

METHODS IN BEHAVIORAL RESEARCH

SEVENTH EDITION



PAUL C. COZBY

Methods in Behavioral Research

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PAUL C. COZBY

California State University, Fullerton



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Preface

Teaching and learning about research methods are both challenging and a great deal of fun. This new edition of *Methods in Behavioral Research* maintains the features of previous editions that have been appreciated by both instructors and students. Clear communication of concepts is my highest priority. I have tried to present material clearly and use interesting examples. I have also tried to enhance learning by describing many important concepts in several contexts throughout the book; research shows that redundancy aids understanding. I have also emphasized the need to study behavior using a variety of research approaches. An outline precedes each chapter; study terms and review and activity questions appear at the end of each chapter. Important terms are bold-faced in the text and defined in the glossary.

RESOURCES

A Web site devoted to learning about research methods is maintained at **www.mayfieldpub.com/cozby**. This site provides an easy way to obtain more information about the topics presented in the text through resources available on the World Wide Web. An Instructor's Manual contains many student activities and assignments as well as exam questions.

ORGANIZATION

The organization generally follows the sequence of planning and conducting a research investigation. However, the chapters are relatively independent to provide instructors maximum flexibility in assigning the order of chapters. For example, chapters on research ethics and nonexperimental research methods are presented early in the book, but instructors who wish to present this material later in a course can easily do so.

Chapter 1 gives an overview of the scientific approach to knowledge and distinguishes between basic and applied research. Chapter 2 discusses sources of ideas for research and the importance of library research. Chapter 3 focuses on research ethics; ethical issues are covered in depth here and emphasized throughout the book. Chapter 4 examines psychological variables and the

distinction between experimental and nonexperimental approaches to studying relationships among variables. Chapter 5 is a new chapter that focuses on measurement issues, including reliability and validity. Nonexperimental research approaches, including naturalistic observation, cases studies, and content analysis, are described in Chapter 6. Chapter 7 is a new chapter that covers sampling as well as the design of questionnaires and interviews. Chapters 8 and 9 present the basics of designing and conducting experiments. Factorial designs are emphasized in Chapter 10. Chapter 11 discusses the advantages and disadvantages of quasi-experimental, single-subject, and developmental research designs. Chapters 12 and 13 focus on the use of statistics to understand research results. Finally, Chapter 14 discusses generalization issues, meta-analyses, and the importance of replications. Appendices on writing research reports, conducting statistical analyses, and constructing Latin squares are included as well.

NEW TO THIS EDITION

This edition has incorporated many changes suggested by users of previous editions. Information on questionnaires and self-report measures is included in a separate chapter, and there is more material providing students with specific information that they can use to construct their own measures. Measurement concepts are discussed in a single chapter, reflecting both the importance of this topic and instructors' desire to have greater flexibility in deciding when to introduce this information in their classes. I have also simply referred to the correlational method as the nonexperimental method for assessing relationships between variables. There is also new material on graphing and effect size estimates in the discussion of statistics. Issues relating to the use of computers and the Internet have been integrated into the book—for example, computer control of experimental stimuli, computer-based literature searches, and citing Web sites in research papers.

ACKNOWLEDGMENTS

Many individuals helped to produce this and previous editions of this book. Franklin Graham at Mayfield Publishing Company has been a wonderful editor and friend. Thanks go to Helen Walden for editing the manuscript and Melanie Field for production management. Mitch Okada did a wonderful job updating the Instructor's Manual. I am extremely grateful for the input I have received from numerous students and instructors, and I particularly thank the following individuals who provided detailed reviews for this edition: Bernardo J. Carducci, Indiana University Southeast; Monica J. Harris, University of Kentucky; Constance Jones, California State University, Fresno; Kristen J. Klaaren, Randolph-Macon College; Charles S. Reichardt, University of Denver; Jeffrey N. Swartwood,

State University of New York-Cortland; and Stephen W. Tuholski, Southern Illinois University-Edwardsville.

On a personal note, I would like to thank the people in my life who have helped in numerous ways in producing the book: Jeanne King, Josh Cozby, Brisco Cozby, David Coolidge, Tracy Murphy, David Perkins, Greg Robinson, Claire Palmerino, Dan Kee, Kathy Brown, Frank Bagrash, William Smith, Stan Woll, Penny Fidler, Dennis Berg, Kim Shattuck, Roy McDonald, Ronnie Barnett, and Lisa Marr. Finally, I would like to dedicate this edition to the memory of Alden Paine, a wonderful gentleman who encouraged me, many years ago, to write a book on research methods for Mayfield Publishing Company. Alden passed away in 1997 and is fondly remembered by the many people whose lives he touched.

I am always interested in receiving comments and suggestions from students and instructors. Please send e-mail to cozby@fullerton.edu, or use my postal address: Department of Psychology, Box 6834, California State University, Fullerton, CA 92834-6834.

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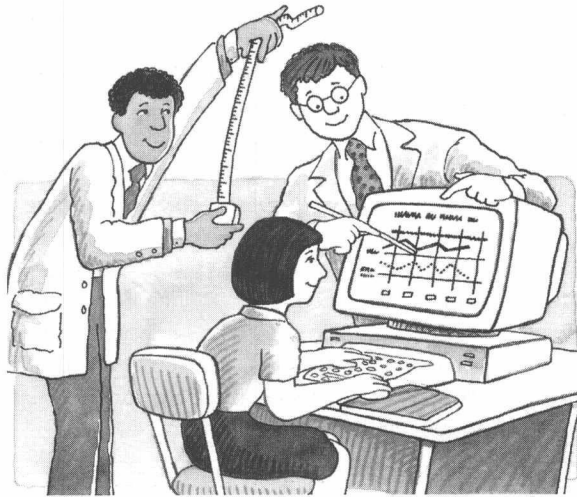
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Scientific Understanding of Behavior

- **Uses of Research Methods**

- **The Scientific Approach**

The Limitations of Intuition and Authority

Authority

Skepticism, Science, and the Empirical Approach

Integrating Intuition, Skepticism, and Authority

- **Goals of Science**

Description of Behavior

Prediction of Behavior

Determining the Causes of Behavior

Explanation of Behavior

- **Basic and Applied Research**

Basic Research

Applied Research

Comparing Basic and Applied Research

Study Terms

Review Questions

Activity Questions

What are the causes of aggression and violence? How do we remember things, what causes us to forget, and how can memory be improved? What are the effects of stressful environments on health and social interaction? How do early childhood experiences affect later development? What are the best ways to treat depression? How can we reduce prejudice and intergroup conflict? Curiosity about questions such as these is probably the most important reason that many students decide to take courses in the behavioral sciences. Scientific research provides us with a means of addressing such questions and providing answers. In this book, we will examine the methods of scientific research in the behavioral sciences. In this introductory chapter, we will focus on ways in which a knowledge of research methods can be useful in understanding the world around us. Further, we will review the characteristics of a scientific approach to the study of behavior and the general types of research questions that concern behavioral scientists.

USES OF RESEARCH METHODS

Informed citizens in our society increasingly need knowledge of research methods. Daily newspapers, general-interest magazines, and other media are continually reporting research results: "Type A Personalities More Likely to Suffer From Heart Attacks" or "Smoking Linked to Poor Grades." Articles and books make claims about the beneficial or harmful effects of particular diets or vitamins on one's sex life, personality, or health. Survey results are frequently reported that draw conclusions about how we feel about a variety of topics. How do you evaluate such reports? Do you simply accept the findings because they are supposed to be scientific? A background in research methods will help you to read these reports critically, evaluate the methods employed, and decide whether the conclusions are reasonable.

Many occupations require the use of research findings. For example, mental health professionals must make decisions about treatment methods, assignment of clients to different types of facilities, medications, and testing procedures. Such decisions are made on the basis of research; to make good decisions, the mental health professional must be able to read the research conducted by others and judge its adequacy and relevance for the particular setting in which he or she works. Similarly, people who work in business environments frequently rely on research to make decisions about marketing strategies, ways of improving employee productivity and morale, and methods of selecting and training new employees. Educators must keep up with research on topics such as the effectiveness of different teaching strategies or programs to deal with special student problems. Knowledge of research methods and the ability to evaluate research reports are useful in many fields.

It is also important to recognize that scientific research has become increasingly important in public policy decisions. Legislators and political leaders at all levels of government frequently take political positions and propose legislation

based on research findings. Research may also influence judicial decisions: A prime example of this is the *Social Science Brief* that was prepared by psychologists and accepted as evidence in the landmark 1954 case of *Brown v. Board of Education*, in which the U.S. Supreme Court banned school segregation in the United States. One of the studies cited in the brief was conducted by Clark and Clark (1947). The study found that, when allowed to choose between light-skinned and dark-skinned dolls, both Black and White children preferred to play with the light-skinned dolls. (See Stephan, 1983, for a further discussion of the implications of this study.) Legislation and public opinion regarding the availability of pornographic materials have been informed by behavioral research investigations of this topic (see, for example, Koop, 1987; Linz, Donnerstein, & Penrod, 1987), and psychological research on sex stereotyping greatly influenced the outcome of a Supreme Court decision on sex discrimination by employers (Fiske, Bersoff, Borgida, Deaux, & Heilman, 1991). Research is also important when pilot developing and assessing the effectiveness of programs designed to achieve certain goals—for example, to increase retention of students in school or to influence people to engage in behaviors that reduce their risk of contracting HIV. If successful, such programs may be implemented on a large scale. The fact that so many policy decisions and political positions are based on research makes knowledge of research methods particularly important for all of us as informed citizens who must ultimately evaluate the policies at the voting booth.

THE SCIENTIFIC APPROACH

We opened this chapter with several questions about human behavior and suggested that scientific research is a valuable means of answering them. How does the scientific approach differ from other ways of learning about behavior? People have always observed the world around them and sought explanations for what they see and experience. However, instead of using a scientific approach, many people rely on intuition and authority as ways of knowing.

The Limitations of Intuition and Authority

Most of us either know or have heard about a married couple who, after years of trying to conceive, adopts a child. Then, within a very short period of time, the couple finds that the woman is pregnant. This observation leads to a common belief that adoption increases the likelihood of pregnancy among couples who are having difficulties conceiving a child. Such a conclusion seems intuitively reasonable, and people usually have an explanation for this effect; for example, the adoption reduces a major source of marital stress, and the stress reduction in turn increases the chances of conception (see Gilovich, 1991).

This example illustrates the use of intuition and anecdotal evidence to draw general conclusions about the world around us. When you rely on intuition, you accept unquestioningly what your own personal judgment or a single story

about one person's experience tells you about the world. The intuitive approach takes many forms. Often, it involves finding an explanation for our own behaviors or the behaviors of others. For example, you might develop an explanation for why you keep having conflicts with a co-worker, such as "that other person wants my job" or "having to share a telephone puts us in a conflict situation." Other times, intuition is used to explain intriguing events that you observe, as in the case of concluding that adoption increases the chances of conception among couples having difficulty conceiving a child.

A problem with intuition is that numerous cognitive and motivational biases affect our perceptions, and so we may draw erroneous conclusions about cause and effect (cf. Fiske & Taylor, 1984; Gilovich, 1991; Nisbett & Ross, 1980; Nisbett & Wilson, 1977). Gilovich points out that there is in fact no relationship between adoption and subsequent pregnancy according to scientific research investigations. Then why do we hold this belief? Most likely it is because of a cognitive bias called *illusory correlation* that occurs when we focus on two events that stand out and occur together. When an adoption is closely followed by a pregnancy, our attention is drawn to the situation, and we are biased to conclude that there must be a causal connection. Such illusory correlations are also likely to occur when we are highly motivated to believe in the causal relationship. Although this is a natural thing for us to do, it is not scientific. A scientific approach requires much more proof before drawing conclusions.

Authority

The philosopher Aristotle was concerned with the factors associated with persuasion or attitude change. In his *Rhetoric*, Aristotle describes the relationship between persuasion and credibility: "Persuasion is achieved by the speaker's personal character when the speech is so spoken as to make us think him credible. We believe good men more fully and readily than others." Thus, Aristotle would argue that we are more likely to be persuaded by a speaker who seems prestigious, trustworthy, and respectable than by one who lacks such qualities.

Many of us might accept Aristotle's arguments simply because he is considered a prestigious "authority" and his writings remain important. Similarly, many people are all too ready to accept anything they learn from the news media, books, government officials, or religious figures. They believe that the statements of such authorities must be true. The problem, of course, is that the statements may not be true. The scientific approach rejects the notion that one can accept on faith the statements of any authority; again, more proof is needed before we can draw scientific conclusions.

Skepticism, Science, and the Empirical Approach

The scientific approach to knowledge recognizes that both intuition and authority are sources of ideas about behavior. However, scientists do not unquestioningly accept anyone's intuitions—including their own. Scientists recognize