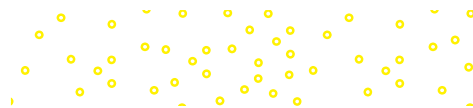
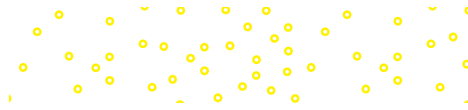


Methods in Behavioral Research





Methods in Behavioral Research

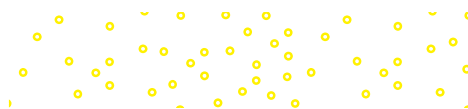
FIFTEENTH EDITION

PAUL C. COZBY

California State University, Fullerton

SCOTT C. BATES

Utah State University





METHODS IN BEHAVIORAL RESEARCH: FIFTEENTH EDITION

Published by McGraw Hill LLC, 1325 Avenue of the Americas, New York, NY 10019. Copyright ©2024 by McGraw Hill LLC. All rights reserved. Printed in the United States of America. Previous editions ©2020, 2018, and 2015. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written consent of McGraw Hill LLC, including, but not limited to, in any network or other electronic storage or transmission, or broadcast for distance learning.

Some ancillaries, including electronic and print components, may not be available to customers outside the United States.

This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 LCR 28 27 26 25 24 23

ISBN 978-1-260-71890-4 (bound edition)

MHID 1-260-71890-5 (bound edition)

ISBN 978-1-260-88305-3 (loose-leaf edition)

MHID 1-260-88305-1 (loose-leaf edition)

Executive Portfolio Manager: *Jason Seitz*

Senior Product Development Manager: *Dawn Groundwater*

Senior Marketing Manager: *Olivia Kaiser*

Senior Content Project Manager: *Sherry Kane*

Lead Assessment Project Manager: *Jodi Banowetz*

Manufacturing Project Manager: *Rachel Hirschfield*

Senior Designer: *Beth Blech*

Lead Content Licensing Specialist: *Carrie Burger*

Cover Image: *antonyspencer/E+/Getty Images*

Compositor: *Aptara[®], Inc.*

All credits appearing on page or at the end of the book are considered to be an extension of the copyright page.

Library of Congress Cataloging-in-Publication Data

Names: Cozby, Paul C., author. | Bates, Scott, 1969- author.

Title: Methods in behavioral research / Paul C. Cozby, California State University,

Fullerton, Scott C. Bates, Utah State University, Logan.

Description: Fifteenth edition. | New York, NY : McGraw Hill LLC, [2024] | Includes index.

Identifiers: LCCN 2022032823 (print) | LCCN 2022032824 (ebook) | ISBN

9781260718904 (hardcover) | ISBN 9781260883053 (spiral bound) | ISBN

9781260883077 (ebook) | ISBN 9781260883046 (ebook other)

Subjects: LCSH: Psychology—Research—Methodology. | Social sciences—Research—Methodology.

Classification: LCC BF76.5 .C67 2024 (print) | LCC BF76.5 (ebook) | DDC

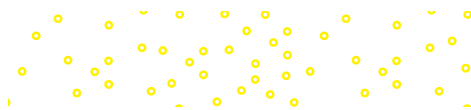
150.72—dc23/eng/20220913

LC record available at <https://lcn.loc.gov/2022032823>

LC ebook record available at <https://lcn.loc.gov/2022032824>

The Internet addresses listed in the text were accurate at the time of publication. The inclusion of a website does not indicate an endorsement by the authors or McGraw Hill LLC, and McGraw Hill LLC does not guarantee the accuracy of the information presented at these sites.

mheducation.com/highered

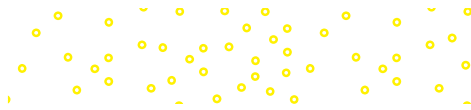


For Paul Rosenblatt

—PCC

For my grandmother, Marcile Lottie Yastrop, who had a teacher’s heart.

—SCB





Guide to Diversity, Equity, and Inclusion

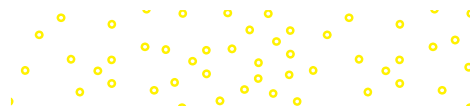
Since our first edition, *Methods in Behavioral Research* has helped students learn to think like behavioral scientists. Scientists rely on observations to uncover the truth. Historically, most of the scholarship in the behavioral sciences was conducted by White men with White male research participants; it is a discipline built on a single, segmented, incomplete view of humanity. While systemic inequality in society and science has held our collective understanding of humanity back, the persistence, talent, and hard work of many scholars have resulted in a more diverse, equitable, and inclusive science. Now behavioral research is being conducted worldwide, with diverse participants, by researchers with diverse backgrounds and experiences. We are a better science today than we were yesterday and must continue striving to be better. Because *Methods in Behavioral Research* is dedicated to helping students learn about the foundation of the behavioral sciences, it is our responsibility to shine a light on this history and help illuminate a more inclusive path forward.

We use inclusive language, even if original texts do not. Language evolves and changes over time. In *Methods of Behavioral Research*, we describe some classic studies in the behavioral sciences. We will often modify the language used in those studies to reflect an inclusive sensibility. We are guided by the American Psychological Association's Inclusive Language Guidelines because we agree that, "by embracing inclusive language... we firmly believe that we will not only communicate effectively with more people but also better adapt to a diversifying society and globe" (American Psychological Association, 2021b). We also laud the APA's conceptualization of this living document and believe that language guidelines—like language itself—change over time.

We engage with diversity, equity, and inclusion. When discussing studies, we will describe their limitations regarding diversity, equity, and inclusion. One of the essential concepts in behavioral science—the idea that a study can be generalized beyond the population studied—will be emphasized when we talk about research. We will be careful about discussing a study conducted at a specific time and place with a particular group of research participants. When describing one of psychology's most famous studies, the Milgram obedience studies, we note that Milgram's sample mainly consisted of White people from New England. And we will draw attention to replications that expand those findings beyond their narrow origin.

We cite research conducted with diverse populations and researchers from diverse backgrounds. Research has not always represented diverse viewpoints (Roberts et al., 2020). We will not always succeed—behavioral science has a long way to go before it can represent the diversity of humanity—but we are trying (Buchanan, 2021). We foreground research conducted with diverse people by researchers who represent the diversity of humanity—such as Dr. Changwon Son and his colleagues, who studied the effects of COVID-19 on college students’ mental health in the United States; or Drs. Aurino, Wolf, and Tsinigo’s (2020) study of household food insecurity and early childhood development in Ghana, Africa; and Dr. Nada Goodrum and her colleagues’ longitudinal study of mothers’ disclosure of their HIV status to their children (Goodrum et al., 2021).

This book is a product of its authors and their environment. We welcome feedback and hope you will reach out to us directly if you have a critique, suggestion, or thought.



Contents

Preface xv

About the Authors xxvii

1 SCIENTIFIC UNDERSTANDING OF BEHAVIOR 1

Consuming Research 2
Ways of Knowing 3
Being a Skilled Consumer of Research 8
Goals of Behavioral Science 9
Basic and Applied Research 13
Review Questions 20
Study Terms 21
Check Your Learning: Answers 21

2 WHERE TO START 22

Research Questions, Hypotheses, and Predictions 23
Sources of Ideas 25
Types of Journal Articles 30
Exploring Past Research 35
Review Questions 49
Study Terms 49
Check Your Learning: Answers 50

3 ETHICS IN BEHAVIORAL RESEARCH 51

Milgram's Obedience Experiments 52
Historical Context of Current Ethical Standards 53

APA Ethics Code 55
 Assessment of Risks and Benefits 57
 Informed Consent 59
 The Importance of Debriefing 64
 Institutional Review Boards 66
 Research with Nonhuman Animal Subjects 70
 Being an Ethical Researcher: The Issue of
 Misrepresentation 71
 Conclusion: Risks and Benefits Revisited 75
Review Questions 81
Study Terms 81
Check Your Learning: Answers 82

4 FUNDAMENTAL RESEARCH ISSUES 83

Validity: An Introduction 84
 Variables 85
 Operational Definitions of Variables 85
 Relationships Between Variables 87
 Nonexperimental Versus Experimental Methods 92
 Experimental Methods: Additional Considerations 99
 Evaluating Research: Summary of the Four
 Validities 104
Review Questions 109
Study Terms 110
Check Your Learning: Answers 110

5 MEASUREMENT CONCEPTS 111

Reliability of Measures 112
 Construct Validity of Measures 117
 Reactivity of Measures 121
 Variables and Measurement Scales 122
Review Questions 129
Study Terms 130
Check Your Learning: Answers 130



6 OBSERVATIONAL METHODS 131

- Quantitative and Qualitative Approaches 132
- Naturalistic Observation 134
- Systematic Observation 137
- Case Studies 140
- Archival Research 142
- Review Questions 148*
- Study Terms 149*
- Check Your Learning: Answers 149*

7 ASKING PEOPLE ABOUT THEMSELVES: SURVEY RESEARCH 150

- Why Conduct Surveys? 151
- Constructing Questions to Ask 153
- Responses to Questions 156
- Finalizing the Survey Instrument 160
- Administering Surveys 161
- Survey Designs to Study Changes Over Time 164
- Sampling From a Population 165
- Sampling Techniques 168
- Evaluating Samples 173
- Reasons for Using Convenience Samples 174
- Review Questions 179*
- Study Terms 180*
- Check Your Learning: Answers 180*

8 EXPERIMENTAL DESIGN 181

- Confounding Variables and Internal Validity 182
- Basic Experiments 183
- Assigning Participants to Experimental Conditions 188
- Review Questions 198*
- Study Terms 198*
- Check Your Learning: Answers 198*



9 CONDUCTING EXPERIMENTS 199

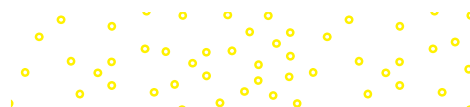
- Selecting Research Participants 200
- Manipulating the Independent Variable 201
- Measuring the Dependent Variable 207
- Additional Controls 211
- Final Planning Considerations 215
- Analyzing and Interpreting Results 218
- Communicating Research to Others 219
- Review Questions* 223
- Study Terms* 223
- Check Your Learning: Answers* 224

10 COMPLEX EXPERIMENTAL DESIGNS 225

- Increasing the Number of Levels of an Independent Variable 226
- Increasing the Number of Independent Variables: Factorial Designs 228
- Outcomes of a 2×2 Factorial Design 232
- Assignment Procedures and Factorial Designs 236
- From 2×2 to $N \times N$ Factorial Designs 238
- Factorial Designs with Three or More Independent Variables 239
- Review Questions* 244
- Study Terms* 244
- Check Your Learning: Answers* 244

11 SINGLE-CASE, QUASI-EXPERIMENTAL, AND DEVELOPMENTAL RESEARCH 245

- Single-Case Experimental Designs 246
- Quasi-Experimental Designs 250
- Developmental Research Designs 259
- Review Questions* 267
- Study Terms* 268
- Check Your Learning: Answers* 268

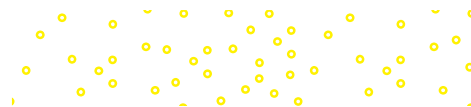


12 UNDERSTANDING RESEARCH RESULTS: DESCRIPTION AND CORRELATION 270

- Scales of Measurement: A Review 271
- Describing Results 272
- Frequency Distributions 274
- Descriptive Statistics 277
- Graphing Relationships 278
- Correlation Coefficients: Describing the Strength of Relationships 279
- Effect Size 285
- Regression Equations 286
- Multiple Correlation and Regression 287
- Mediating and Moderating Variables 289
- Advanced Statistical Analyses 292
- Review Questions* 296
- Study Terms* 296
- Check Your Learning: Answers* 297

13 UNDERSTANDING RESEARCH RESULTS: STATISTICAL INFERENCE 298

- Samples and Populations 299
- Inferential Statistics 300
- Null and Research Hypotheses 301
- Probability and Sampling Distributions 301
- Group Differences: The t and F Tests 304
- Type I and Type II Errors 311
- Choosing a Significance Level 314
- Interpreting Nonsignificant Results 315
- Choosing a Sample Size: Power Analysis 316
- The Importance of Replications 317
- Significance of a Pearson r Correlation Coefficient 318
- Statistical Analysis Software 318
- Selecting the Appropriate Statistical Test 320
- Review Questions* 324
- Study Terms* 324
- Check Your Learning: Answers* 324



14 GENERALIZATION 326

- Generalizing Across People 327
- Generalizing Across Situations 334
- Replications 336
- Assessing External Validity Via Literature Reviews and Meta-Analyses 340
- Using Research to Improve Lives 342
- Review Questions* 345
- Study Terms* 346
- Check Your Learning: Answers* 346

APPENDIX A: REPORTING RESEARCH 347

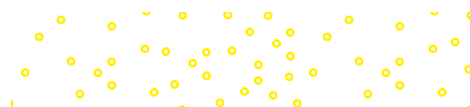
- Introduction 347
- Writing Your Report 348
- Formatting Your Report 355
- Organization of the Report 357
- The Use of Headings 374
- Citing Sources and Creating a Reference List 375
- Abbreviations 384
- Reporting Numbers and Statistics 386
- Paper and Poster Presentations 387
- APA Style Resources: Sample Paper 390
- APA Style Resources: Citations 411
- APA Style Resources: Title Page 413
- APA Style Resources: Page and Section Format 416
- APA Style Resources: Reference List 419

APPENDIX B: STATISTICAL TESTS 422

- Descriptive Statistics 422
- Statistical Significance and Effect Size 425

Engaging with Research

- Chapter 1: Introduction
- Chapter 2: Laptops in Class
- Chapter 3: Replication of Milgram
- Chapter 4: Studying Discrimination



Chapter 5: Measurement Concepts
Chapter 6: Observational Methods
Chapter 7: Survey Research
Chapter 8: Experimental Design
Chapter 9: Conducting Experiments
Chapter 10: Complex Experimental Designs
Chapter 11: Developmental Research
Chapter 14: Generalizing Results

Glossary 443

References 452

Index 472



Preface

Methods in Behavioral Research guides students toward success by helping them study smarter and more efficiently. Supported by SmartBook®, McGraw Hill's adaptive and personalized reading experience, this Fifteenth Edition provides helpful pedagogy, rich examples, and a clear voice in its approach to methodological decision making.

In this Fifteenth Edition, we strive for an accessible presentation and continue looking for opportunities to drive home foundational concepts and reinforce students' understanding of the material. We have reimagined end-of-chapter content. We chose concepts that students have traditionally found most challenging and designed exercises that ask them to reflect, recall, and organize the material. We have also aligned with the *Publication Manual of the American Psychological Association* (7th ed.). Focused organization combined with clear and direct writing remains a hallmark of *Methods in Behavioral Research*. Chapters follow the arc of a research investigation, from planning through conducting and presenting.

ORGANIZATION

Methods in Behavioral Research moves carefully through the major concepts in behavioral research, from the foundations of scientific study through practical issues in research design and implementation.

"Scientific Understanding of Behavior" grounds students in the scientific approach, emphasizing the distinction between basic and applied research. "Where to Start" discusses sources of ideas for research and the importance of library research. "Ethics in Behavioral Research" focuses on research ethics; ethical issues are covered in depth here and emphasized throughout the book. "Fundamental Research Issues" introduces validity and examines psychological variables and the distinction between experimental and nonexperimental approaches to studying relationships among variables. "Measurement Concepts" focuses on measurement issues, including reliability and validity. Nonexperimental research approaches—including naturalistic observation, case studies, and content analysis—are described in "Observational Methods." "Asking People About Themselves: Survey Research" covers sampling as well as the design of questionnaires and interviews. "Experimental Design" and "Conducting Experiments" present the basics of designing and conducting experiments. Factorial designs are emphasized in "Complex Experimental Designs." "Single-Case, Quasi-Experimental, and

Developmental Research” discusses the designs for special applications: single-case experimental designs, developmental research designs, and quasi-experimental designs. “Understanding Research Results: Description and Correlation” and “Understanding Research Results: Statistical Inference” focus on the use of statistics to help students understand research results. These chapters include material on effect size and confidence intervals. Finally, “Generalization” discusses external validity, meta-analyses, open science, and the importance of replications.

FEATURES

Methods in Behavioral Research includes the following features to enhance learning:

NEW! APA Style Resources. New, easy-to-use guides on APA style formatting for the title page, page and section format, citations, and the reference page. The title page guide includes both professional and student versions. The citations guide includes how-to guides for many common in-text and parenthetical citations as well as formats for commonly used sources. The page and section guide guides students through APA headers, font choices, margins, and running heads. The reference page guide includes global formatting as well as source-level formatting.

NEW! Sample Paper. A new, fully annotated sample paper—written by an undergraduate researcher—provides an accessible example of good APA style. Annotation points to common questions and common misperceptions and connects students back to the APA Style Resources sections for additional information. The new sample paper and annotations were designed to be easy to use in both e-book and print formats.

Engaging with Research. This feature has been refined to include authors from diverse backgrounds and topic-of-study that reflect the diversity of the behavioral sciences. These boxes include published journal articles with questions and exercises designed to focus on chapter-related material. In addition, the articles help students become familiar with the structure and language of journal articles in psychology. Most important, we have provided links to online copies of the articles whenever possible.

Being a Skilled Consumer of Research. These exercises are designed to get students out of the textbook and out of their classrooms and into the broader world in which we all move. These exercises ask students to look at examples of research—such as studies on the predictors of happiness and the causes and effects of sitting in the front of the classroom—to compare what they’ve learned in class or the text with what they see. Applying the concepts they have learned will help them expand their understanding of the content.

Fully updated according to the Publication Manual of the American Psychological Association (7th ed.): This edition includes and supports new guidelines on ethical and bias-free writing, adopts the new standard for in-text citations, updates rules for manuscript formatting, and adopts the APA's final resolution to the eternal question: One space or two after a period? (Answer: One!)

Check Your Learning: Practice Exercises. In previous editions, these Check Your Learning boxes were placed within the body of the chapter. We learned that students often found this placement distracting and preferred to be able to control when to complete the exercises. Feature includes an in-text callout to place the content; the actual exercises and answers are at the end of the chapter.

Solid pedagogy. Each chapter opens with a set of learning objectives that serve as reading guides and ends with a review of major concepts and key terms.

Practical examples. Thought-provoking examples help students interpret challenging concepts and complex research designs. For instance, the concept of diversity of ideas is examined through the lens of biases regarding rap music, and theory article formats are introduced by discussion of a recent study on suicide.

Emphasis on decision-making. Distinguishing among a variety of research designs helps students understand when to use one type of design over another.

FLEXIBLE

Chapters are designed to work independently, so that they can be adapted to any curriculum or syllabus. Sections are clearly defined, and relevant practice exercises are called out within each, making it easy to reorder or skip topics.

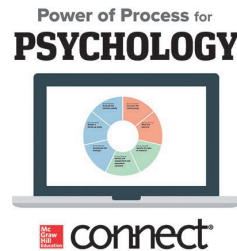
In addition, two appendices related to communicating research findings and conducting statistical analyses can be used at any time throughout the course. Appendix A includes an annotated version of a published paper and provides firm instructions for organizing research. Appendix B includes a bank of statistical tests that can be applied to a variety of research designs.



connect®

Methods in Behavioral Research is available to instructors and students in traditional print format as well as online within McGraw Hill Connect, a digital assignment and assessment platform. Connect includes assignable and assessable videos, quizzes, exercises, and interactive activities, all associated with learning objectives for *Methods in Behavioral Research*. These online tools make managing assignments easier for instructors, and learning and studying more motivating and efficient for students.

Power of Process, available in Connect for Research Methods, guides students through the process of critical reading, analysis, and writing. Faculty can select or upload their own content, such as journal articles, and assign analysis strategies to gain insight into students' application of the scientific method. For students, Power of Process offers a guided visual approach to exercising critical thinking strategies to apply before, during, and after reading published research.



A PERSONALIZED EXPERIENCE THAT LEADS TO IMPROVED LEARNING AND RESULTS

Students study more effectively with Connect and SmartBook. How many students think they know everything about introductory psychology, but struggle on the first exam?

With more than a decade of collecting data from billions of questions answered across 90+ disciplines, we've learned a lot about adaptive learning's impact on student performance. We've created a secure space for learning that balances intentional rigor with the freedom to make mistakes. This is an environment that develops self-awareness through meaningful, immediate feedback that improves student success. SmartBook builds on our market-leading technology with enhanced capabilities that deliver a more personalized, productive, and accessible learning experience for students and instructors.

SmartBook helps students study more efficiently by highlighting what to focus on in the chapter, asking review questions, and directing them to resources until they understand. SmartBook creates a personalized study path customized to individual student needs, continually adapting to pinpoint knowledge gaps and focus learning on concepts requiring additional study. By taking the guesswork out of what to study, SmartBook fosters more productive learning and helps students better prepare for class. With SmartBook, instructors have the flexibility to tailor assignments to their courses. Pick the topics, depth of coverage, or even the length of time students spend on an assignment. SmartBook assignments can help students build foundational knowledge, while review assignments can focus on multiple chapters or previously assigned concepts to help students prepare for exams.

With McGraw Hill's free ReadAnywhere app, students can read or study when it's convenient for them—anytime, anywhere. Available for iOS or Android

smartphones or tablets, ReadAnywhere gives users access to McGraw Hill tools, including the eBook and SmartBook in Connect. Students can take notes, highlight, and complete assignments offline, and their work will sync when they open the app with WiFi access. SmartBook also provides a more accessible student experience with improved color contrast, descriptions for images, increased keyboard navigation, and enhanced screen reader support. Work is ongoing to improve the user experience for all.

POWERFUL REPORTING

Whether a class is face-to-face, hybrid, or entirely online, McGraw Hill Connect provides the tools needed to reduce the amount of time and energy instructors spend administering their courses. Easy-to-use course management tools allow instructors to spend less time administering and more time teaching, while reports allow students to monitor their progress and optimize their study time.

- The **At-Risk Student Report** provides instructors with one-click access to a dashboard that identifies students who are at risk of dropping out of the course due to low engagement levels.
- The **Category Analysis Report** details student performance relative to specific learning objectives and goals, including APA learning goals and outcomes and levels of Bloom's taxonomy.
- The **SmartBook Reports** allow instructors and students to easily monitor progress and pinpoint areas of weakness, giving each student a personalized study plan to achieve success.

ADDITIONAL RESOURCES



Achieve simplicity in assigning and engaging your students with course materials. Craft your teaching resources to match the way you teach! With McGraw Hill Create, you can easily rearrange chapters, combine material from other content sources, and quickly upload content you have written, such as your course syllabus or teaching notes. Find the content you need in Create by searching through thousands of leading McGraw Hill textbooks. Arrange your book to fit your teaching style. Create even allows you to personalize your book's appearance by selecting the cover and adding your name, school, and course information. Order a Create book and you'll receive a complimentary electronic review copy (eComp) via email in about an hour. Experience how McGraw Hill Create empowers you to teach your students *your* way: <http://create.mheducation.com>

CONTENT CHANGES IN THE FIFTEENTH EDITION

The Fifteenth Edition of *Methods in Behavioral Research* reflects global and specific chapter level changes.

Global changes

- We've adopted APA's inclusive language guidelines.
- We engage with diversity, equity, and inclusion in examples.
- We cite research conducted with diverse populations and researchers from diverse backgrounds.
- Engaging with Research was refined to include authors from diverse backgrounds and topics of study that reflect the diversity of the behavioral sciences.
- Appendix A was significantly revised to focus on usability for students: new sections related to APA style (7th edition) were created, and a new sample paper was designed to connect students to APA style guidelines and help them learn effective APA style writing.
- Being a Skilled Consumer of Research was refined to specifically enhance critical thinking skills.

Chapter 1

- "Being a Skilled Consumer of Research" has been revised to include eight key questions to help students evaluate "any research study that will reveal a lot about how much the study should be trusted."
- Repositioned "Engaging with Research" chapter-ending features are explained in chapter 1 and align with the eight questions to ask of a study to be a Being a Skilled Consumer of Research.
- The new "Engaging with Research" chapter feature is a study of ethnic variation in gratitude and well-being, and asks students to evaluate this study using the eight questions that lead to being a skilled consumer of research.

Chapter 2

- Analysis of the impact of the pandemic on research and academic conferences.
- A new key example related to Latina identity safety in STEM environments anchors the chapter.

Chapter 3

- Discussion on how exploitation of minority groups in research has contributed to COVID-19 vaccine resistance.

- Explanation of the informed consent procedure used in the Milgram study, which allowed for participants to withdraw at any time without penalty.
- Description of the Greenspan and Loftus (2021) study on misinformation and “enhanced debriefing.”
- Examination of “debriefing” as a researcher’s obligation to treat participants with dignity and respect.
- Significantly revised section on Research with Nonhuman Animal Subjects.

Chapter 4

- Several new examples, including Schreer’s 2009 study of how Black customers were subject to suspicion in a customer scenario, Weijers and de Koning’s 2021 study of how subjects reacted to varying reminders to sanitize hands. Guntzviller et al. 2020 found that stress is related to poor mental health among young adult Hispanics and that social support can help mitigate the effects of stress.
- Expanded discussion of predictive validity, with the construct of “grit” as an example.
- New Engaging with Research study examining workplace discrimination using a “lost email” experiment (Agerström et al., 2021).

Chapter 5

- A new section, *Measurement Validity: For Whom*, focuses on measurement validity across populations in an effort to draw attention to measurement biases that intersect with the diversity of study populations.

Chapter 6

- A significantly revised section introducing qualitative and quantitative approaches.
- Discussion of the Goodrum et al. 2021 study using mixed-methods research design to study what happens after mothers diagnosed with HIV disclose their HIV status to their children.
- A new section on Sampling Behaviors and Experiences describes the Experience Sampling Method (ESM) and Day Reconstruction Method (DRM).
- Description of the Halstead et al. 2021 study on PTSD resulting from racial discrimination and sexual abuse during childhood.
- Definition of *psychobiography* as a case study in which the researcher applies psychological theory to explain the life of a historical figure.
- Discussion of Stout et al. 2020 study that tried two different mentors for recruiting Black and non-Hispanic White older adults for research investigation on Alzheimer’s disease.

- Explanation of the National Longitudinal Mortality Study as a database for studying the effects of demographic and socioeconomic characteristics on mortality rates.
- New examples of archival research studies using written, audio, and video records: Kruspe et al. (2020), who analyzed Twitter messages during the first months of the COVID-19 pandemic; Corbett and Savarimuthu (2022), who analyzed 6,528 tweets about sustainable energy; Trivedi et al. (2021), who examined suicide prevention using Google-search trends; and Lewis et al. (2020), who analyzed the content of books for young children to detect and quantify gender biases.
- The new Engaging with Research study examines meal service and feeding practices among Mexican American fathers and mothers (Penilla et al., 2022).

Chapter 7

- Updated section on using pictorial scales in behavioral research.
- New information on conducting surveys in large randomly selected samples, especially online, and the Pew Research Center's *American Trends Panel*.
- Discussion of the McBride et al. (2021) study on the impact of concerns about climate change on psychological well-being.
- Explanation of convenience samples through online participant recruitment services such as Amazon Mechanical Turk and Prolific.
- The new "Engaging with Research" study examines the effects of COVID-19 on U.S. college students' mental health (Son et al., 2020).

Chapter 8

- Discussion of education reform, especially emphasis on STEM and the Educational Robotics approach and its impact on cognitive development.
- A new example of the Solomon four-group design studied the effect of an intervention to promote responsible substance use, safe sex, and other positive behaviors in a diverse sample of 18- to 24-year-olds experiencing homelessness (Rew et al. 2022).
- Debate on the manipulation check as a potential demand characteristic that alerts subjects to the study's purpose.
- The new Engaging with Research study examines executive functions in 5- and 6-year-old typically developing children through educational robotics in a randomized control trial study (Di Lieto et al., 2020).

Chapter 9

- Examination of the methods used to study memory and cognition, including the Cushing and Bodner 2022 study on improving proofreading accuracy.

- Hies and Lewis (2022) used a face database to obtain stimuli for a study on perceptions of people wearing masks during the COVID pandemic.
- Forrin et al. (2021) studied whether and how the behavior of one student in a learning situation might affect the behavior of another. They proposed that inattention (or attention) to learning could spread, a phenomenon called “attention contagion.”
- Randall et al. (2017) investigated weight discrimination in a field experiment conducted on a college campus.
- Wang et al. (2021) used a technology called the Contain Intelligent Facial Expression Recognition System (CIFERS) to explore real-time emotions (joy and anxiety) of college students.
- De Vita et al. (2021) conducted research to examine the pain-reducing effects of cannabidiol (CBD) and determine the degree to which observed pain reduction is due to the effects of CBD as opposed to the psychological expectancies associated with this substance.
- Introduction of the “examiner” expectancy effect using the Sodos et al. 2018 study in which examiners first rated whether or not they believed an examinee was a cannabis user.
- Discussion of the debate about the use of manipulation checks (Ejelöv and Luke, 2020; Hauser et al., 2018). One concern is that the manipulation check might serve as a demand characteristic, alerting subjects to the purpose of the study.
- A new section on Open Science and Preregistration.
- The new Engaging with Research study examines Instagram influencer posts using eye-tracking technology to see how specific tags on posts (#ad versus #sponsored) would impact people’s visual attention to those ads (Klein et al., 2020).

Chapter 10

- A new example of a mixed factorial design. Pan et al. (2020), for example, were interested in identifying factors that might help college students pay attention to the material presented in a recorded lecture.
- A new Engaging with Research study reported on an experiment with Instagram users in the United States to test whether hiding “likes” would affect the users’ mood and loneliness (Wallace and Buil, 2020).

Chapter 11

- Enhanced discussion of the ex post facto design and selection differences that can arise.
- Discussion of the Rathje et al. (2021) study on empathy

- The new Engaging with Research Study (Aurino et al., 2020) reported on a longitudinal study of children in Ghana, in sub-Saharan Africa.

Chapter 12

- Significantly revised section on multiple correlation and regression.
- A new section on mediating and moderating variables.
- A revised section on advanced statistics that creates a gentle introduction to the more sophisticated statistical approaches that students see in recently published work.

Chapter 14

- A deeply revised section on Generalizing Across People that focuses on identities (including sex, gender, sexual orientation, race, and ethnicity) and culture, threats to external validity.
- A deeply revised section on Generalizing Across Situations focuses on research conducted in a laboratory setting and researcher expectancy effects.
- A new example of meta-analysis that examined the effectiveness of psychotherapy delivered remotely for children and adolescents (Venturo-Conerly et al., 2022).
- A new book-ending section, Using Research to Improve Lives, frames the behavioral sciences in terms of “There is a lot of work left to do” and our hope that students “feel more prepared to do it.”
- The new Engaging with Research study investigated the experiences of economically disadvantaged mothers during the COVID-19 pandemic (Haskett et al., 2022).

Appendix A

- Updated and aligned with the *Publication Manual of the American Psychological Association* (7th ed.).
- An enhanced organization designed to provide useful and accessible resources for students as they learn to write in APA style.
- The section Avoiding Biased Language now refers to the APA *Inclusive Language Guidelines* (APA, 2021b).
- A new annotated sample paper—written by an undergraduate—provides an accessible example of good APA style.
- New APA Style Resources pages provide students will easy-to-use guidance on the title page, page and section format, citations, and the reference page.

INSTRUCTOR RESOURCES

Methods in Behavioral Research also includes the following instructor resources:

Instructor's Manual: Designed to provide a wide variety of resources for presenting the course, the instructor's manual includes learning objectives, ideas for lectures and discussions, laboratory demonstrations, and activities aligned specifically to facilitate a clearer knowledge of research methods.

Test Bank: By increasing the rigor of the test bank development process, McGraw Hill has raised the bar for student assessment. A coordinated team of subject-matter experts methodically vetted each question and each set of possible answers for accuracy, clarity, and effectiveness. Each question is further annotated for level of page difficulty, Bloom's taxonomy, APA learning outcomes, and corresponding coverage in the text. Structured by chapter, the questions are designed to test students' conceptual, applied, and factual understanding.

Test Builder: New to this edition and available within Connect, Test Builder is a cloud-based tool that enables instructors to format tests that can be printed or administered within a Learning Management System. Test Builder offers a modern, streamlined interface for easy content configuration that matches course needs, without requiring a download.

Test Builder enables instructors to:

- Access all test bank content from a particular title
- Easily pinpoint the most relevant content through robust filtering options
- Manipulate the order of questions or scramble questions and / or answers
- Pin questions to a specific location within a test
- Determine your preferred treatment of algorithmic questions
- Choose the layout and spacing
- Add instructions and configure default settings

Lecture Presentation: Accessibility compliant, PowerPoint slides are provided that present key points of the chapter, along with supporting visuals. All of the slides can be modified to meet individual needs.

Image Gallery: The complete set of figures and tables from the text are available for download and can be easily embedded into PowerPoint slides.

Remote proctoring and browser-locking capabilities: Hosted by Proctorio within Connect, remote proctoring provides control of the assessment environment by enabling security options and verifying the identity of the student. Seamlessly integrated within Connect, these services allow instructors to control students' assessment experience by restricting browser activity, recording students' activity, and verifying students are doing their own work. Instant and detailed reporting gives instructors an at-a-glance view