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Beginning Behavioral Research

A Conceptual Primer

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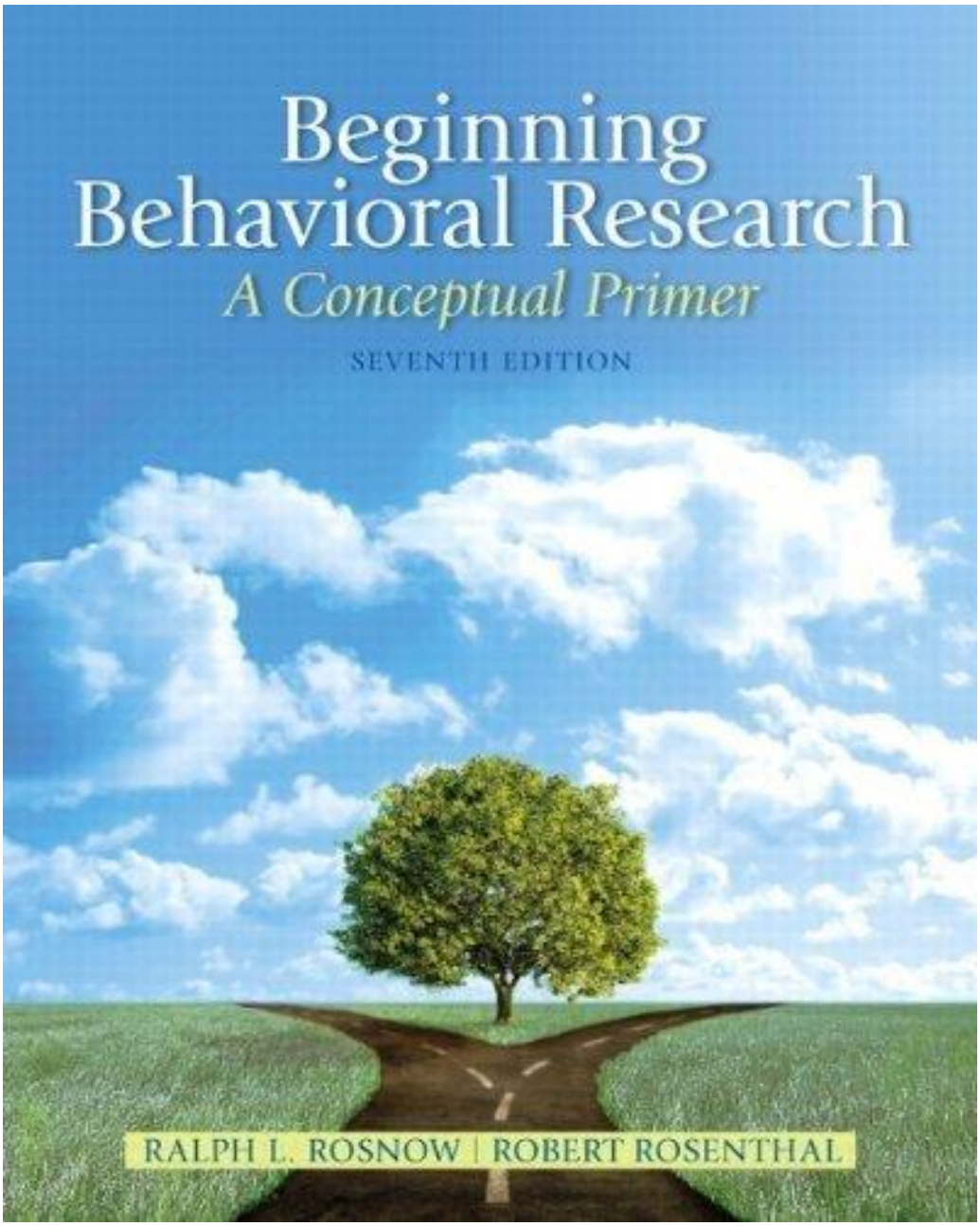
7th Edition



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CHAPTER 1: *BEHAVIORAL RESEARCH AND THE SCIENTIFIC METHOD*

CHAPTER OUTLINE

I. Why Study Research Methods and Data Analysis?
- A. The term "researching" (i.e., exploring a problem systematically) is traditionally called the scientific method in college science courses.
  1. This "method" is used in all scientific fields.
  2. However, its applications vary from one discipline to another.
- B. Why should we know the scientific method or study techniques of research?
  1. We can enhance our understanding of the influence that science has on our lives.
  2. We can learn to differentiate between good science and pseudoscience.
  3. We can acquire information and skills useful in our daily lives.
  4. We can learn about the limits of particular studies and methods.
  5. We may find that studying and doing research can be an exciting career.

II. What Alternatives Are There to the Scientific Method?
- A. Charles Sanders Peirce (1839–1914) described four distinct strategies for formulating strongly held beliefs.
- B. The four strategies for the "fixation of belief."
  1. **Method of tenacity** is clinging stubbornly and mindlessly to claims or beliefs just because they have been around a while.
  2. **Method of authority** is the acceptance of an idea as being valid because someone in a position of power or authority states it.
  3. The **a priori method** is the use of one's individual powers of reason and logic to make sense of the world.
  4. The **scientific method** provides a framework with which to draw on independent realities to evaluate claims.

III. How Do Scientists Use Empirical Reasoning and the Scientific Method?
- A. The scientific method involves the use of **empirical reasoning**.
- B. Empirical reasoning is a combination of logic, carefully organized observation, and measurement.
- C. It is the use of empirical reasoning that all scientists have in common, despite differences in the particular methods of empirical inquiry they may employ.
- D. Empirical reasoning entered into behavioral science during the late nineteenth century when individuals such as Wilhelm Wundt (1832–1920) and William James (1843–1910) began employing the scientific method utilized by physicists and biologists to study psychological behavior.
- E. Francis Galton (1822–1911) demonstrated the application of empirical reasoning to questions thought to lie completely outside of science.

IV. Applications in Behavioral Research

A. Empirical reasoning has been applied to questions about human nature, cognition, perception, and behavior.

B. Stephen J. Ceci and his colleagues employed empirical reasoning to investigate the accuracy of children's eyewitness testimony.

C. Solomon Asch used empirical reasoning to study conformity and the reasons why people go along with certain consensual opinions.

V. How Do Extraempirical Factors Come into Play?

A. Although the scientific method is distinguished by its reliance on the primary use of empirical procedures, extraempirical factors also play an important role in ascertaining what is true.

B. Aesthetic considerations play a part.

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C. Opinions and arguments are articulated in the accepted **rhetoric** (**rhetoric of justification)** of the particular field they represent.

1. Rhetoric includes specialized terms and structure of reporting.
2. Peer-reviewed journals rely upon this rhetoric.

D. Researchers have a penchant for poignant analogies and metaphors for visualizing one thing in terms of another (i.e., **perceptibility**).

VI. What Does Behavioral Research Cover?

A. **Behavioral Research** is an umbrella term that includes covers the use of empirical reasoning (viz., careful logic, organized observation, and measurement) from different methodological vantage points in an effort to understand how and why people act, perceive, feel, and think as they do in a variety of disciplines such as psychologists, behavioral economists, political scientists, sociologists, and cultural anthropologists.

B. The objective of behavioral and social science is to describe and explain how and why humans think, feel, and behave as they do.

C. To develop a more complete and integrated picture of human nature, behavioral and social scientists have come to embrace **methodological pluralism,** which means that by necessity, researchers use different tools and designs (different methods) because each is limited in some way, yet each method represents and reflects a particular perspective on the phenomenon of interest and the multifaceted complexity of human nature.

VII. How Does Research Go From Descriptive to Relational to Experimental?

A. Descriptive conclusions tell us *how things are*.

1. The goal of **descriptive research** is the careful mapping out of a situation or set of events.
2. Causal explanations are not of direct concern except perhaps speculatively.
3. This orientation is often considered a necessary first step in the development of a program of research because it establishes the logical and empirical foundation of any future undertaking.

4. Descriptive research is rarely regarded as sufficient as it does not allow one to address questions concerning why something happens or how what happens is related to other events.

B. Relational (or "correlational") conclusions tell us *how things are in relation to other things*.
1. Relational (or correlational) research involves measuring and relating two or more variables or conditions.
2. Based on coordinated observations, one should be able to make a quantitative statement concerning the relationship, or correlation, between the variable of interest.
a. Are *X* and *Y* significantly related?
b. What is the pattern of the relationship (e.g., linear or nonlinear)?
c. What is the strength of the relationship?

C. Experimental conclusions tell us *how things are and how they got to be that way*.
1. The objective is the identification of causes (i.e., what leads to what) through the manipulation of conditions thought to be responsible for the effect.
2. Relational research rarely provides causal explanations, and then only under very special circumstances.

VIII. What are the Characteristics of Good Researchers?

A. Enthusiasm
B. Open-mindedness
C. Common sense
D. Role-taking ability
E. Creativity and inventiveness
F. Confidence in one's own judgment
G. Ability to communicate
H. Care about details
I. Integrity and honest scholarship

LECTURE IDEAS AND ACTIVITIES

1. To demonstrate the pervasiveness of science in modern society as well as the utility of understanding the process of science, assemble a collection of articles that report on recent scientific findings. The science section of the Tuesday *New York Times* is particularly useful for finding such articles (http://www.nytimes.com). Another Internet resource is *Science Daily* (http://www.sciencedaily.com). Discuss the findings reported in these articles, emphasizing how an understanding of the scientific process can help one better evaluate or question the findings or conclusions reported in the media.

2. Jacobson, Mulick, and Schwartz (1995) discuss how the reliance on pseudoscientific findings has led to the acceptance by professionals of some therapeutic treatments that appear to have negligible, if any, benefit for the afflicted individual. Jacobson et al. argue that one example of the reliance on pseudoscientific research practices to establish the efficacy of a therapeutic

intervention is the controversial case of facilitated communication. Jacobson et al. describe the disparity between the controlled, scientific research studies that have found very little, if any, support for this type of intervention with autistic individuals and its unquestioned acceptance by its proponents. Jacobson et al. discuss possible reasons why proponents of facilitated communication have rejected sound scientific practices in favor of practices that can be described as representing pseudoscience. Not surprisingly, this article sparked debate concerning whether scientific practices can really establish the efficacy of facilitated communication (e.g., Allen & Allen, 1996; Biklen, 1996; Fernald, 1996; Jacobson et al., 1996; Knox, 1996). You might want to assign these articles and have your students debate the criteria that one should use to establish the effectiveness of a treatment intervention. You may also want to discuss whether treatments that have become popular based solely on pseudoscientific evidence are really that detrimental to society as a whole or to the individuals they are intended to help. In other words, is it always necessary to establish the efficacy of a treatment intervention using practices that can be characterized as "good science"?

Allen, B., & Allen, S. (1996). Can the scientific method be applied to human interaction? *American Psychologist, 51,* 986.

Biklen, D. (1996). Learning from the experiences of people with disabilities. *American Psychologist, 51,* 985–986.

Fernald, D. (1996). Tapping too softly. *American Psychologist, 51,* 988.

Jacobson, J. W., Mulick, J. A., & Schwartz, A. A. (1995). A history of facilitated Communication: Science, pseudoscience, and antiscience. *American Psychologist, 50,* 750-765.

Jacobson, J. W., Mulick, J. A., & Schwartz, A. A. (1996). If a tree falls in the woods... *American Psychologist, 51,* 988–989.

Knox, L. A. (1996). The facilitated communication witch-hunt. *American Psychologist, 51,* 986–987.

3. More information on the life of Charles Sanders Peirce as well as hypertext versions of his writings are available at a website dedicated to this American philosopher (http://www.peirce.org).

4. Before discussing Peirce's methods of "fixing belief," have students write down five things they believe to be true. Once they have completed their lists, have each student share his or her list with another student. As one student reads each "truth" from his or her list, the student's partner should simply ask, "Why do you believe that this is true?" to each item, recording the student's response. As a class, discuss the nature of the arguments that were used to fend off the challenges to the veracity of the student's beliefs. This exercise easily leads into a discussion of Peirce's methods of "fixing belief." You may want to categorize the types of arguments the students used to justify the veracity of their beliefs using Peirce's four methods of fixing belief.

5. To help students to critically consider the underlying foundation of claims of veracity, you might incorporate the following writing assignment into discussion of Peirce's methods of