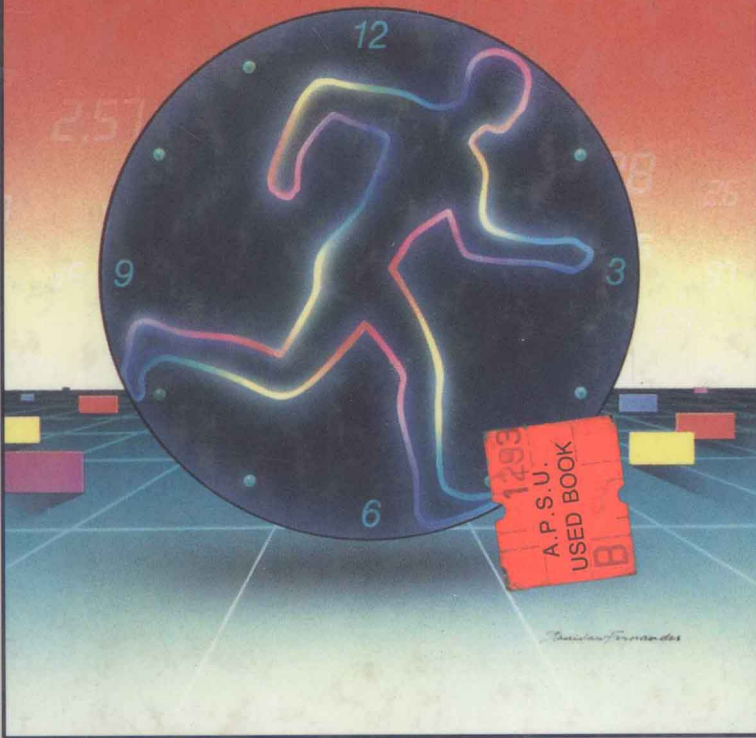


FOURTH EDITION



DAVID G. ELMES  
BARRY H. KANTOWITZ  
HENRY L. ROEDIGER III

# RESEARCH METHODS IN PSYCHOLOGY



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Fourth Edition

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# RESEARCH METHODS IN PSYCHOLOGY

Fourth Edition

**David G. Elmes**  
Washington and Lee University

**Barry H. Kantowitz**  
Battelle Memorial Institute

**Henry L. Roediger III**  
Rice University

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# PREFACE

Presenting you with the fourth edition of a book first published in 1981 gives us great pleasure. The acceptance by earlier readers has allowed us to prepare this new version, which we hope you find rewarding. As with the other editions, the purpose of this book is to present the methods of psychological science so that you can understand the nature of valid and reliable research. Whether you become a producer or a consumer of research, it is vital that you be able to evaluate and appraise it.

## TEXT ORGANIZATION

The text is divided into three parts or sections. The first part focuses on the basics of scientific investigation, including the philosophy of science. The four chapters in the first section provide the groundwork for the remainder of the material. The second part contains five chapters, which focus on the design and execution of experiments. The final section and appendixes A and B treat the tactical aspects of conducting and analyzing research.

We recommend that the first section be read first. The chapters within a section are best read in the order given, except for those in the third section, which are self-contained and may be read at any time after reading the first four chapters.

## Pedagogical Features

Each chapter contains several features designed to improve comprehension and enhance interest. The **Facing Page** provides a summary of the upcoming chapter. The facing page will alert you to important concepts and will provide a convenient aid for review. The **Overview** introduces the substance of each chapter. Within the chapter there are frequent **Concept Summaries**, which are designed to drive home important concepts and to assist in study and review. The first eleven chapters include an **Application** section, which considers how some of the concepts discussed in that chapter can be used outside of the laboratory setting. At the end of each chapter are several features: a point-by-point **Summary**; a list of **Key Concepts**; thought-provoking **Exercises**; and **Suggested Readings**. These features will help you derive maximum benefit from the contents of the chapter—they will reinforce and extend your under-

standing. Most of the chapters are followed by a **Psychology in Action** section, which presents a project for you to undertake. These projects are intended to further your interest in scientific psychology.

As in earlier editions, many concepts are discussed more than once. The repeated discussion of important ideas in separate parts of the text is done to enhance understanding. We want to take advantage of the well-known benefits of distributed practice and varied rehearsal to maximize the efficiency of the learning process for our readers.

## CHANGES FROM THE THIRD EDITION

Users of the previous edition will notice several changes in this edition. The advice of our capable reviewers, the suggestions of readers, and our own experience have resulted in changes in organization and content. The knowledge explosion in science and the increasing importance of psychological research demand well-trained practitioners and consumers. In addition, we believe that our survival depends on improvements in the technological and scientific sophistication of society. Thus, the first four chapters have been heavily revised, placing more emphasis on conducting research and its philosophical background than was the case in earlier editions. The beginnings of a project are considered in chapter 1. Students participate as subjects in an experiment, and then many of the basics of research are examined in the light of their experience in the experiment. Chapter 2 focuses on the nature of theory construction and hypothesis testing. The next two chapters consider reliability and validity in the context of making scientific observations and measuring behavior. The intent of the first section is to make sure that the student is aware of the rationale of psychological science and will, therefore, be challenged to master the nuts and bolts of scientific investigation.

Part of the organizational changes have involved relocating the ethics chapter to the section on Tactical Aspects of Research. Our reviewers noted that the goals of the course may determine when ethical considerations are examined. Thus, the ethics chapter may be read at any point during the course, which is also true of the chapter on how to read and write laboratory reports. We believe that the current organization is very flexible, and it can be altered to suit the needs of most instructors.

In several places we have chosen new examples to illustrate concepts and principles. Students intrigued by nearly any aspect of scientific psychology will find examples to challenge and interest them. Research on a case of multiple personality illustrates small-*n* research, and the tip-of-the-tongue phenomenon is used to illustrate the basics of experimentation. Several new examples have been used to illustrate the principles of descriptive research, including a case study of a famous scientist.

Our goals in choosing examples were threefold: to illustrate the proper ways to conduct research, to convey the importance and tremendous scope of psychological science, and to impart a sense of fun and excitement that can be found in undertaking psychological investigations. We hope that we have been successful in attaining those goals.

## ACKNOWLEDGEMENTS

Writing a textbook is a cooperative effort among the authors, readers, and users of earlier editions; the editors and production staff; and the sage advice of several capable reviewers. Many readers of the third edition and the professors who assigned it have written us with valuable suggestions and comments. We thank them for their help and hope that new readers will help us devise a fifth edition. We appreciate the help of the production staff at West—a group of competent people who made our job easier and the product better. Mary Schiller, our editor, deserves special recognition for her organizational skill and wit. We owe a debt to the following reviewers: E. C. Dalrymple-Alford, University of Guelph; Larry Hochhaus, Oklahoma State University; Phyllis Hornbuckle, Virginia Commonwealth University; John Limber, University of New Hampshire; Michael Moore, University of California at Davis; Michael Perone, West Virginia University; and Michael Stadler, Louisiana State University.

Others have provided invaluable technical help. It is a pleasure to recognize the contributions of Denny LeCompte, Heather Turner, and Jennifer Gladwell. They helped in many ways with such skill and efficiency that this edition would be in limbo without their fine assistance. The support of Washington and Lee University, especially its Department of Psychology, is gratefully acknowledged. Several authors and publishers have helped us reproduce important materials. We are grateful to the Literary Executor of the late Sir Ronald A. Fisher, F.R.S., to Dr. Frank Yates, F.R.S., and to Longman Group Ltd. London for permission to reprint Table C-5 from their book *Statistical Tables for Biological Agricultural and Medical Research* (6th edition, 1974).

Finally, we owe an incalculable debt to our teachers who encouraged us to pursue scientific psychology. We would like to dedicate this work to the memory of three outstanding individuals who shared the fun and excitement of experimental psychology with us: **David A. Grant**, **William M. Hinton**, and **L. Starling Reid**. Each, in his own way, encouraged students to engage in sound psychological research. Their enthusiasm led us into experimental psychology, and we hope that you find a similar model to lead you in the same direction.

David G. Elmes  
Barry H. Kantowitz  
Henry L. Roediger III

## ABOUT THE AUTHORS

**David G. Elmes** is a Professor of Psychology and Head of the Department of Psychology at Washington and Lee University, where he has taught since 1967. He earned his B.A. with high honors from the University of Virginia and continued on to complete the M.A. and Ph.D. degrees there. Elmes was Adjunct Professor at Hampden-Sydney College, was a research associate for a year in the Human Performance Center of the University of Michigan, and was a Visiting Fellow of University College at the University of Oxford, England. At Washington and Lee he is a codirector of the Cognitive Science Program. Professor Elmes edited *Readings in Experimental Psychology* and is coauthor of the fourth edition of *Experimental Psychology* (with B. H. Kantowitz and H. L. Roediger III). He has published numerous articles concerned with human and animal learning and memory in the *Journal of Comparative and Physiological Psychology*, *Memory & Cognition*, *Physiological Psychology*, and *Journal of Experimental Psychology: Learning, Memory, and Cognition*, among others. He frequently referees papers submitted to technical journals and was a Consulting Editor for the *Journal of Experimental Psychology: Learning, Memory and Cognition* for several years.

**Barry H. Kantowitz** is a Senior Staff Research Scientist at Battelle Memorial Institute, Seattle, in the Center for Human Factors and Organizational Effectiveness. He received the Ph.D. degree in Experimental Psychology from the University of Wisconsin in 1969. From 1969 to 1987 he held positions as Assistant, Associate, and Professor of Psychological Sciences, at Purdue University, West Lafayette, Indiana. Dr. Kantowitz was elected a Fellow of the American Psychological Association in 1974. He has been a National Institute of Mental Health Postdoctoral Fellow at the University of Oregon, a Senior Lecturer in Ergonomics at the Norwegian Institute of Technology, Trondheim, Norway, and a Visiting Professor of Technical Psychology at the University of Lulea, Sweden. He has written and edited more than one dozen books. His research on human attention, mental workload, reaction time, human-machine interaction, and human factors has been supported by the Office of Education, the National Institute of Mental Health, the National Aeronautics and Space Administration, and the Air Force Office of Scientific Research. He served a five-year term on the editorial board of *Organizational Behavior and Human Performance*. He has published over seventy scientific articles and book chapters.

**Henry L. Roediger III** is the Lynette S. Autrey Professor of Psychology at Rice University, where he has taught since 1988. He received a B.A. degree in psychology from Washington and Lee University in 1969 and a Ph.D. in cognitive psychology from Yale University in 1973. He has previously been on the faculty at Purdue University (1973–1988) and spent three years as a visiting professor at the University of Toronto. His research interests lie in cognitive psychology, particularly in human learning and memory. He has published over seventy chapters, articles, and reviews as well as two other textbooks: *Psychology* (coauthored with E. D. Capaldi, S. G. Paris, and J. Polivy) and *Experimental*



*Psychology* (with D. G. Elmes and B. H. Kantowitz). He also edited (with F. I. M. Craik) *Varieties of Memory and Consciousness: Essays in Honour of Endel Tulving*. Roediger serves as a Consulting editor for *Contemporary Psychology*; *Journal of Experimental Psychology: Learning, Memory, and Cognition*; and *Journal of Memory and Language*. He served as Editor of the *Journal of Experimental Psychology: Learning, Memory, and Cognition* from 1985–1989 and as its Associate Editor from 1981 to 1984. He is a member of the Governing Board of the Psychonomics Society (Chair, 1989–1990) and is Secretary-Treasurer of the Midwestern Psychological Association.



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Fourth Edition

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