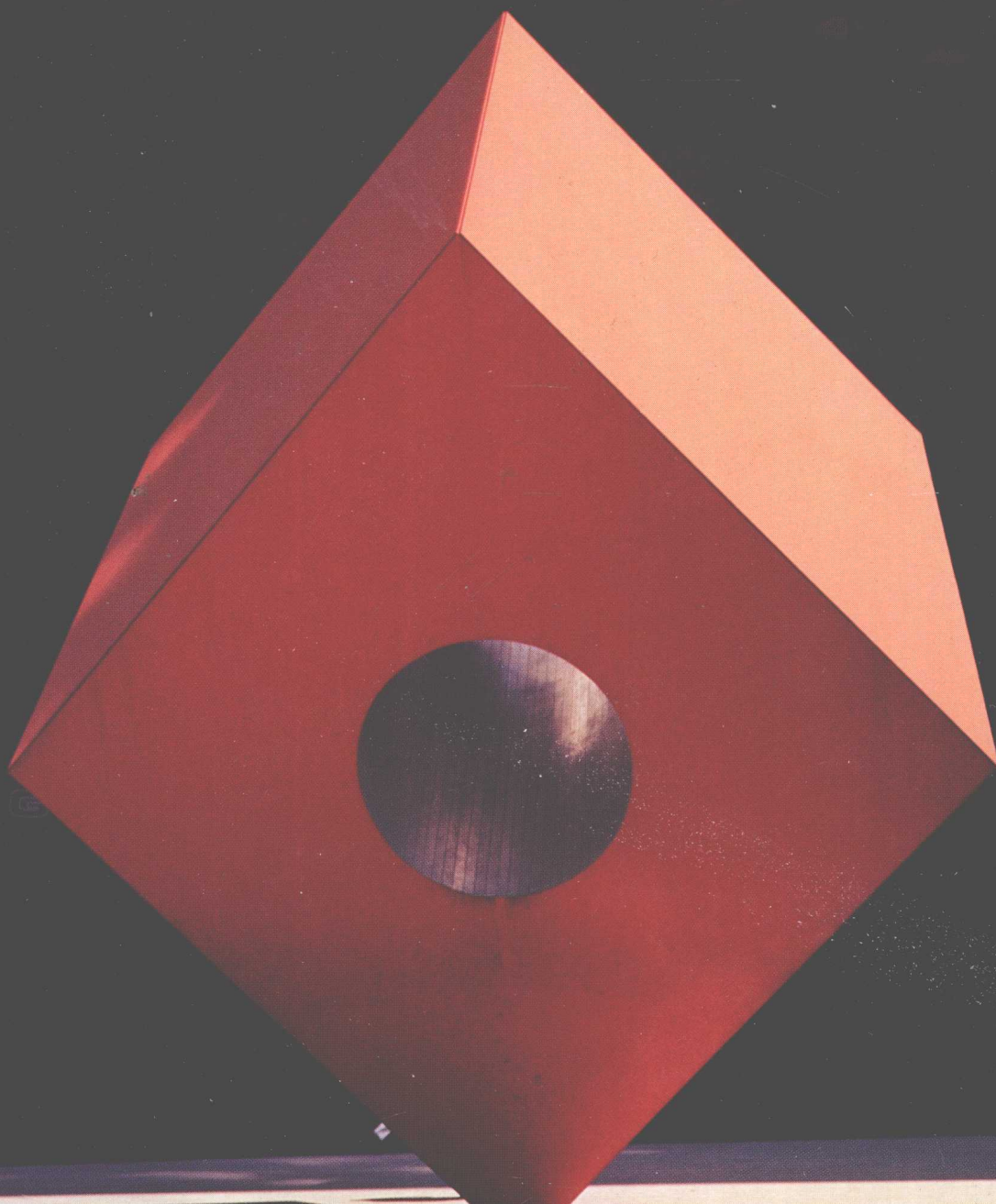


Research Design and Methods

A PROCESS APPROACH

Kenneth S. Bordens / Bruce B. Abbott



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Research Design and Methods: A Process Approach

Indiana University — Purdue University
at Fort Wayne

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*We dedicate this book to the memory of Dr. Daniel P. Murphy,
colleague, friend, and teacher.*

Preface

The research methods course that most psychology majors are required to take is a challenge for both students and the instructor. The challenge for students is to deal with concepts that are alien and try to understand a new way of looking at the world. The challenge for the instructor is to ensure not only that students understand the concepts important to research, but also that they can apply them to the conduct and evaluation of research. Unfortunately, many research methods texts do precious little to teach students how research is actually done. Although students may come away with a knowledge about different research designs and methods, they may not fully understand the nuances involved in developing a successful research study.

The goal of our text, *Research Design and Methods: A Process Approach*, is to provide a step-by-step guide to designing, conducting, reporting, and evaluating psychological research. At each step, students are given the information they need to evaluate the options at their disposal and carry out the step. The text takes students from the elementary concepts of scientific research to some fairly advanced topics while maintaining a relaxed and readable style.

We have made the text complete enough to serve the needs of different instructors, course formats, and levels. Many of the chapters can be assigned or omitted as desired without affecting the continuity of the text. Instructors wishing to focus on experimental methods, for example, could omit Chapters 6 and 7. Chapters 11 and 12 provide a review of descriptive and inferential statistics that could be omitted if students already have a strong background in these areas. (We find, however, that our own students benefit from the review.) For courses where more advanced material is suitable, the instructor could include the chapters in Part IV. Part IV provides chapters on multivariate design and analysis (a brief survey of the techniques available and their uses), theory construction and use, and topics related to biases affecting the published research literature.

We have included expanded discussions of topics given cursory treatment in many research methods texts. For example, Chapters 6 and 7 include

material on nonexperimental designs, quasi-experimental designs, and questionnaire construction and administration; whereas Chapter 13 shows how to use computers to analyze data, with illustrations for *SPSS-X*, *SAS*, *BMD-P*, and a commercial package for use on personal computers.

Even in the more “traditional chapters” we have included expanded discussions of topics, supported with interesting examples. In Chapter 2, for example, we give detailed instructions for using the *Psychological Abstracts* and *Social Science Citations Index*, and briefly describe how to use *Index Medicus* and on-line computer searches. Our coverage of ethical issues in Chapter 5 traces the origins of the APA ethical principles to the Nazi war crimes trials at Nuremberg after the close of World War II, and in Chapter 10 we detail the origins and history of the single-subject design in psychology. In Chapter 14 we go beyond simply describing APA writing style and providing a sample paper. We have also explored the structure of an APA-style manuscript and given some tips on how to write clearly.

Several features of the text help students organize and understand the material presented. Each chapter ends with a list of key terms. Within each chapter, each key term is identified in boldface type and defined. We have made liberal use of examples from the research literature to illustrate many of the concepts and techniques discussed. We have also included numerous figures and tables to help students understand textual material.

In addition to the learning aids included in the text, we have developed an extensive ancillary package. A student workbook includes review questions for each chapter along with “hands-on” exercises for students to do. We have also provided a set of classroom-tested research projects that students can conduct to gain experience with various research designs. In addition, we have developed an easy-to-use statistical package for the personal computer that students can use to analyze their data.

A project such as this requires the help of many people. We thank all those who contributed their time and talent, although we can name here only a few. Our reviewers offered many helpful suggestions for improving the manuscript. If the book still has flaws it is because we failed to implement them all. Our appreciation for this advice goes to Helen J. Crawford, University of Wyoming; Arthur D. Fisk, University of South Carolina; Daniel Leger, University of Nebraska; Beth A. Shapiro, Emory University; Robert F. Smith, George Mason University; Michael S. Wogalter, University of Richmond; and Barbara Tabachnick of California State University, Northridge for her excellent review of Chapter 15. We would also like to thank our colleague Elaine Blakemore for her input into Chapter 6; and Irwin Horowitz for his advice and support. Our thanks go also to Franklin C. Graham, Sponsoring Editor at Mayfield Publishing, for providing encouragement and prodding, both of which were necessary; and to all the others at Mayfield Publishing and Business Media Resources who contributed to this text.

Our thanks go to our wives, Ricky Karen Bordens and Stephanie Abbott, and our families for their support and encouragement. They put up with seeing very little of us but the backs of our heads this past year as we hunched over our keyboards and stared at our computer screens while waiting for the muses to speak.

KENNETH S. BORDENS
BRUCE B. ABBOTT

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P A R T I

GENERAL PRINCIPLES OF RESEARCH DESIGN

C H A P T E R 1

Studying Behavior

If you are like most people, you often find yourself wondering about the causes of behavior you see occurring around you. You may ask, “Why is that student arguing with her professor?” or “Why did those terrorists blow up that plane?” or “Why did the cat disappear for two weeks last spring?” As we attempt to formulate explanations based on the information at our disposal, we behave much as scientists do. As a matter of fact, Kelly (1963) characterized each person as a scientist who has developed a set of strategies for determining the causes of observed behavior.

Although Kelly characterized people as scientists, these everyday strategies frequently lack the rigor to qualify as truly scientific. In most cases the explanations developed for behaviors observed in everyday life are made on the spot with little thought to accuracy. We commonly develop an explanation and then, satisfied that the explanation makes sense, simply adopt it with no further thought. Or, if we do give more thought to our explanations, we often base our thinking on hearsay, conjecture, anecdotal evidence, or unverified sources of information. Although our everyday explanations may serve to reduce transient curiosity about a behavior, they remain untested conjectures.

Accepted as fact, such conjectures may become the bases for future actions. For example, you may conclude that a person angrily stomping out of a room has a nasty personality, although in reality this is not the case. This negative impression may lead you to refuse a social invitation from that person. Perhaps you find out that the two of you had much in common and could have become good friends. In a real sense, you have been victimized by a faulty explanation.

Unfounded, but commonly accepted, explanations for behavior can have widespread consequences when the explanations become the basis for social policy. For example, segregation of blacks in the South was based on stereotypes of assumed racial differences in intelligence and moral judgment. These beliefs sound ludicrous today, and have failed to survive a scientific

analysis. These mistakes may have been avoided if lawmakers of the time had relied on objective information rather than prejudice.

To avoid the trap of easy, untested explanations for behavior, we need to abandon the informal, unsystematic approach to explanation and to adopt an approach that has proven its ability to find explanations of great power and generality. This approach, called the scientific method, and how you can apply it to answer questions about behavior are the central topics of this book.

This book is about the research process. In a broader sense it is about the business of finding unambiguous explanations for behavior. This text describes how to develop scientifically testable research questions about behavior, how to develop and use acceptable methods of observation by using appropriate research designs, how to properly analyze and interpret the resulting data, and how to use these results to arrive at scientifically acceptable explanations.

Whether or not you intend to pursue a career in psychological research, these concepts will be among the more important and useful information that you take with you when you leave college. The complex world of today constantly demands that you evaluate information and draw valid conclusions from it. If you know how to proceed on a scientific basis, you will be in a much better position to deal with such information and to evaluate the conclusions and explanations of others.

Explaining Behavior

Psychology is the science of behavior. The goal of any science is to provide valid and reliable explanations for observed behavior and to build a body of knowledge about that behavior. In order to accomplish this, the scientist attempts to uncover **scientific explanations** for behavior. The next sections contrast scientific explanations with common-sense explanations, and with explanations based on belief and faith.

Common-sense Versus Scientific Explanations

In our everyday lives we develop rather simplistic explanations for observed behaviors. These explanations are based largely on the limited information available from the observed situation. We then develop an explanation for that behavior based on what we assume to be true. For example, after reading about a woman who was raped while thirty five witnesses watched, you might conclude that “urban apathy” was the cause. These explanations we develop on a day-to-day basis are **common-sense explanations**.

Three important differences exist between common-sense explanations and scientific explanations. First, common-sense explanations usually are developed based on casual observations of behavior, conjecture, hearsay, anecdotal evidence, or a combination of all of these. In contrast, scientific explanations are based on carefully made observations of behavior. Scientists determine in advance of the observation what aspects of behavior will be observed, under what conditions, and how these aspects will be measured.

The second difference is that scientific explanations are subjected to testing against plausible alternatives. The angry person observed stomping out of the