supposed to test himself or herself on a modification of the Stroop (1935) experiment. Then, the beginnings of a research project are discussed within the context of that experiment. The discussion focuses on being a critical thinker, getting ideas for research, developing testable hypotheses, and conducting pilot research. Several problem areas (that is, potential pitfalls) in conducting research receive attention. These include ethics, researcher bias, and poor communication owing to the lack of operational definitions.

Outline

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New to This Edition

• *General Organization:* Part I of the text has been expanded to four chapters covering the *Basics of Scientific Psychology*. Chapter 4, *Conducting Ethical Research*, was Chapter 12 in the previous edition, but has been moved to Part I in the Ninth Edition.

• *Updated References:* Links to electronic resources have been updated.

Definitions of Key Concepts

Anthropomorphizing is the attribution of human characteristics to a non-human animal.

A **behavior** is an activity or response that is measured in psychological research.

Confounding occurs when a variable that is not controlled varies systematically with changes in a manipulated variable, thereby not allowing the researcher to conclude that the manipulated variable was responsible for an obtained effect.

A **control variable** is a factor in an experiment that is held constant (i.e., is fixed) by the researcher so that it cannot vary with changes along manipulated variables.

A **critic** is an individual who makes an informed assessment about the value of a thought, object or event.

A **critical thinker** is a person who exercises careful judgment in evaluating the soundness of research project, including its design, findings and conclusions.

A **dependent variable** is the factor in an experiment that is measured (in psychology, the nature or incidence of a behavior).

During a **double-blind design**, neither the researcher nor the participant is aware of important aspects of the research, such as its purpose.

Ethical issues for an organization (e.g., the American Psychological Association, or APA) are those topics that concern the (agreed upon) standards of appropriate behavior; in psychological research these issues include questions about the appropriate treatment of research participants.

Inadvertent researcher bias occurs whenever a researcher's views could accidentally affect the outcome of research, usually through a reliance on a flawed or incomplete research design.

An **independent variable** is any factor in an experiment that is manipulated or varied by the researcher.

Internal validity refers to the degree to which causal statements about the relationship between variables can be made.

An **operational definition** determines a research construct in terms of how it is produced or measured, thereby permitting other researchers to study the construct in the same manner.

Pilot research refers to preliminary research that is conducted on a small scale (i.e., with a small number of participants) in order to evaluate the appropriateness of methods (e.g., choice of variables and their selected levels).

A **placebo** is a pharmacologically inert substance that is given to control participants in order to make them think that they have been administered a drug.

A **protocol** is a detailed list of (step-by-step) methods used to conduct a research study.

Psychological Abstracts is a printed copy of brief summaries, or abstracts, of all psychological research articles that appear in APA-recognized journals.

PsycINFO is a computer search engine that permits the user to search and retrieve abstracts relating to a particular topic (or combination of topics) from within all volumes of *Psychological Abstracts*.

Reliability refers to the relative consistency of behavioral measures.

The **Stroop effect** describes a common finding in cognitive psychology that was originally argued to occur when an overlearned, or automatic process (e.g., reading a color word) interferes with the accuracy and/or speed of a related, but more effortful/controlled process (e.g., identifying an ink color that differs from the color word that the ink spells, such as the word *blue* in red ink).

A **testable hypothesis** is a prediction in research that states an expected relationship between two or more variables in measurable terms.

Answers to Exercises

1. [*Special Exercise*]. Music may disrupt studying more if it includes vocal as well as instrumental music because the verbal aspect could interfere more directly with concentration than when just instruments are playing. A second factor could be loudness--the louder the music, the more disrupting it is. Another problem could be the listener's musical preference, which the hint refers to in the question. My freshman roommate insisted on playing *Bolero* every night, and I found that to be very disconcerting. A person who hates opera music, might find it very difficult to concentrate when opera is playing. On the other hand, the same individual could study effectively when "heavy metal" rock is playing. A new, unfamiliar song of the preferred genre might divert a listener's attention, whereas an old favorite might not. Contrariwise, "our song" could lead to a substantial amount of daydreaming and disruption. I have found that many students wish to investigate this problem, which at face value is mundane. As the above indicates, however, there are many worthwhile and complicated questions that can be examined. The general problem is not as simple as one might expect, and a professor could easily get an entire class involved by having subsets of students research various aspects of the relation between music and studying.

2. Note: Reports of search results on aggression will vary depending upon the selection of abstracts, when the search is conducted, and the range of acceptable publication dates permitted within PsycINFO. A recent search example for abstracts mentioning "aggression" produced 24,320 records. The following reference was selected:

> Pellegrini, A. D. (2002). Affiliative and aggressive dimensions of dominance and possible functions during early adolescence. *Aggression & Violent Behavior*, *7*(1), 21-31.

A subsequent author search produced 58 records. Finally, a separate online search through the (James Madison University) library catalog indicated that the library carried the journal electronically after 1996. The article was available for full-text download from Elsevier Science's *ScienceDirect*.

3. Transform each of the following problems or statements into at least two testable hypotheses:

a. *You can't teach an old dog new tricks.*

i. Dogs older than a particular adult age (e.g., 7 years) are less likely to be successfully conditioned to consistently perform a trick (e.g., to sit on command with a particular incidence) than are younger dogs (e.g., where training to sit begins at 1 year of age or earlier).
ii. (Non-literal interpretation) Adults learning a new skill (e.g., speaking a foreign language) will produce more frequent errors in applying the skill relative to children who received similar amounts of training.

b. *Eating junk food lowers your grade point average.*

i. Students who do not eat junk food (e.g., fast food, candy, and/or desserts) will maintain higher overall GPA's than students who regularly eat junk food.
ii. Students who voluntarily agree to regularly eat junk food over the course of a particular semester will obtain lower course grades than were obtained in the immediately preceding semester.

c. *A penny saved is a penny earned.*

i. People who place a portion of their earnings in a savings account or other interest-bearing account will tend to report higher earnings at the end of the year than individuals with similar salaries who do not utilize such an account.
ii. People who place a portion of their earnings in a traditional retirement account tend to have more money available when they reach retirement age than those who do not have a retirement account.

d. *The best way to study is cramming the night before an exam.*

i. Students who only study the night before an exam will obtain higher grades on the exam than students who study gradually over the course of several nights prior to the exam.
ii. Students will perform better on a test in a course if their studying begins and ends closer to the administration of the exam.

e. *Out of sight, out of mind; or absence makes the heart grow fonder.*

i. Dating couples who have been separated by circumstance for a certain period of time (e.g., a month) will rate their devotion as stronger (or alternatively, their dating partner as more attractive) than similarly matched couples who have not been separated.

ii. Individuals will be more likely to forget an incident involving someone that made them angry (or, alternatively, more likely to forgive the offender) the longer they go without seeing each other following the incident.

Suggestions for Discussion

Researcher Bias. A good example of how a researcher's preconceptions can bias research outcomes comes from the intelligence testing literature in this country, where standardized intelligence tests in English were frequently administered to incoming immigrants. This example can be effectively used to discuss the issue of bias by first introducing this as a research scenario, and then by asking students how they would expect the results to turn out (i.e., immigrants should score significantly lower than an age-equivalent sample of Americans). Then the class can be questioned about how to interpret this expected (or previously obtained) outcome. Students generally recognize that the obvious, but erroneous conclusion from this approach is that Americans are smarter people. This conclusion indicates a preference for that conclusion on the part of researchers through the selection of a flawed design. Students could then be prompted to generate a more appropriate research design (e.g., use of language-/culture-specific tests).

Testable Hypotheses. The notion of testable hypotheses is a very important one. As a classroom exercise, have the students evaluate the following statements in terms of testability. This demonstration will be most useful in illustrating the importance of formulating precise hypotheses if you have the students continue to revise the statements until a testable format is given:

a. Beagles are smarter than poodles.

b. The U.S. would not have become involved in World War II if the Japanese had not bombed Pearl Harbor.

c. Soccer players are better athletes than football (American Rules) players.

d. College students consume more beer per capita than any other age group.

e. Our actions sometimes reflect conscious intentions, but they are usually governed by unconscious urges.

f. African violets grow better in filtered than in direct sunlight.

g. Vanilla Ice is a better singer than Madonna.

h. The design of the Honda Accord is superior to that of the Toyota Cressida.

i. Diamonds are a good investment.

j. You learn more information when studying for an essay test than when studying for a multiple-choice test.

Science and Luck. For teaching purposes, we approach research in psychology in a fairly rigid way. We do not discuss the role of chance or luck (serendipity) in science. A very satisfactory lecture can be based on Skinner's (1956) article, "A Case History in Scientific Method." This article appeared in *American Psychologist, 11*, 221-233. In it he emphasizes the roles of curiosity and serendipity. A point to make of all this follows Pasteur who said, "Chance favors the prepared mind."

Application: Research Careers in Psychology. The text's introduction of careers in research can act as a good springboard to discuss a variety of important career-oriented topics. Students have indicated that it is very helpful to them to receive detailed information about research careers in the course. A logical organization for such information would be to introduce careers by major sub-disciplines in research (e.g., clinical vs. experimental, basic v. applied). I often have a representative from our university's Career Services office present some of this information to the class and distribute material pertaining to the wide range of career options for (research) psychologists, career finding services available to students, plus preparations and requirements for graduate training. Discussions on careers are time-consuming, and are never complete. As a result, in larger classes these research career discussions tend to be most effective when students are required to come to class ready with a few personally motivated questions about careers. In this way, following a brief presentation the instructor can field focused questions from individual students. Most questions generally concentrate on training requirements, expected salaries, and job responsibilities.

Psychology in Action: The Stroop Effect. The Stroop effect represents a quick and simple demonstration of a research project that can be used to give students practice with recognizing the application of several key terms and concepts from Chapter 1. For this reason, it is useful to have students participate in a brief version of a Stroop experiment. In smaller classes, students could conduct on each other the version of the Stroop phenomenon that is provided in the chapter. Alternatively, students could be instructed to collect individual data from any of a number of available web locations with demonstration versions of the Stroop effect (e.g., see *Suggested Web Sites* below). If time allows, data could be collate for the entire class, and students could calculate means for each condition. Depending on their background, the students also could derive other descriptive and inferential statistics from the data. It is likely that obtained results will be very similar to those shown in figure 1-1. The importance of replication could be discussed in this context.

In larger classes, I have found it easier to construct a simple overhead with several stimuli from three conditions relating to the original, color-based version of the effect (color names in black ink, color swatches in focal colors, and color names written in a mismatched color of ink). Hypothetical data could be collected by having class members raise their hand when they have completed color identification for a given condition, with the instructor determining how long it took the majority of the class to indicate completion. Slower completion times will be reported for the mismatched color condition. The demonstration's value is as a prompt for students to indicate whether the study represents basic or applied research, to identify (independent, dependent, and control) variables, to interpret results, and also to point out problems with how study was run (sources of error), including possible confounds (e.g., order of conditions).

As is the case with the text's version of the effect, the overhead demonstration (and measurement techniques) that I use is deliberately flawed to more readily allow for student evaluation of potential pitfalls, after which more appropriate alternative designs could be generated.

> *[Elmes: "Some reviewers and users of this book have complained that we discuss concepts in several places in the text. The gist of the complaint is that students become confused when a topic is presented twice or more. As a psychologist who studies learning and memory, I find this complaint odd. Everything I know about learning and memory suggests that repetition, especially spaced repetition, leads to better retention than does a single presentation. The point is that many topics, such as confounding, are relevant at many points in the course and you should discuss them as often as you think it is necessary. Our discussions of many topics--including interaction, regression, and converging operations--are repeated, because they are particularly difficult concepts for most students."]*

Experimental Dilemma

An experimenter wanted to test the effects of music on learning by fourth grade children. [*What is a good testable hypothesis?*] To keep his work at a manageable level, he decided to introduce music into the classroom every afternoon for one week. No music would be played during the morning hours. The experimenter chose the music carefully--the music was from familiar TV cartoons, and the loudness was moderate. After the week of music presentation, the students were given tests on the morning and afternoon material. Test scores for the morning material were much higher than the scores on the afternoon material. Thus, the experimenter concluded that cartoon music disrupted learning in the classroom. Do you agree or disagree with this conclusion? In either case tell why.

Answer. The conclusion should not be accepted. There are at least two sources of confounding present. The morning and afternoon materials were confounded with the music variable (music/no music). Furthermore, the levels of the independent variable were confounded with time of day. Either or both of these confounding variables make it difficult to arrive at firm decisions about the effects of the independent variable.

Suggested Readings

Smith, R. A. (2002). *Challenging your preconceptions: Thinking critically about psychology* (2nd ed.). Belmont, CA: Wadsworth/Thomson Learning.

This text from the publisher outlines the general characteristics of critical thinkers. It demonstrates not only the importance of critical thinking, but also common thought errors, through a review of (often controversial) issues from different major disciplines in psychology. The text is intended to be bundled with introductory textbooks. Thus, the organization of research issues is identical to the typical organization of topics from introductory psychology courses (statistics, biopsychology, sensation and perception, learning, memory, and motivation, social psychology). The text focuses on the realization of preconceptions by researchers and how those preconceptions can bias research outcomes and interpretation of results.

Amuchastegui, A. (1996). Researcher bias in the field of sexuality and reproductive health. In S. Zeidenstein & K. Moore (Eds.), *Learning about sexuality: A practical beginning* (pp. 86-97). New York, NY: International Women's Health Coalition.

The chapter demonstrates problems associated with researcher bias as they pertain to research on human sexual behavior. A study by the author is presented on the meaning of virginity and initial sexual experiences to young people from three Mexican communities. The study is given as an example of how biases could influence research outcomes.

Suggested Web Sites

http://www.ipsych.com → click on "Cognition" → click on "Stroop Effect"

Chapter 1 frequently refers to Stroop phenomenon, and provides an atypical example of the effect in the *Psychology in Action* section. A brief demonstration that more closely approximates the original/typical version of the Stroop effect is provided at the web site of the Internet Psychology Laboratory, or IPL, which was developed by Leonard J. Trejo, Ph.D., Gary Bradshaw, Ph.D., and colleagues at the Department of Psychology, University of Illinois at Urbana-Champaign. The demonstration experiment is accompanied by a short text description of the effect, and student participants can save and print their results. The experiment requires installation of the IPL plug-in, which can be obtained directly from the site at http://www.ipsych.com/faq/plugin.html.

http://www.psichi.org/pubs/eye/home.aspx

In the list of *Web Resources* provided in Chapter 1, students are referred to *Eye on Psi Chi*, the journal for Psi Chi, the national honor society in psychology (the current link is provided above). A lot of useful information can be obtained by students choosing to view articles by category. The *Fields of Psychology* link specifically lists all past articles for full-text download that report career information for different disciplines of psychology. The page is of specific interest as a supplement to this chapter (and also Chapter 2) because many of the articles give detailed descriptions of particular careers in applied areas (often with training and salary information), including clinical, community, human factors, industrial-organizational, school, consumer, and forensic psychology. The *Careers* link also lists useful articles relating to career preparation, including discussions of degree and research requirements for specific jobs in the field.

http://www.apa.org/careers/resources/guides/careers.pdf

This is the link to an APA distributed pamphlet (which can be ordered with an accompanying video) entitled, *Psychology: Scientific Problem Solvers--Careers for the 21st Century*. A full copy of the brochure can be downloaded in Adobe Acrobat (.pdf) format. In the context of Chapter 1 material, the site provides relevant information on the various types of research areas, as well as differences between basic and applied research positions. Also presented is data that will be surprising to students that indicates that the majority of psychologists work outside of academia.

TESTBANK

MULTIPLE CHOICE

1. Behavior is usually defined as:
   a. covert psychological processes
   b. thoughts and feelings
   c. overt activities
   d. the brain's response to a stimulus

   ANS: C PTS: 1 REF: Introduction MSC: WWW

2. In the Stroop conflict experiment:
   a. reading is faster than counting
   b. counting is faster than reading
   c. reading and counting take about the same time
   d. counting is an automatic process

   ANS: A PTS: 1 REF: An Investigation of Reading

3. Basic scientific research is done:
   a. to solve practical problems
   b. just to see what would happen
   c. to verify a theoretical prediction
   d. to gather data to test a theory

   ANS: D PTS: 1 REF: Goals of Psychological Research

4. Which of the following is an example of basic (rather than applied) research?
   a. conducting a survey in the hopes of developing a more user-friendly TV remote control
   b. determining if the reading of a color name (e.g., blue) interferes with the processing of a different color of ink on a page (e.g., red)
   c. determining if people who are predisposed to later develop schizophrenia process pictures of human faces differently than other populations in the hopes of developing a test for early detection and diagnosis
   d. reducing pilot error by determining in which of two displays pilots are faster at detecting a warning light

   ANS: B PTS: 1 REF: Goals of Psychological Research

5. A critic is a person who:
   a. always finds fault with something
   b. makes informed judgments
   c. makes biased judgments
   d. accepts scientific results

   ANS: B PTS: 1 REF: Goals of Psychological Research

6. Assume that your instructor wants to evaluate the effects of the intensity of surrounding light (in watts) on performance in a Nintendo game. Individuals who vary randomly in their initial skill level on the game are assigned to a room containing an overhead light at a selected intensity. Each participant plays the game in their assigned room at the same time of day, and their high score is measured. A control variable in this study is ____.
   a. level of light (in watts)
   b. Nintendo game score
   c. time of day
   d. skill level

   ANS: C PTS: 1 REF: Goals of Psychological Research

7. Assume that you are interested in evaluating the effect of study context on reading comprehension for the current course material. Which of the following represents a possible independent variable for this research project?
   a. time of study/reading
   b. major course of study for the participant (e.g., Psychology, Sociology, etc.)
   c. type of distracting events at the time of study (e.g., none, music, friend's conversation, etc.)
   d. number of correct answers on a quiz

   ANS: C PTS: 1 REF: Goals of Psychological Research

8. In an experiment, what is observed or measured is called the:
   a. independent variable
   b. dependent variable
   c. control variable
   d. confounding variable

   ANS: B PTS: 1 REF: Goals of Psychological Research

9. In an experiment, what is manipulated or changed is called the:
   a. independent variable
   b. dependent variable
   c. control variable
   d. confounding variable

   ANS: A PTS: 1 REF: Goals of Psychological Research
   MSC: WWW

10. In an experiment, what is held constant is called the:
    a. independent variable
    b. dependent variable
    c. control variable
    d. confounding variable

    ANS: C PTS: 1 REF: Goals of Psychological Research

11. In the conflict experiment in Chapter 1, ____ was the dependent variable.
    a. time of day
    b. type of task
    c. time to read the lists
    d. order of conditions

    ANS: C PTS: 1 REF: Goals of Psychological Research

12. In an experiment, something that varies together with the independent variable is called the:
    a. control variable
    b. confounding variable
    c. conflict variable
    d. second independent variable

    ANS: B PTS: 1 REF: Goals of Psychological Research

13. In the conflict experiment in Chapter 1, ____ was confounded with the levels of the independent variable.
    a. time of day
    b. age of the participants
    c. time to read the lists
    d. order of conditions

    ANS: D PTS: 1 REF: Goals of Psychological Research

14. Which variable is most likely confounded with the conditions in the text's demonstration of the Stroop effect?
    a. experimenter error in reading the clock
    b. ceiling effects on accuracy
    c. viewing position of participants
    d. the order in which the conditions were run

    ANS: D PTS: 1 REF: Goals of Psychological Research

15. Science begins with:
    a. hypotheses
    b. theories
    c. observation
    d. experiments

    ANS: C PTS: 1 REF: Sources of Research Ideas

16. A very good tool for searching the psychological literature is:
    a. *Social Science Citation Index*
    b. *PsycINFO*
    c. *Psychological Review*
    d. *Psychological Reports*

    ANS: B PTS: 1 REF: Sources of Research Ideas

17. A testable hypothesis:
    a. lacks measurable dependent variables
    b. can be developed for variables that cannot be directly observed or manipulated
    c. specifies how two or more variables are related
    d. will tend to be supported by the obtained data

    ANS: C PTS: 1 REF: Developing Testable Hypotheses
    MSC: WWW

18. Which of the following would be *least* helpful in searching for recent work on the Stroop effect?
    a. *Social Science Citation Index*
    b. *PsycINFO*
    c. Stroop's article
    d. a dictionary

    ANS: C PTS: 1 REF: Reviewing the Literature

19. Pilot research refers to:
    a. the guiding hypotheses that lead to a conclusion
    b. applied research concerned with aviation
    c. the outcomes of preliminary research
    d. preliminary research prior to a complete project
    e. the lack of information provided by most research

    ANS: D PTS: 1 REF: Conducting Pilot Research

20. Which statement is true regarding pilot research?
    a. Pilot research usually involves a large number of participants.
    b. Pilot research often is used to determine whether or not the levels of an independent variable are appropriate.
    c. Pilot research is usually conducted once potential problems with the experiment have been resolved.
    d. Pilot research cannot reveal potential causal relationships between variables.

    ANS: B PTS: 1 REF: Conducting Pilot Research

21. One problem in evaluating pilot research is:
    a. the small sample of participants
    b. the number of confounding variables
    c. the lack of a testable hypothesis
    d. the lack of a dependent variable

    ANS: A PTS: 1 REF: Conducting Pilot Research

22. Deliberate fabrication in reported research is:
    a. more common than inadvertent bias
    b. increasing in psychological journals
    c. usually undetected
    d. less common than inadvertent bias

    ANS: D PTS: 1 REF: Some Pitfalls to Avoid

23. An important source of researcher bias is:
    a. deliberate fabrication of results
    b. a researcher's preconceptions
    c. different variables in experimental and control groups
    d. the uniform treatment of participants in experimental and control groups

    ANS: B PTS: 1 REF: Some Pitfalls to Avoid
    MSC: WWW

24. Morton argued that skull volume was related to intelligence, and that skull volume was correlated with race. This conclusion reflected a bias by Morton to design research to confirm his expectations. Which of the following approaches was responsible for helping to overcome this biased conclusion?
    a. Morton became aware of his own preconceptions.
    b. A strict protocol was used (all test procedures were identical).
    c. Many scientists researched the problem in different ways.
    d. Double-blind studies were used.

    ANS: C PTS: 1 REF: Some Pitfalls to Avoid

25. One effective way of minimizing inadvertent researcher bias is to:
    a. use a protocol
    b. not allow participants to know which treatment was given
    c. allow the researcher to know which participants get which treatment
    d. conduct a pilot study

    ANS: A PTS: 1 REF: Some Pitfalls to Avoid

26. A placebo:
    a. is a pharmacologically inert substance
    b. tends to increase reactivity in participants
    c. is given to researchers to reduce their bias
    d. will be effective regardless of whether or not a double-blind design is used

    ANS: A PTS: 1 REF: Some Pitfalls to Avoid

27. In a double-blind experiment:
    a. the participant knows which treatment was given
    b. the researcher knows who received what treatment
    c. participant reactivity and researcher bias are minimized
    d. the researcher poses as another participant

    ANS: C PTS: 1 REF: Some Pitfalls to Avoid

28. The statement, "The cow yearned for the grass on the other side of the fence," is an example of:
    a. experimenter bias
    b. anthropomorphizing
    c. species-specific behavior
    d. an operational definition of hunger

    ANS: B PTS: 1 REF: Some Pitfalls to Avoid

29. An operational definition:
    a. cannot be obtained for abstract concepts such as *anxiety*
    b. must allow other people to apply it
    c. must be scientifically sensible
    d. is a behavioral measure that is agreed upon by all researchers working in the field

    ANS: B PTS: 1 REF: Some Pitfalls to Avoid
    MSC: WWW

30. Which of the following represents a possible operational definition of violent behavior in school-age children?
    a. the number of times a child slaps or strikes another child
    b. any act of aggression against a child or teacher
    c. the intent to harm another individual
    d. when a child gets angry at another person

    ANS: A PTS: 1 REF: Some Pitfalls to Avoid

TRUE/FALSE

1. Thoughts and feelings aren't observed directly, so they aren't studied in psychology.

    ANS: F PTS: 1 REF: Introduction

2. In a Stroop conflict study, counting is usually faster than reading.

   ANS: F PTS: 1 REF: An Investigation of Reading

3. About 90 percent of psychology departments require or recommend some combination of courses in statistics and research design.

   ANS: T PTS: 1 REF: Goals of Psychological Research

4. Scientific progress is driven by basic questions and practical problems.

   ANS: T PTS: 1 REF: Goals of Psychological Research

5. Psychological research is always practical in its focus.

   ANS: F PTS: 1 REF: Goals of Psychological Research

6. In an experiment concerned with the effects of type of music on the rate of learning, rate of learning is the independent variable.

   ANS: F PTS: 1 REF: Goals of Psychological Research

7. In an experiment concerned with the effects of marijuana on the perception of colors, perception of colors is the dependent variable.

   ANS: T PTS: 1 REF: Goals of Psychological Research

8. The independent variable in the Stroop experiment was the task performed by the participants.

   ANS: T PTS: 1 REF: Goals of Psychological Research

9. You need a Ph.D. to do good psychological research.

   ANS: F PTS: 1 REF: Goals of Psychological Research

10. A critical thinker looks for design flaws such as confounding.

    ANS: T PTS: 1 REF: Goals of Psychological Research

11. "Chevrolets are better than Fords" is an example of a good testable hypothesis.

    ANS: F PTS: 1 REF: Developing Testable Hypotheses

12. "Using Crest daily will prevent new cavities" is an example of a good testable hypothesis.

    ANS: T PTS: 1 REF: Developing Testable Hypotheses

13. A review of the literature may help you determine the levels of your independent variable.

    ANS: T PTS: 1 REF: Reviewing the Literature

14. Pilot research is important because it is a problem-free way of gathering preliminary data.

    ANS: F PTS: 1 REF: Conducting Pilot Research

15. An ethical researcher does not have to be concerned about animal subjects, but he or she does have to be concerned about human participants.

    ANS: F PTS: 1 REF: Some Pitfalls to Avoid

SHORT ANSWER

1. Outline the eight steps in the typical research project.

   ANS:
   Answer not provided.

   PTS: 1

2. Describe a theory that accounts for the fact that it is difficult to say "2" when you see the stimulus *3 3*.

   ANS:
   Answer not provided.

   PTS: 1

3. In an experiment conducted to determine the effects of package color on the number of cookies that were eaten, participants were presented with three boxes of cookies that had the name of the cookie and its ingredients typed in either blue, green, or purple ink. The experimenter determined the number of cookies eaten from each box. Present a testable hypothesis for this experiment. Specify the independent and dependent variables. What are some potential confounding variables? How could you prevent the confounding?

   ANS:
   Answer not provided.

   PTS: 1

4. Is the statement, "Philosophy majors are the best students" a scientific one? Defend your answer.

   ANS:
   Answer not provided.

   PTS: 1

5. Consider some violations of the "Golden Rule" that might be ethically improper in a research project.

   ANS:
   Answer not provided.

   PTS: 1