TO THE STUDENT

Welcome!
Most likely, you are studying psychology because you have an interest in learning about how people think, feel, and/or behave. Or, more simply, you want to figure out people. Yet you may be in this course because you are fulfilling a requirement and consider research something that you need to “get through” because it is a bit intimidating or boring. Here is a dirty little secret: most of what you have learned about psychology in your other courses relied on research to discover that new information. In your own life you have made your own guesses and created your own theories about what makes people “tick.” However, only after you have acquired knowledge and skills in research methods and statistics will you be able to confidently and accurately provide answers to your questions about others’ thoughts, feelings, and behavior. This knowledge and skill set will be instrumental after graduation, as they will help set you apart from other job-seekers.

While it is good to have questions about human behavior, it is often even more exciting to find out if your answers are right, and then share them with others, adding to everyone’s understanding of the world. This book emphasizes this thrill of discovery and deemphasizes the simple memorization of abstract terms and concepts. Our goal is to fundamentally change the way you think and evaluate the world around you.

We take a “learning by doing” approach, which we believe is the best way to learn almost anything. How did you learn to use your new smartphone? How did you learn to use Facebook or Instagram? We bet you didn’t bother reading through an instruction manual (in fact, manuals are such a dying learning technique that you probably never even received one). Instead, you probably jumped right in by testing out different features. We believe that you can learn research skills in the same “learn by using” way. Our book will help you think like a psychologist. You will be part of the research process in which the psychologist needs to account for key issues, make decisions, and problem solve throughout the process. Along the way you’ll learn lots of new concepts, but always in the context of how to use them. If you are not careful, you’ll soon find yourself getting caught up in the adventure that we call research!

Best wishes for a thought-provoking course, and for all of the success that life will bring you,

Dr. L, Dr. C, and Dr. S
TO THE INSTRUCTOR

Albert Einstein once said, “The definition of insanity is doing the same thing over and over again and expecting different results.” Taking this to heart, we developed a new approach to teaching research methods. This approach stays true to the course goal of covering key concepts, while placing greater emphasis on engaging students’ interests and involving them in the thought process inherent in trying to answer an engaging research question. To this end, three key principles guided our writing of this textbook:

1. **If you start with an interesting question, research design concepts become useful tools that help provide answers.**

The captivating nature of research is its ability to provide answers to some of our most perplexing questions. Yet when we teach this course, we can mistakenly put the primary focus on concepts, which are likely less interesting. Without question, we need to teach the concepts and students need to learn them, but the strong emphasis on concepts may miss the parts that make science fun and useful. In fact, research shows that students dutifully learn these concepts, but may miss out on their utility or proper implementation (Sizemore & Lewandowski, 2009). There is a better way. As Ken Bain (2004) articulates in his book, *What the Best College Teachers Do*, “… the best teachers often try to create what we have come to call a ‘natural critical learning environment.’ In that environment, people learn by confronting intriguing, beautiful, or important problems, authentic tasks that will challenge them to grapple with ideas, rethink their assumptions, and example their mental models of reality.” In the “natural critical learning environment” of psychological research, we should begin with an interesting question or theory. Through the process of seeking an answer, students will become familiar with psychologists’ decision-making processes in ways that will encourage them to think more like a scientist in the classroom and beyond.

2. **A vast majority of students in this course are not going to be career researchers.**

We get it. Realistically many, if not most, students who take a research methods course will not become career researchers or frequent writers of APA-style papers. Yet we believe that a research methods course is the most important course that every psychology major takes because it promotes scientific and psychological literacy (Halpern, 2009). Increased psychological literacy will help students learn to avoid potential biases in their decision making, as well as learn how to critically evaluate information from external sources. A research course also nurtures students’ curiosity about the world. Psychologically literate students will not simply make observations about the world. Rather, they will also reflexively generate
hypotheses about the nature and genesis of the observation, and will proceed to generate strategies for scientifically testing their ideas.

Finally, society seems to be experiencing a cultural movement that questions the utility of data and science in favor of going with your “gut” or relying on your own experiences. If a student needs to make a decision at some point about giving their child a vaccination, using data-based scientific evidence to guide that decision will be useful. We believe it is much easier to dismiss data as “just a bunch of numbers” if you have never had the opportunity to engage in the research process. Sadly, many students may never have the opportunity to conduct their own research study as part of their undergraduate experience. To address this, our book demonstrates researchers’ careful decision making and gives a “behind the scenes” perspective on the scientific research process. By reading about this process, students will develop a deeper understanding of how a research question leads to data and findings.

3. Design doesn’t occur in a vacuum. Design, statistics, and writing are best understood through their relation to one another.

The process of scientific discovery is an integrated endeavor. Unfortunately, many psychology curricula and textbooks treat design, statistics, and writing as distinct entities either by having separate textbooks for each, or by segregating them to different chapters. Doing so ignores the fact that each process predominantly occurs along with the other two. A psychologist rarely designs a study without analyzing the collected data. Similarly, a psychologist would not discover new information, only to avoid communicating the results. For there to be something to communicate or write about, a study has to be designed in the first place. When design, statistics, and writing are taught together, students can appreciate and benefit from their interrelations.

To address this, Discovering the Scientist Within: Research Methods in Psychology incorporates statistical issues and aspects of APA-style writing in conjunction with the discussion of design concepts. Because this book primarily emphasizes design, the statistics discussion focuses on why a certain statistic is appropriate for a particular design, as well as how to convey statistical results in an APA-style Results section and in tables and/or figures. We find that students commonly struggle with writing the Discussion section, which is problematic because that section focuses on applying critical thinking to the results. To address this, we model the Discussion section by explaining, interpreting, and critically evaluating our results. We also provide appendices that further reinforce statistical analyses and APA-style writing. By focusing on the basics of statistics and writing in the context of design and an interesting research question, students will be able to clearly see statistics’ utility, without getting lost in the details that can cause them anxiety.
Book and Chapter Organization

We begin our text with several chapters that introduce students to the science of psychology (Chapter 1), the research process (Chapter 2), and ethics (Chapter 3). Chapter 4: The Psychologist’s Toolbox: Tools for Building Better Designs provides a fundamental understanding of research design, the manipulation and measurement of variables, error, validity, reliability, and sampling. We believe these chapters provide students with an important foundational understanding of key research concepts that will allow them to engage more with the material in subsequent chapters. In the next set of chapters, we show how key research designs help us find answers to interesting questions.

The design chapters (Chapters 5–13) use a Socratic method that results in a less formal, more conversational writing style to lead readers through the examination of nine distinct research questions, each paired with a research design. The conversation that unfolds revolves around the thought process that a psychologist would undertake to design a study. Of course, no study is perfect and no design is infallible. Rather, our goal is to model the complicated thought process that psychologists use in pursuit of answers. In this process, readers will inevitably think of superior solutions and more elegant designs. As journal article reviewers and readers, we know that for most studies, we have ideas for improvements or other ways to do the study. In fact, we sincerely hope that our readers have this exact experience because it demonstrates that they are thinking critically about design and deeply about the topic at hand.

The design chapters follow a consistent structure where we:

1) Identify the chapter’s specific student learning outcomes
2) Introduce an interesting research question
3) Model the literature review process by reviewing some of the relevant literature that piques students’ interest in the topic and provides a foundational understanding of the research question, so that students have a basis for thinking through the relevant design issues
4) Discuss the operational definitions of the variables
5) Formulate hypotheses
6) Discuss ethical considerations that may influence the examination of the hypothesis
7) Discuss key design decisions (e.g., participant selection, design selection, nature of the manipulations/measures). At major decision points, we will model how a psychologist might weigh competing options
8) Discuss key issues related to data analysis (e.g., which statistic to use, the basic logic behind the statistic)

9) Demonstrate how to write an APA-style Results section and create figures and/or tables for the appropriate statistic

10) Model an APA-style Discussion section by addressing the implication and interpretation of the results, alternate explanations, and possible future directions

Finally, there are two appendices that provide more in-depth coverage of statistics and the communication of psychological science using APA style. Instructors may choose to assign these as standalone readings, or to augment the coverage from the preceding design chapters.

**Pedagogical Features**

In addition to our writing style, we have incorporated several pedagogical features to reinforce and expand our discussion of strategies psychological researchers use to answer their questions. More specifically, each chapter includes:

1) **Research Spotlight** – These boxes provide brief research summaries related to the chapter’s topic that highlight studies that students should find interesting.

2) **Thinking Like a Scientist in Real Life** – These boxes describe how students can apply abstract research concepts to their everyday life by demonstrating how thinking like a scientist is useful in nonresearch contexts.
3) **Bolded Key Terms** – Good note-taking often requires students to identify key concepts and ideas as they read a textbook. To help students in this area, we bold key terms to highlight them and provide standalone definitions in the page margins (in addition to the in-text explanation).

4) **Your Turn** – At key points in each chapter, we provide students with an opportunity to check their progress.

5) **Chapter Review Questions** – At the end of the chapter, we provide a set of review questions to help students gauge their comprehension of key learning objectives from the chapter. Questions appear in multiple-choice and short-answer formats, and test conceptual knowledge as well as students’ deeper understanding.

6) **Application Exercises** – These exercises provide students with the chance to engage with the material through more hands-on experiences. These items typically ask students to apply concepts directly to their own lives, and to access an outside source (e.g., watch something on TV or read something online) to help them discover how the chapter’s material has made their thinking more scientific.

We recognize that there is no single best approach to teaching a research methods course. As a result, the book’s format easily integrates a variety of approaches instructors take for teaching this course. For example, an instructor could elect to cover basic concepts in class before students read the book. In this approach, the book builds on class material by demonstrating how the concepts are used to answer a research question. Another strategy would be to have students read the text before class as background material. Instructors could then elect to spend class time clarifying and expanding upon the book’s content. Finally, instructors can use the textbook to model their own course projects and/or labs on an entirely new research question of their choosing, or students might use the book as a model for their own project or thesis.

As William Butler Yeats said, “Education is not the filling of a pail, but the lighting of a fire.” By helping students discover their inner scientist, we hope to enhance students’ skills and, in the process, create a spark that will remain lit throughout their lifetime.
Media and Supplements

We make the integration of our book into your course easy by providing an unprecedented collection of high-quality instructor resources, overseen by the book’s authors to ensure a consistent style and approach throughout, as well as an easy integration into your course.

First, we provide a comprehensive **Instructor’s Resource Manual** that, for each chapter, provides a chapter outline, a concept guide that gives additional examples for each key concept, additional “Thinking Like a Scientist in Real Life” and “Research Spotlight” examples, suggestions for in-class activities, demonstrations and examples, lab/group project ideas, a feature designed to enhance psychological/information literacy, and suggestions for using end-of-chapter materials. For chapters that focus on specific designs, we provide the data sets for the chapter example, as well as an additional data set on a distinct research question. We also provide thoughts on alternate directions that the chapter’s study could have gone.

Additionally, we provide unique **Lecture Slideshows** that incorporate the same active learning and hands-on approach as the textbook. That is, rather than creating text-dense slides that provide verbatim definitions of chapter concepts for students to copy, our slides engage students in the material. Chapter Lecture Slideshows include additional examples, discussion questions, demonstrations, and activities built right into the presentation to help you bring the material to life. For design chapters, we provide two sets of Lecture Slideshows: one set that incorporates the chapter’s research question and a more traditional set that focuses on key concepts. You can pick a favorite set or mix and match the slides from different sets to fit your individual style and goals.

We also provide a **Downloadable Test Bank**, powered by Diploma, which includes a full assortment of test items developed by the book’s authors. Each chapter features over 200 multiple-choice, short-answer, and essay questions, written by Dr. Sadie Leder-Elder (High Point University) and Dr. Mallory Malkin (Mississippi University for Women), to test students at several levels of Bloom’s taxonomy. This first edition also features a set of data-based reasoning questions, written by Dr. Angela Sikorski (Texas A&M University, Texarkana), to test advanced critical thinking skills in a manner similar to the MCAT. Additionally, each chapter will have its own set of “Fix It” questions in which students identify errors in a variety of research scenarios and suggest, via short-answer form, how to correct them. All the questions are matched to the outcomes recommended in the APA Guidelines for the Undergraduate Psychology Major (APA, 2013a). The accompanying gradebook software makes it easy to record students’ grades throughout a course, sort student records, view detailed analyses of test items, curve tests, generate reports, and add weights to grades.
All of these resources are available to adopters of the text for free download through the Macmillan Higher Education website at www.macmillanhighered.com/lewandowski.

**LaunchPad Solo for Research Methods**

We have co-authored a unique set of *Research in Action* activities with Melanie Maggard (University of the Rockies) that provides students with direct experiences in planning and designing studies. Research in Action puts the user in the role of a scientific investigator and asks them to make decisions in planning and executing a study from idea to results. We introduce each activity in the appropriate chapter and emphasize core concepts from the text. Instructors can use Research in Action as an in-class activity or for students to get additional practice at home. Instructors can preview the activities and purchase them through the LaunchPad Solo for Research Methods, a dynamic course space with additional study tools and assessment features, at www.macmillanhighered.com/launchpadsolo/researchmethods.

To further enhance the experience with the LaunchPad Solo for Research Methods, we have also incorporated a series of Data Visualization Activities, which include data presented in an interactive user experience, as well as questions which prompt students to utilize the visualization to find and interpret data. All of the Assessments tied to the Data Visualization Activities have been tagged to APA Goals and Outcomes 2.0 as a means to help students strengthen their scientific inquiry and critical thinking skills. In short, the LaunchPad Solo for Research Methods is an invaluable tool for both online classrooms and courses that benefit from a wealth of active learning tutorials.

**Research in Action Activities**


- Chapter 1: Psychology as a Science: A Scientific Look at Psychics, p. 13
- Chapter 2: The Research Process: Determining Key Study Elements, p. 38
- Chapter 3: Ethics: Being an Ethical Researcher, p. 67
- Chapter 4: The Psychologist’s Toolbox: Is the Swagger-Meter 1.0 a Quality Measure?, p. 101
- Chapter 5: Qualitative Research: You’re Hired!, p. 136
- Chapter 6: Observational Research: Is Public Affection a Public Affliction?, p. 186
Chapter 7: Survey Research: Which Professor Should You Take?, p. 210
Chapter 8: Two-Group Design: To Multitask or Not to Multitask?, p. 267
Chapter 9: Multigroup Design: Dressing for Distress?, p. 301
Chapter 10: Within-Subjects Design: Left Out and Feeling Low, p. 336
Chapter 11: Factorial Design: Can the News Influence Our Implicit Prejudice?, p. 371
Chapter 12: Mixed Design: Do Speed Daters Become Pickier the Later It Gets?, p. 418
Chapter 13: Using Research in the Real World: Why Did You Buy THAT?, p. 466
Appendix B: Communicating the Science of Psychology: The Editor’s Studio, p. 490
Appendix B: Communicating the Science of Psychology: Acknowledging the Contributions of Others, p. 496
Appendix B: Communicating the Science of Psychology: The Structure of an APA-Style Paper, p. 507

In addition, Worth Publishers is pleased to offer the following texts as supplements to Discovering the Scientist Within:

- **SPSS: A User-Friendly Approach** by Jeffery Aspelmeier and Thomas Pierce is a comprehensive introduction to SPSS that is easy to understand and vividly illustrated with cartoon-based scenarios. In the newest edition of the text for SPSS Version 22, the authors go beyond providing instructions on the mechanics of conducting data analysis and develop students’ conceptual and applied understanding of quantitative techniques.

- **Psychology and the Real World: Essays Illustrating Fundamental Contributions to Society**, Second Edition, is a superb collection of essays by major researchers that describes their landmark studies. Published in association with the not-for-profit FABBS Foundation, this engaging reader includes essays that exemplify the broad scope and life-changing benefits of contemporary psychological science. A portion of all proceeds is donated to FABBS to support societies of cognitive, psychological, behavioral, and brain sciences.

- **The Horse That Won’t Go Away: Clever Hans, Facilitated Communication, and the Need for Clear Thinking** by Thomas E. Heinzen, Scott O. Lilienfeld, and Susan A. Nolan is a fascinating series of case studies
in confirmation bias. The authors engage and inspire students with true stories of how psychological research methods led to some surprising truths.

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Ultimately, this book represents our taking a little piece of our world and improving it. We hope that others will do the same as they use science to make the world a better place.