STUDY GUIDE TO ACCOMPANY

Research Design and Methods

A PROCESS APPROACH

Fourth Edition

Kenneth S. Bordens ▪ Bruce B. Abbott

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Student Workbook and Study Guide to Accompany

RESEARCH DESIGN AND METHODS
A PROCESS APPROACH

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TO THE STUDENT

When we wrote the first three editions of *Research Design and Methods: A Process Approach,* we hoped that students would experience firsthand the fascinating and exciting world of research. Our hope has remained the same as we have prepared the fourth edition. To help you master the concepts in the textbook, we have prepared this accompanying study guide.

Beginning each chapter of this study guide is a section called "Key Questions to Consider." In this section, we have identified the central questions that you should consider when reading the text, those that are most important to your understanding of the research process. After the list of questions, you will find a chapter outline of the corresponding chapter in the text. This outline can help you organize your reading and study time.

After the chapter outline are "Review and Study Questions," which will help you prepare for exams. There are four types of questions, outlined as follows.

Key Term Definition

We have listed the key terms from each chapter for you to define. After reading the text, try to define each term without looking at the text definition. It is best if you define each term *in your own words* by paraphrasing the text's definition. Try to supply an example for each term. Actively transforming the information in the text into your own thoughts and ideas will help you understand the terms better than simply memorizing and writing down the text definition. After you have defined each term, use the text chapter and the glossary at the end of the text to check your work.

Multiple-Choice Questions

In your college career you will probably encounter many multiple-choice exams, especially in larger classes. Your instructor in your research methods course may use such items, even if your class is small. The multiple-choice questions we have included in this study guide will help you in two ways. First and foremost, they will help you learn the material in the text. Second, they will give you practice doing multiple-choice tests. A few basic rules will help you master these items.

First, be sure to read each question completely and carefully. That includes the stem of the question as well as each choice. We have in our years of teaching run into many students who get multiple-choice items incorrect because they do not carefully read the question. Read the stem of the question looking very specifically for what is being asked.

1. Is the question being asked in the affirmative (for example, "Which of the following is an example of . . . ?") or in the negative (for example, "Which of the following is not an example of . . .")?
2. Consider *all* the possibilities, noting carefully how the alternatives are worded. Don't be fooled by "alternative a" that sounds correct and then neglect to read the rest of the alternatives. There may be a better alternative among b, c, and d (or perhaps the correct answer is "both a and b").
3. Don't read too much into the question. Often students think their instructors are trying to trick them by including items that could be answered in several ways if certain, unlikely conditions exist. As a general rule, accept the most likely meaning. If you are really unsure what is being asked of you, ask your instructor about the item in question.

Second, after reading each alternative, eliminate those that are obviously incorrect. If you can eliminate one or two choices as obviously incorrect, you need consider only the remaining ones seriously.

Third, trust your intuition. If you do not know the answer to a question and take a "stab" at the answer, don't go back later and change your answer unless you have good reason to do so. For example, you may encounter an item later on an exam that triggers your memory for the previous item. If you have good reason to change an answer, do so, but do not try to second-guess yourself. Most of the time your first guess is probably correct.

At the end of each chapter in this study guide we have listed the correct answers to the multiple-choice items. Of course you should not look at them until you have done all of the items. Evaluate your answers against the correct answers. Try to understand why you got certain ones wrong. Use the text to help explain the correct answer. Of course, you should always feel free to ask your instructor for clarification of any points you do not understand.

Fill-in Questions

Multiple-choice items require you to recognize a correct answer. We also include items that require you to recall an answer. Fill-in questions do this better than multiple-choice questions. For each item, provide the word or phrase that best completes the sentence. After doing all the items, check your answers against the correct answers listed at the end of the chapter.

Essay Questions

Term definitions, multiple-choice questions, and fill-in items are good ways to test how well you remember information. They do not, however, help you to integrate information. Essay items do this much better. Because your instructor may require you to do essay items on a exam, we have included five or six essay questions for each chapter. When answering these questions, try to organize your answer carefully. You can know all about a topic, yet still receive a low grade because you did not organize your answer. Take the time to prepare a brief outline (even if only in your mind) for your answer before writing anything down. Then begin to answer the question. Keep in mind that you should focus on the issue central to the question. An essay item is not an invitation to regurgitate everything you can remember. Just answer the question!

Exercising Your Knowledge

Review and study questions are fine ways to help learn about the research process. However, we want you to get some "hands-on" experience with the issues raised in each chapter. The best way to learn about research is to get involved with it. Only then will you see the exciting aspects of the research process. To this end, we have included one or more exercises for each chapter that you can *do on your own.* These exercises do not require that you work in a group (although you could certainly adapt them for a group project). They are things that you can do alone to apply what you have learned and thus gain a deeper understanding of the issues in each chapter.

As you go through the exercises, you will find that some are relatively simple (for example, identifying the appropriate statistic for a given design), whereas others are more involved (for example, conducting a correlational study of the relationship between weather and mood). We urge you to do some, if not all, of these exercises, even though they consume some time. In the end you will have a much better understanding of research issues if you do the exercises than if you do not.

CONTENTS

CHAPTER 1

EXPLAINING BEHAVIOR

KEY QUESTIONS TO CONSIDER

- What are the two steps suggested by Cialdini (1994) for exploring the causes of behavior and how do they relate to explaining behavior?
- What are the main characteristics of a scientific explanation?
- How do scientific and commonsense explanations differ?
- How do belief-based and scientific explanations differ?
- What kinds of questions do scientists refrain from investigating?
- How can faulty inference invalidate a scientific explanation?
- What are pseudoexplanations and how do you avoid them?
- What are the defining characteristics and weaknesses of the method of authority and rational method?
- What is the scientific method and why is it preferred in science?
- What is the difference between a method and a technique?
- How do basic and applied research differ? How are they similar?
- How are the steps of the scientific method applied to answering research questions?

CHAPTER OUTLINE

Exploring the Causes of Behavior
Explaining Behavior
    Scientific Explanations
        Scientific Explanations Are Empirical
        Scientific Explanations Are Rational
        Scientific Explanations Are Testable
        Scientific Explanations Are Parsimonious
        Scientific Explanations Are General
        Scientific Explanations Are Tentative

REVIEW AND STUDY QUESTIONS

Key Term Definition

Define each of the following terms.

Research:

Scientific explanation:

Parsimonious explanation:

Commonsense explanation:

Belief-based explanation:

Pseudoexplanation:

Circular explanation:

Method of authority:

Rational method:

Scientific method:

Variable:

Hypothesis:

Basic research:

Applied research:

Deductive reasoning:

Pilot study:

MULTIPLE-CHOICE QUESTIONS

Circle the alternative that best completes the stem of each question.

1. Scientific explanations are based on objective and systematic observations carried out under carefully controlled conditions. This quality makes scientific explanations
   a. rational.
   b. parsimonious.
   c. empirical.
   d. general.

2. A scientific explanation that is _____ is the least complex, requiring the fewest assumptions.
   a. empirical
   b. parsimonious
   c. general
   d. testable

3. Explanations that are simple and based on the limited information available from a situation observed are
   a. pseudoexplanations.
   b. circular explanations.
   c. commonsense explanations.
   d. authoritative explanations.

4. Scientific explanations differ from nonscientific explanations in that scientific explanations are
   a. less general.
   b. subjected to rigorous research scrutiny.
   c. more likely to be based on hearsay and anecdotal evidence.
   d. both a and b above

5. The "urban apathy" explanation for Kitty Genovese's murder shows that
   a. even scientific explanations sometimes fail.
   b. commonsense explanations do not provide an adequate explanation for observed behavior.
   c. it is difficult to avoid the trap of pseudoexplanations.
   d. none of the above

6. Explanations based on belief
   a. need no evidence to support them.
   b. are often trusted because they seem to fit with the larger framework of belief.
   c. can never be tested empirically.
   d. both a and b
   e. both b and c

7. Scientific explanations sometimes fail because they
   a. sometimes are based on inferring underlying causes from observed events.
   b. are too general.
   c. are too heavily rooted in a flawed belief system.
   d. are difficult to develop into testable hypotheses.

8. When an explanatory concept is nothing more than a new label for an existing phenomenon, we have a(n)
   a. pseudoexplanation.
   b. inferred explanation.
   c. commonsense explanation.
   d. alternative explanation.

9. To avoid the trap of circular explanations, you should
   a. include more than one independent variable in your experiment.
   b. avoid using correlational research designs.
   c. provide independent measures of the behavior of interest and the explanatory concept.
   d. place a higher premium on maintaining internal validity than external validity.

10. After reading about a terrorist attack against a passenger airliner, you go to the library and read about the factors contributing to such behavior. The method of inquiry you are using is the
   a. rational method.
   b. scientific method.
   c. exploratory method.
   d. method of authority.

11. The "rational method" of inquiry is most useful in the early stages of science to
   a. identify potential causal relationships among variables.
   b. develop hypotheses that will be subjected to empirical test.
   c. help you decide which research questions are important and which are not.
   d. none of the above

12. The scientific method of inquiry differs from other methods of inquiry in that the scientific method
   a. requires that hypotheses be tested empirically.
   b. is limited to experimental research.
   c. does not require revision and retesting of hypotheses that are not fully supported.
   d. all of the above

13. Any characteristic or quantity that can take on several different values is a
   a. variable.
   b. constant.
   c. hypothetical value.
   d. none of the above

14. A hypothesis is
   a. a statement of the actual relationship between variables.
   b. a tentative statement about the relationship between variables.
   c. tested only if it is not supported using the method of authority or rational method.
   d. none of the above

15. The point where the scientific method differs from the other methods of inquiry is
   a. initial observation of a phenomenon under real-world conditions.
   b. formulation of tentative explanations for observed phenomena.
   c. further observing and experimenting on an observed phenomenon.
   d. refining and retesting tentative explanations.

16. Imagine that you have conducted an experiment and confirmed your hypothesis. If you were using the scientific method, your next step would probably be to
    a. abandon your line of research and start a whole new research program.
    b. refine your hypothesis and further study the behavior of interest.
    c. do your experiment again because your results were probably in error.
    d. none of the above

17. Research that is conducted to test a purely theoretical issue is termed
    a. applied research.
    b. laboratory research.
    c. basic research.
    d. fundamental research.

18. Dr. Jones conducts an experiment to help a local corporation solve some production problems. This experiment would best be classified as
    a. basic research.
    b. fundamental research.
    c. pilot research.
    d. applied research.

19. The first step in the research process is
    a. choosing a research design.
    b. deciding on which statistics you want to use to analyze your data.
    c. lining up participants for your study.
    d. developing a research idea and hypothesis.

20. Hypothesis development involves deductive reasoning, which is deriving
    a. general laws from specific instances.
    b. general hypotheses from specific theories.
    c. specific hypotheses from specific ideas.
    d. specific hypotheses from general ideas.

Fill-In Questions

Fill in the blanks with the word or phrase that best completes each sentence.

1. A danger of relying on explanations based on everyday observations is that they may _____.

2. A(n) _____ is constantly evaluated for consistency with existing evidence and with known principles.

3. Although we develop explanations for behavior every day, these explanations do not qualify as truly _____.

4. Scientists prefer explanations that have broad explanatory power over those that work only within a limited set of circumstances. This suggests that scientific explanations are _____.

5. A(n) _____ requires no evidence and is assumed to be true.

6. The mythical scientist in the *Motel of the Mysteries* example used in the text developed faulty explanations because he relied on _____ too much.

7. Faulty conclusions may be drawn from research data because researchers fail to consider _____.

8. Using the label "schizophrenia" to "explain" why a person is hallucinating and acting in a bizarre manner is an example of using a(n) _____.

9. Pseudoexplanations can be avoided by providing _____ of the behavior of interest and the explanatory concept.

10. In the _____, you rely on expert sources for answers to questions.

11. The _____ method is the only acceptable method of developing valid scientific explanations.

12. When using the scientific method, the hypothesis that you develop is subjected to _____.

13. An alternative to discarding a disconfirmed hypothesis is to _____ _____

14. In addition to being a method of inquiry, the scientific method is also a(n) _____ _____.

15. Even though we can sometimes classify research as basic or applied, the distinction between these two categories is often _____.

Essay Questions

1. Why is a scientific explanation stronger than a commonsense explanation?

2. Give an example of a pseudoexplanation (other than one provided in the text), and show how the trap of pseudoexplanation can be avoided.

3. What are the critical differences between the nonscientific (for example, the method of authority) methods and the scientific method?

4. Outline and discuss the steps of the scientific method, and indicate why each is so important.

5. Compare and contrast basic and applied research.

6. What steps would you follow if you wanted to design an experiment on a topic that interests you? What are some of the major decisions you would have to make?

EXERCISING YOUR KNOWLEDGE

Developing and Testing Hypotheses

One characteristic of the scientific method is to develop a testable hypothesis. Research is then used to test the validity of that hypothesis. This exercise will give you practice in developing and testing hypotheses. It is based on experiments on concept formation reported by Bruner, Goodnow, and Austin (1956). In a typical concept formation task, a participant is shown an example from a category (for example, a geometric form), and from an array of stimuli the participant must then discover the characteristics of objects constituting a category.

Figure 1-1 shows an array of stimuli used by Bruner et al. in their studies of thought processes. Represented are four dimensions with three variations of each. These are shape of object (circle, square, or cross), color of object (black, white, shaded), number of objects (one, two, or three), and the number of borders surrounding the objects (one, two, or three). Each item ("card") in the array represents an instance of some category. Your task, as outlined next, will be to discover the general rule of class membership.

For this exercise we have thought of three categories. Of course, we are not going to tell you what they are at this point. We will tell you that the following instances in Figure 1-1 are examples of these three categories (referred to by "row, column"; for example, "1, 3" refers to the instance at the intersection of row 1 and column 3 in Figure 1-1):

1. 4, 4
2. 5, 6
3. 5, 9

Take each of these categories one at a time and do the following:

1. Develop a hypothesis about the characteristics of the general category and record your hypothesis.
2. Choose an instance from the array that you think adequately tests your hypothesis.
3. Consult Table 1, 2, or 3 at the back of this manual (depending on which category you are trying to discover) for feedback as to whether your choice is also a member of the category. Do this by looking up your choice in the appropriate row and column of the correct table. For example, if you selected 7, 8 for the first category, then look up row 7, column 8 in Table 1 in

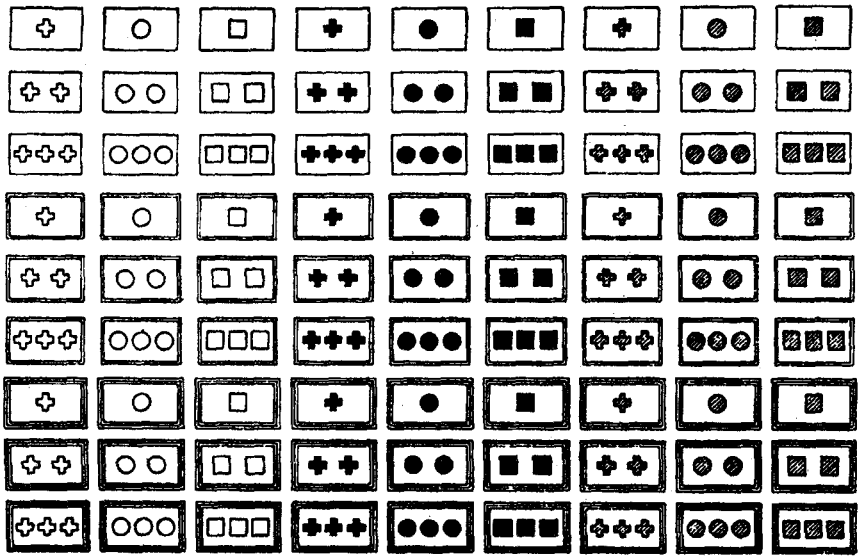

Figure 1-1 Stimuli for hypothesis-testing exercise. Reprinted from Bruner, J., Goodnow, J. J., & Austin, G. A. (1956), *A Study of Thinking* (p. 42). Copyright © 1956 by John Wiley and Sons, New York.

Appendix A. Repeat the process. *IMPORTANT: LOOK ONLY AT THE ROW AND COLUMN RELEVANT TO YOUR PRESENT CHOICE.*

4. Keep a running record of your hypotheses, how they were tested, whether or not your hypotheses are confirmed, and how many choices were required to discover the category. Try to discover the category in the fewest choices possible (the categories themselves are identified on the last page of the Appendix; now, no cheating!).

After you have completed all three of the category problems, you can then evaluate the strategy that you used to discover the category. Bruner, Goodnow, and Austin (1956) define several possible concept formation strategies:

1. *Simultaneous Scanning:* This is the most sophisticated way of testing your hypotheses. With this method the individual uses the information about the first positive card to logically eliminate as many possible rules as possible. Thereafter, choices are used to simultaneously test several hypotheses. Using this strategy leads to the fastest identification of a category. However, it is difficult to use because so much information must be considered at once.
2. *Successive Scanning:* This is the least sophisticated method. With this method one hypothesis is tested at a time. For example, you may have said "all members of the category are black" and tested that hypothesis. After disconfirming that hypothesis you may have moved on to another hypothesis (for example, "all members are circles").

3. *Conservative Focusing:* In this strategy a positive instance is used as a point of focus. Once a positive instance is found, hypothesis evaluation proceeds by changing a single attribute and seeing if the next selection leads to positive or negative feedback. Negative feedback to the change indicates membership in the category. Choices proceed in this fashion until the category is unambiguously identified.

Whereas the major purpose of this demonstration is to get you used to developing and systematically testing hypotheses, it also serves as a lesson in how to formulate the most effective hypotheses and how to test them most effectively. Different strategies for hypothesis testing will be taken up in other chapters of the text and this manual.

Identifying Explanations for Behavior

For a period of one week read your local newspaper and take note of explanations offered for covered events. How would you classify those explanations (for example, scientific, based on belief, and so on)? For each event you evaluate, develop a hypothesis that could be tested with the scientific method.

ANSWERS TO QUESTIONS AND EXERCISES

Multiple-Choice Questions

1. C	6. D	11. B	16. B
2. B	7. A	12. A	17. C
3. C	8. A	13. A	18. D
4. B	9. C	14. B	19. D
5. B	10. D	15. C	20. D

Fill-In Questions

1. become the basis for future actions
2. scientific explanation
3. scientific
4. general
5. belief-based explanation
6. inference
7. alternative explanations
8. pseudoexplanation or circular explanation
9. independent measures
10. method of authority
11. scientific
12. further observing and experimenting
13. revise and retest the hypothesis
14. attitude
15. unclear

CHAPTER 2

DEVELOPING IDEAS FOR RESEARCH

KEY QUESTIONS TO CONSIDER

- How do you use unsystematic and systematic observation to help develop research ideas?
- What makes a research question answerable and important?
- How can a thorough review of the literature help you develop good research questions?
- What is the difference between a primary and secondary source and how should each be used?
- What are the differences between nonrefereed and refereed journal articles?
- How do the major sources of research information differ?
- What are *PsycLit* and the *Psychological Abstracts* used for?
- How can you narrow or broaden a computerized literature search?
- What are the advantages and disadvantages of computer literature searches?
- Why is it important to read a research report critically?
- What rules should you follow when reading a research report critically?
- What should you look for in each section of an APA-style research report?

CHAPTER OUTLINE