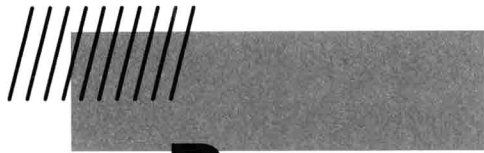


GARY W. HEIMAN

**RESEARCH
METHODS**

IN PSYCHOLOGY

**Incorporates changes from
the Fourth Edition of the APA Publication Manual,
including a sample manuscript.**



Research Methods in Psychology

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PREFACE

As is usually the case, the impetus for writing this book was frustration with existing textbooks. After teaching introductory research methods for more years than I care to admit, I could not find a methods book whose style and organization satisfied the demands of the course.

Methods courses tend to have formidable goals. Instructors want students to (1) understand the terminology, logic, and procedures used in research; (2) integrate statistical procedures with research methods; (3) develop critical thinking skills regarding research; and (4) gain the capacity to design and conduct research and write APA-style reports. At the same time, students often have little background in psychological research, have little interest in conducting research, and are usually unsure of the purposes of statistical procedures. Further, students are not proficient in the critical thinking skills needed to evaluate research and are not proficient in the communication skills necessary for clear scientific writing. I have attempted to create a textbook that recognizes students' initial weaknesses, but which brings students within reach of the level of sophisticated understanding of psychological research that most instructors seek.

I recognize that a methods course often requires a laboratory component. Labs, however, pose the following problem: Students must have some knowledge of methods for lab exercises to be meaningful, but the benefits of lab exercises are minimal if students cannot conduct them until late in the semester. Therefore, an instructor often feels pressure to tell students everything they need to know of lab techniques up front, frequently skipping around to different portions of the text. To prevent this, I have written a text that gets students into the lab early in the course. (I envision students completing their first laboratory study in concert with Chapters 3 and 4.)

But the text is written so that it is also appropriate for a course that does not have a lab component. Some texts essentially train future graduate-level researchers, presenting the details of very involved and often esoteric techniques. Others depict methods as an abstract academic discipline, incorporating elaborate histories of methodological developments with copious citations that bury the application of concepts. I have chosen a middle ground, with the goal of leaving both those students who are graduate-school-bound and those who are not with a solid understanding of the basic and common designs found in psychological research. I focus on the decisions and conclusions that a researcher makes in order to engage students.

Students often have difficulty not only understanding the basic concepts, but integrating them, applying them in different contexts, and sometimes simply remembering what a term conveys. I have therefore attempted to write a textbook that teaches the material actively. This book (1) presents the concepts, procedures and evaluation of research in an organized manner, (2) provides an integrated review and discussion of statistics with methods, (3) reviews terminology and concepts frequently, especially as they are reintroduced in new settings, and (4) fosters understanding through application to specific examples. I have tried to anticipate and alleviate students' confusion over terminology,

recognizing that an introductory methods course is in part a language course and that achieving literacy requires practice.

Finally, teaching “critical thinking” is not easy. Often, textbook discussions end abruptly, just prior to answering the question “So what?” I have tried to include the “so what” of research methods by pointing out the logical ramifications behind each issue and providing critical analysis. This, together with an eye to integrating the various concepts and providing a researcher’s perspective, have led me to focus on the *process* of designing and conducting research.

Organization

The chapter organization of this textbook departs from the typical introductory research methods textbook in three significant ways.

First, the text uses a “top-down” approach that stresses context and the interrelatedness of topics. To give students a background for thinking scientifically and enable them to begin conducting lab exercises, Part I provides an overview of the general, conceptual, design, and statistical issues in the research process. It is a somewhat bare-bones discussion. The goal is to provide a general context for all research designs that is centered on the common goal of demonstrating relationships. Students should understand a few simple sample studies and begin thinking about major design issues. To this end, Chapter 1 introduces the goals of research, the basics of the scientific method, and the logic of research, using simple, everyday examples. Chapter 2 presents the conceptual issues in research, identifying the major design and interpretive concerns by examining one initially unsound sample study of the kind students beginning in research are likely to create. Chapter 3 provides a nonthreatening conceptual review of the role of statistics in research. It describes how the major procedures would be applied to one research example and how design issues influence statistical outcomes through their impact on power. Chapter 4 provides an overview of the major issues within the context of using APA-format as a way to organize one’s thinking about research. (A complete sample APA-style report is provided in Appendix C.) Chapters in Parts II and III then revisit these issues, providing more refined and detailed discussions.

A second departure from the typical methods textbook is that such topics as confounding, demand characteristics, and between- and within-subjects designs are not dealt with in separate chapters, and there are no separate ethics or statistics ghettos. In “real” research, these issues arise within the context of the variables, procedures, and subjects to be studied. Part II therefore discusses design, control, statistical, and ethical issues as they arise in each step of designing an experiment. Chapter 5 presents the selecting and designing of independent variables. Chapter 6 discusses the decisions involved when developing the dependent variable, including how a variable leads to parametric and non-parametric statistics. Chapter 7 presents the issues of controlling subject variables and introduces within-subjects designs. Chapter 8 discusses creating studies that investigate multiple independent variables, introducing multifactor statistical analyses and other advanced statistical techniques. (The computational formulas and critical values tables for common statistical procedures are presented in Appendixes A and B.)

A final departure from the norm is that the text focuses on the design of laboratory

experiments as early as Part II. By gaining an understanding of the basics of highly controlled experiments, students acquire the background necessary for understanding the strengths and weaknesses of other procedures, described in Part III. Further, since experiments are often complex and difficult to design, investigating them early on leaves much of the semester for students to practice designing and reporting them in their lab exercises. Then, in Part III, Chapter 9 presents correlational designs, including questionnaire development and a brief discussion of advanced correlational statistics. Chapter 10 discusses field experiments, single-subject designs, and animal research. Chapter 11 presents quasi-experiments, survey techniques, and observational/descriptive methods. Relevant design, ethical, and statistical issues are integrated with these chapters as well.

The final chapter, Chapter 12, is unique in that it is a review chapter that allows students to apply and integrate the issues previously discussed. It consists of a series of research problems in which students answer structured questions concerning design, evaluation, and interpretation.

Pedagogical Features

Rather than present a laundry list of the components and characteristics of various research approaches, I have attempted to teach methods (and statistical applications) in an integrated, cohesive manner. I introduce new terms and concepts as they are needed and refer back to previous concepts as they reappear. A conceptual/intuitive discussion of statistical procedures is woven throughout the text, which focuses on how statistics are used by researchers to answer their questions.

Several themes recur throughout the text. Reliability and validity appear repeatedly as the basis for making decisions among various design options. The interaction between statistics and design is present in the recurring concerns of demonstrating relationships and maximizing statistical power. Basic issues such as confounding, demand characteristics, and counterbalancing are also addressed repeatedly. Revisiting these issues in their different contexts allows students to retain and integrate the basic concepts. My intent is that students should understand that the nature of a research question and the goals of the researcher dictate the design. The design has strengths and weaknesses, which in turn dictate the interpretation of results.

All concepts are presented within the context of example studies. When introducing a general technique, I cite a number of different examples so that students gain an appreciation of the variety and scope of the technique. I then present the material in a chapter using one or two detailed example studies. Throughout, I have sought simple, easily understood examples, avoiding unnecessarily sophisticated studies that are beyond the student's psychology background and that might obscure the illustrative purpose of the example. I have also attempted to select interesting examples that convey the elegance and challenge of research that students can easily replicate as class projects.

Each chapter ends with a summary and review. Student review questions, as well as discussion questions for use in class, are also provided. At least one question dealing with ethics is included in each chapter. Answers to review questions and suggested directions for discussion questions are provided in the Instructor's Manual.

The Instructor's Manual also contains a test item file of thirty-five to forty multiple-choice questions and five short-answer questions per chapter as well as several supplementary discussion questions. The complete *Instructor's Manual with Test Items* is available both in print and on disk.

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