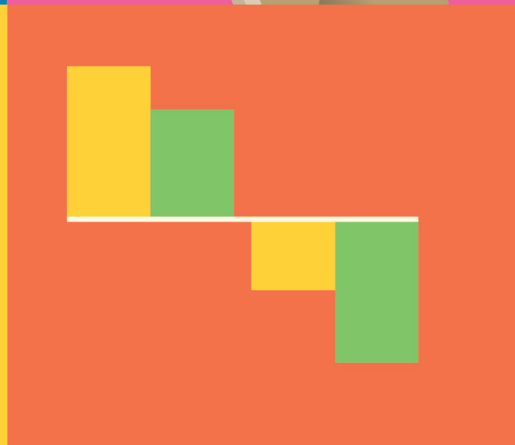
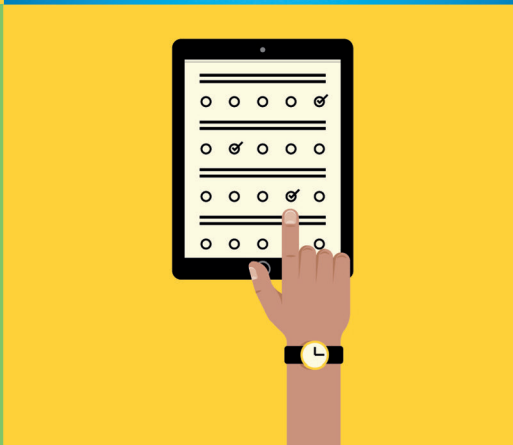
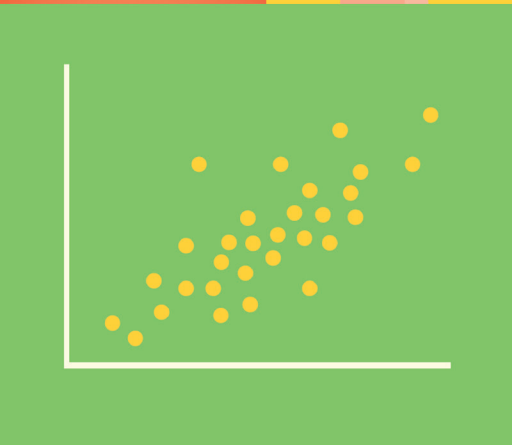
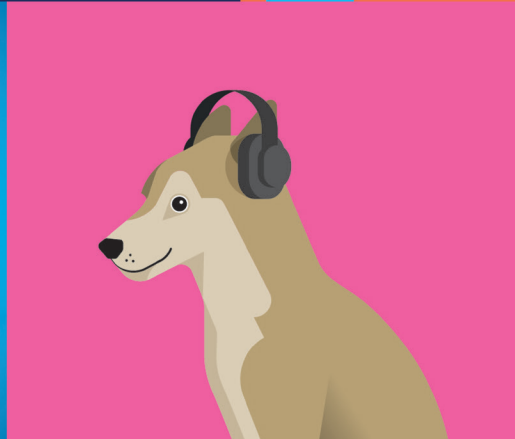
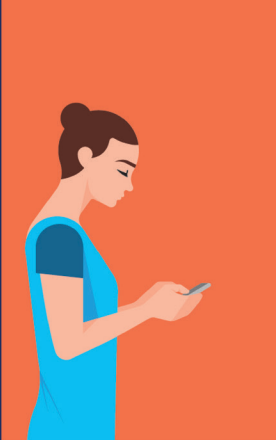


BETH MORLING  
**RESEARCH METHODS  
IN PSYCHOLOGY**  
Third Edition





THIRD EDITION

# Research Methods in Psychology

EVALUATING A WORLD OF INFORMATION





THIRD EDITION

# Research Methods in Psychology

EVALUATING A WORLD OF INFORMATION

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**Beth Morling**

UNIVERSITY OF DELAWARE



W. W. NORTON & COMPANY, INC.  
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**For my parents**







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# About the Author



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# Preface

Students in the psychology major plan to pursue a tremendous variety of careers—not just becoming psychology researchers. So they sometimes ask: Why do we need to study research methods when we want to be therapists, social workers, teachers, lawyers, or physicians? Indeed, many students anticipate that research methods will be “dry,” “boring,” and irrelevant to their future goals. This book was written with these very students in mind—students who are taking their first course in research methods (usually sophomores) and who plan to pursue a wide variety of careers. Most of the students who take the course will never become researchers themselves, but they can learn to systematically navigate the research information they will encounter in empirical journal articles as well as in online magazines, print sources, blogs, and tweets.

I used to tell students that by conducting their own research, they would be able to read and apply research later, in their chosen careers. But the literature on learning transfer leads me to believe that the skills involved in designing one’s own studies will not easily transfer to understanding and critically assessing studies done by others. If we want students to assess how well a study supports its claims, we have to teach them to assess research. That is the approach this book takes.

## Students Can Develop Research Consumer Skills

To be a systematic consumer of research, students need to know what to prioritize when assessing a study. Sometimes random samples matter, and sometimes they do not. Sometimes we ask about random assignment and confounds, and sometimes we do not. Students benefit from having a set of systematic steps to help them prioritize their questioning when they interrogate quantitative information. To provide that, this book presents a framework of **three claims and four validities**, introduced in Chapter 3. One axis of the framework is the three kinds of claims researchers (as well as journalists, bloggers, and commentators) might make: frequency claims (some percentage of people do X), association claims (X is associated with Y), and causal claims (X changes Y). The second axis of

the framework is the four validities that are generally agreed upon by methodologists: internal, external, construct, and statistical.

The three claims, four validities framework provides a scaffold that is reinforced throughout. The book shows how almost every term, technique, and piece of information fits into the basic framework.

The framework also helps students set priorities when evaluating a study. Good quantitative reasoners prioritize different validity questions depending on the claim. For example, for a frequency claim, we should ask about measurement (construct validity) and sampling techniques (external validity), but not about random assignment or confounds, because the claim is not a causal one. For a causal claim, we prioritize internal validity and construct validity, but external validity is generally less important.

Through engagement with a consumer-focused research methods course, students become systematic interrogators. They start to ask more appropriate and refined questions about a study. By the end of the course, students can clearly explain why a causal claim needs an experiment to support it. They know how to evaluate whether a variable has been measured well. They know when it's appropriate to call for more participants in a study. And they can explain when a study must have a representative sample and when such a sample is not needed.

## What About Future Researchers?

This book can also be used to teach the flip side of the question: How can producers of research design better studies? The producer angle is presented so that students will be prepared to design studies, collect data, and write papers in courses that prioritize these skills. Producer skills are crucial for students headed for Ph.D. study, and they are sometimes required by advanced coursework in the undergraduate major.

Such future researchers will find sophisticated content, presented in an accessible, consistent manner. They will learn the difference between mediation (Chapter 9) and moderation (Chapters 8 and 9), an important skill in theory building and theory testing. They will learn how to design and interpret factorial designs, even up to three-way interactions (Chapter 12). And in the common event that a student-run study fails to work, one chapter helps them explore the possible reasons for a null effect (Chapter 11). This book provides the basic statistical background, ethics coverage, and APA-style notes for guiding students through study design and execution.

## Organization

The fourteen chapters are arranged in six parts. Part I (Chapters 1–3) includes introductory chapters on the scientific method and the three claims, four validities framework. Part II (Chapters 4–5) covers issues that matter for any study: research

ethics and good measurement. Parts III–V (Chapters 6–12) correspond to each of the three claims (frequency, association, and causal). Part VI (Chapters 13–14) focuses on balancing research priorities.

Most of the chapters will be familiar to veteran instructors, including chapters on measurement, experimentation, and factorial designs. However, unlike some methods books, this one devotes two full chapters to correlational research (one on bivariate and one on multivariate studies), which help students learn how to interpret, apply, and interrogate different types of association claims, one of the common types of claims they will encounter.

There are three supplementary chapters, on Descriptive Statistics, Inferential Statistics, and APA-Style Reports and Conference Posters. These chapters provide a review for students who have already had statistics and provide the tools they need to create research reports and conference posters.

Two appendices—Random Numbers and How to Use Them, and Statistical Tables—provide reference tools for students who are conducting their own research.

## Support for Students and Instructors

The book's pedagogical features emphasize active learning and repetition of the most important points. Each chapter begins with high-level learning objectives—major skills students should expect to remember even “a year from now.” Important terms in a chapter are introduced in boldface. The Check Your Understanding questions at the end of each major section provide basic questions that let students revisit key concepts as they read. Each chapter ends with multiple-choice Review Questions for retrieval practice, and a set of Learning Actively exercises that encourage students to apply what they learned. (Answers are provided at the end of the book.) A master table of the three claims and four validities appears inside the book's front cover to remind students of the scaffold for the course.

I believe the book works pedagogically because it spirals through the three claims, four validities framework, building in repetition and depth. Although each chapter addresses the usual core content of research methods, students are always reminded of how a particular topic helps them interrogate the key validities. The interleaving of content should help students remember and apply this questioning strategy in the future.

I have worked with W. W. Norton to design a support package for fellow instructors and students. The online Interactive Instructor's Guide offers in-class activities, models of course design, homework and final assignments, and chapter-by-chapter teaching notes, all based on my experience with the course. The book is accompanied by other ancillaries to assist both new and experienced research methods instructors, including a new InQuizitive online assessment tool, a robust test bank with over 750 questions, updated lecture and active learning slides, and more; for a complete list, see p. xix.

## Teachable Examples on the Everyday Research Methods Blog

Students and instructors can find additional examples of psychological science in the news on my regularly updated blog, Everyday Research Methods ([www.everydayresearchmethods.com](http://www.everydayresearchmethods.com); no password or registration required). Instructors can use the blog for fresh examples to use in class, homework, or exams. Students can use the entries as extra practice in reading about research studies in psychology in the popular media. Follow me on Twitter to get the latest blog updates (@bmorling).

## Changes in the Third Edition

Users of the first and second editions will be happy to learn that the basic organization, material, and descriptions in the text remain the same. The third edition provides several new studies and recent headlines. Inclusion of these new examples means that instructors who assign the third edition can also use their favorite illustrations from past editions as extra examples while teaching.

In my own experience teaching the course, I found that students could often master concepts in isolation, but they struggled to bring them all together when reading a real study. Therefore, the third edition adds new Working It Through sections in several chapters (Chapters 3, 4, 5, 8, and 11). Each one works through a single study in depth, so students can observe how the chapter's central concepts are integrated and applied. For instance, in Chapter 4, they can see how ethics concepts can be applied to a recent study that manipulated Facebook newsfeeds. The Working It Through material models the process students will probably use on longer class assignments.

Also new in the third edition, every figure has been redrawn to make it more visually appealing and readable. In addition, selected figures are annotated to help students learn how to interpret graphs and tables.

Finally, W. W. Norton's InQuizitive online assessment tool is available with the third edition. InQuizitive helps students apply concepts from the textbook to practice examples, providing specific feedback on incorrect responses. Some questions require students to interpret tables and figures; others require them to apply what they're learning to popular media articles.

Here is a detailed list of the changes made to each chapter.

CHAPTER	MAJOR CHANGES IN THE THIRD EDITION
1. Psychology Is a Way of Thinking	The heading structure is the same as in the second edition, with some updated examples. I replaced the facilitated communication example (still an excellent teaching example) with one on the Scared Straight program meant to keep adolescents out of the criminal justice system, based on a reviewer's recommendation.
2. Sources of Information: Why Research Is Best and How to Find it	I simplified the coverage of biases of intuition. Whereas the second edition separated cognitive biases from motivated reasoning, the biases are now presented more simply. In addition, this edition aims to be clearer on the difference between the availability heuristic and the present/present bias. I also developed the coverage of Google Scholar.
3. Three Claims, Four Validities: Interrogation Tools for Consumers of Research	<p>The three claims, four validities framework is the same, keeping the best teachable examples from the second edition and adding new examples from recent media. In response to my own students' confusion, I attempted to clarify the difference between the type of study conducted (correlational or experimental) and the claims made about it. To this end, I introduced the metaphor of a gift, in which a journalist might "wrap" a correlational study in a fancy, but inappropriate, causal claim.</p> <p>When introducing the three criteria for causation, I now emphasize that covariance is about the study's results, while temporal precedence and internal validity are determined from the study's method.</p> <p>Chapter 3 includes the first new Working It Through section.</p>
4. Ethical Guidelines for Psychology Research	I updated the section on animal research and removed the full text of APA Standard 8. There's a new figure on the difference between plagiarism and paraphrasing, and a new example of research fabrication (the notorious, retracted <i>Lancet</i> article on vaccines and autism). A new Working It Through section helps students assess the ethics of a recent Facebook study that manipulated people's newsfeeds.
5. Identifying Good Measurement	This chapter retains many of the teaching examples as the second edition. For clarity, I changed the discriminant validity example so the correlation is only weak (not both weak and negative). A new Working It Through section helps students apply the measurement concepts to a self-report measure of gratitude in relationships.
6. Surveys and Observations: Describing What People Do	Core examples are the same, with a new study illustrating the effect of leading questions (a poll on attitudes toward voter ID laws). Look for the new "babycam" example in the Learning Actively exercises.
7. Sampling: Estimating the Frequency of Behaviors and Beliefs	<p>Look for new content on MTurk and other Internet-based survey panels. I updated the statistics on cell-phone-only populations, which change yearly. Finally, I added clarity on the difference between cluster and stratified samples and explained sample weighting.</p> <p>I added the new keyword <i>nonprobability sample</i> to work in parallel with the term <i>probability sample</i>. A new table (Table 7.3) helps students group related terms.</p>



CHAPTER	MAJOR CHANGES IN THE THIRD EDITION
8. Bivariate Correlational Research	<p>This chapter keeps most of the second edition examples. It was revised to better show that association <i>claims</i> are separate from correlational <i>methods</i>. Look for improved moderator examples in this chapter. These new examples, I hope, will communicate to students that moderators change the relationship between variables; they do not necessarily reflect the level of one of the variables.</p>
9. Multivariate Correlational Research	<p>I replaced both of the main examples in this chapter. The new example of cross-lag panel design, on parental overpraise and child narcissism, has four time periods (rather than two), better representing contemporary longitudinal studies. In the multiple regression section, the recess example is replaced with one on adolescents in which watching sexual TV content predicts teen pregnancy. The present regression example is student-friendly and also has stronger effect sizes.</p> <p>Look for an important change in Figure 9.13 aimed to convey that a moderator can be thought of as <i>vulnerability</i>. My own students tend to think something is a moderator when the subgroup is simply higher on one of the variables. For example, boys might watch more violent TV content <i>and</i> be higher on aggression, but that's not the same as a moderator. Therefore, I have updated the moderator column with the moderator "parental discussion." I hope this will help students come up with their own moderators more easily.</p>
10. Introduction to Simple Experiments	<p>The red/green ink example was replaced with a popular study on notetaking, comparing the effects of taking notes in longhand or on laptops. There is also a new example of pretest/posttest designs (a study on mindfulness training). Students sometimes are surprised when a real-world study has multiple dependent variables, so I've highlighted that more in the third edition. Both of the chapter's opening examples have multiple dependent variables.</p> <p>I kept the example on pasta bowl serving size. However, after Chapter 10 was typeset, some researchers noticed multiple statistical inconsistencies in several publications from Wansink's lab (for one summary of the issues, see the <i>Chronicle of Higher Education</i> article, "Spoiled Science"). At the time of writing, the pasta study featured in Chapter 10 has not been identified as problematic. Nevertheless, instructors might wish to engage students in a discussion of these issues.</p>
11. More on Experiments: Confounding and Obscuring Variables	<p>The content is virtually the same, with the addition of two Working It Through sections. The first one is to show students how to work through Table 11.1 using the mindfulness study from Chapter 10. This is important because after seeing Table 11.1, students sometimes think their job is to find the flaw in any study. In fact, most published studies do not have major internal validity flaws. The second Working It Through shows students how to analyze a null result.</p>
12. Experiments with More Than One Independent Variable	<p>Recent work has suggested that context-specific memory effects are not robust, so I replaced the Godden and Baddeley factorial example on context-specific learning with one comparing the memory of child chess experts to adults.</p>

CHAPTER	MAJOR CHANGES IN THE THIRD EDITION
13. Quasi-Experiments and Small- <i>N</i> Designs	<p>I replaced the Head Start study for two reasons. First, I realized it's not a good example of a nonequivalent control group posttest-only design, because it actually included a pretest! Second, the regression to the mean effect it meant to illustrate is rare and difficult to understand. In exchange, there is a new study on the effects of walking by a church.</p> <p>In the small-<i>N</i> design section, I provided fresh examples of multiple baseline design and alternating treatment designs. I also replaced the former case study example (split-brain studies) with the story of H.M. Not only is H.M.'s story compelling (especially as told through the eyes of his friend and researcher Suzanne Corkin), the brain anatomy required to understand this example is also simpler than that of split-brain studies, making it more teachable.</p>
14. Replication, Generalization, and the Real World	<p>A significant new section and table present the so-called "replication crisis" in psychology. In my experience, students are extremely engaged in learning about these issues. There's a new example of a field experiment, a study on the effect of radio programs on reconciliation in Rwanda.</p>
Supplementary Chapters	<p>In the supplementary chapter on inferential statistics, I replaced the section on randomization tests with a new section on confidence intervals. The next edition of the book may transition away from null hypothesis significance testing to emphasize the "New Statistics" of estimation and confidence intervals. I welcome feedback from instructors on this potential change.</p>

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*Beth Morling*

# Media Resources for Instructors and Students



## INTERACTIVE INSTRUCTOR'S GUIDE

**Beth Morling, University of Delaware**

The Interactive Instructor's Guide contains hundreds of downloadable resources and teaching ideas, such as a discussion of how to design a course that best utilizes the textbook, sample syllabus and assignments, and chapter-by-chapter teaching notes and suggested activities.



## POWERPOINTS

The third edition features three types of PowerPoints. The Lecture PowerPoints provide an overview of the major headings and definitions for each chapter. The Art Slides contain a complete set of images. And the Active Learning Slides provide the author's favorite in-class activities, as well as reading quizzes and clicker questions. Instructors can browse the Active Learning Slides to select activities that supplement their classes.



## TEST BANK

**C. Veronica Smith, University of Mississippi, and Catherine Burrows, University of Miami**

The Test Bank provides over 750 questions using an evidence-centered approach designed in collaboration with Valerie Shute of Florida State University and Diego Zapata-Rivera of the Educational Testing Service. The Test Bank contains multiple-choice and short-answer questions classified by section, Bloom's taxonomy, and difficulty, making it easy for instructors to construct tests and quizzes that are meaningful and diagnostic. The Test Bank is available in Word RTF, PDF, and *ExamView*® Assessment Suite formats.



## INQUIZITIVE

**Patrick Ewell, Kenyon College**

InQuizitive allows students to practice applying terminology in the textbook to numerous examples. It can guide the students with specific feedback for incorrect answers to help clarify common mistakes. This online assessment tool gives students the repetition they need to fully understand the material without cutting into valuable class time. InQuizitive provides practice in reading tables and figures, as well as identifying the research methods used in studies from popular media articles, for an integrated learning experience.



## EVERYDAY RESEARCH METHODS BLOG: [www.everydayresearchmethods.com](http://www.everydayresearchmethods.com)

The *Research Methods in Psychology* blog offers more than 150 teachable moments from the web, curated by Beth Morling and occasional guest contributors. Twice a month, the author highlights examples of psychological science in the news. Students can connect these recent stories with textbook concepts. Instructors can use blog posts as examples in lecture or assign them as homework. All entries are searchable by chapter.



## COURSEPACK

**Emily Stanley, University of Mary Washington, and Jeong Min Lee, University of Delaware**

The Coursepack presents students with review opportunities that employ the text's analytical framework. Each chapter includes quizzes based on the Norton Assessment Guidelines, Chapter Outlines created by the textbook author and based on the Learning Objectives in the text, and review flashcards. The APA-style guidelines from the textbook are also available in the Coursepack for easy access.

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THIRD EDITION

# Research Methods in Psychology

EVALUATING A WORLD OF INFORMATION







**PART I**

# **Introduction to Scientific Reasoning**



## Your Dog Hates Hugs

*NYMag.com, 2016*



## Mindfulness May Improve Test Scores

*Scientific American, 2013*

# 1

## Psychology Is a Way of Thinking

THINKING BACK TO YOUR introductory psychology course, what do you remember learning? You might remember that dogs can be trained to salivate at the sound of a bell or that people in a group fail to call for help when the room fills up with smoke. Or perhaps you recall studies in which people administered increasingly stronger electric shocks to an innocent man although he seemed to be in distress. You may have learned what your brain does while you sleep or that you can't always trust your memories. But how come you *didn't* learn that “we use only 10% of our brain” or that “hitting a punching bag can make your anger go away”?

The reason you learned some principles, and not others, is because psychological science is based on studies—on research—by psychologists. Like other scientists, psychologists are empiricists. Being an empiricist means basing one's conclusions on systematic observations. Psychologists do not simply think intuitively about behavior, cognition, and emotion; they know what they know because they have conducted studies on people and animals acting in their natural environments or in specially designed situations. Research is what tells us that most people will administer electric shock to an innocent man in certain situations, and it also tells us that people's brains are usually fully engaged—not just 10%. If you are to think like a psychologist, then you must think like a researcher, and taking a course in research methods is crucial to your understanding of psychology.

This book explains the types of studies psychologists conduct, as well as the potential strengths and limitations of each type of study. You will learn not only how to plan your own studies but



### LEARNING OBJECTIVES

**A year from now, you should still be able to:**

- 1.** Explain what it means to reason empirically.
- 2.** Appreciate how psychological research methods help you become a better producer of information as well as a better consumer of information.
- 3.** Describe five practices that psychological scientists engage in.

also how to find research, read about it, and ask questions about it. While gaining a greater appreciation for the rigorous standards psychologists maintain in their research, you'll find out how to be a systematic and critical consumer of psychological science.

## RESEARCH PRODUCERS, RESEARCH CONSUMERS

Some psychology students are fascinated by the research process and intend to become *producers* of research. Perhaps they hope to get a job studying brain anatomy, documenting the behavior of dolphins or monkeys, administering personality questionnaires, observing children in a school setting, or analyzing data. They may want to write up their results and present them at research meetings. These students may dream about working as research scientists or professors.

Other psychology students may not want to work in a lab, but they do enjoy reading about the structure of the brain, the behavior of dolphins or monkeys, the personalities of their fellow students, or the behavior of children in a school setting. They are interested in being *consumers* of research information—reading about research so they can later apply it to their work, hobbies, relationships, or personal growth. These students might pursue careers as family therapists, teachers, entrepreneurs, guidance counselors, or police officers, and they expect psychology courses to help them in these roles.

In practice, many psychologists engage in both roles. When they are planning their research and creating new knowledge, they study the work of others who have gone before them. Furthermore, psychologists in both roles require a curiosity about behavior, emotion, and cognition. Research producers and consumers also share a commitment to the practice of empiricism—to answer psychological questions with direct, formal observations, and to communicate with others about what they have learned.

### Why the Producer Role Is Important

For your future coursework in psychology, it is important to know how to be a producer of research. Of course, students who decide to go to graduate school for psychology will need to know all about research methods. But even if you do not plan to do graduate work in psychology, you will probably have to write a paper following the style guidelines of the American Psychological Association (APA) before you graduate, and you may be required to do research as part of a course lab section. To succeed, you will need to know how to randomly assign people to groups, how to measure attitudes accurately, or how to interpret results from a graph. The skills you acquire by conducting research can teach you how psychological scientists ask questions and how they think about their discipline.



As part of your psychology studies, you might even work in a research lab as an undergraduate (**Figure 1.1**). Many psychology professors are active researchers, and if you are offered the opportunity to get involved in their laboratories, take it! Your faculty supervisor may ask you to code behaviors, assign participants to different groups, graph an outcome, or write a report. Doing so will give you your first taste of being a research producer. Although you will be supervised closely, you will be expected to know the basics of conducting research. This book will help you understand why you have to protect the anonymity of your participants, use a coding book, or flip a coin to decide who goes in which group. By participating as a research producer, you can expect to deepen your understanding of psychological inquiry.



**FIGURE 1.1**  
**Producers of research.**

As undergraduates, some psychology majors work alongside faculty members as producers of information.

## Why the Consumer Role Is Important

Although it is important to understand the psychologist's role as a producer of research, most psychology majors do not eventually become researchers. Regardless of the career you choose, however, becoming a savvy consumer of information is essential. In your psychology courses, you will read studies published by psychologists in scientific journals. You will need to develop the ability to read about research with curiosity—to understand it, learn from it, and ask appropriate questions about it.

Think about how often you encounter news stories or look up information on the Internet. Much of the time, the stories you read and the websites you visit will present information based on research. For example, during an election year, Americans may come across polling information in the media almost every day. Many online newspapers have science sections that include stories on the latest research. Entire websites are dedicated to psychology-related topics, such as treatments for autism, subliminal learning tapes, or advice for married couples. Magazines such as *Scientific American*, *Men's Health*, and *Parents* summarize research for their readers. While some of the research—whether online or printed—is accurate and useful, some of it is dubious, and some is just plain wrong. How can you tell the good research information from the bad? Understanding research methods enables you to ask the appropriate questions so you can evaluate information correctly. Research methods skills apply not only to research studies but also to much of the other types of information you are likely to encounter in daily life.

Finally, being a smart consumer of research could be crucial to your future career. Even if you do not plan to be a researcher—if your goal is to be a social worker, a teacher, a sales representative, a human resources professional, an entrepreneur, or a parent—you will need to know how to interpret published research with a critical eye. Clinical psychologists, social workers, and family therapists must read research to know which therapies are the most effective. In fact, licensure in these helping professions requires knowing the research behind **evidence-based treatments**—that is, therapies that are supported by research. Teachers also use research to find out which teaching methods work best. And the business world runs on quantitative information: Research is used to predict what sales will be like in the future, what consumers will buy, and whether investors will take risks or lie low. Once you learn how to be a consumer of information—psychological or otherwise—you will use these skills constantly, no matter what job you have.

In this book, you will often see the phrase “interrogating information.” A consumer of research needs to know how to ask the right questions, determine the answers, and evaluate a study on the basis of those answers. This book will teach you systematic rules for interrogating research information.

## The Benefits of Being a Good Consumer

What do you gain by being a critical consumer of information? Imagine, for example, that you are a correctional officer at a juvenile detention center, and you watch a TV documentary about a crime-prevention program called Scared Straight. The program arranges for teenagers involved in the criminal justice system to visit prisons, where selected prisoners describe the stark, violent realities of prison life (**Figure 1.2**). The idea is that when teens hear about how tough it is in prison, they will be scared into the “straight,” law-abiding life. The program makes a lot



**FIGURE 1.2**  
**Scared straight.**

Although it makes intuitive sense that young people would be scared into good behavior by hearing from current prisoners, such intervention programs have actually been shown to cause an increase in criminal offenses.

of sense to you. You are considering starting a partnership between the residents of your detention center and the state prison system.

However, before starting the partnership, you decide to investigate the efficacy of the program by reviewing some research that has been conducted about it. You learn that despite the intuitive appeal of the Scared Straight approach, the program doesn't work—in fact, it might even cause criminal activity to get worse! Several published articles have reported the results of randomized, controlled studies in which young adults were assigned to either a Scared Straight program or a control program. The researchers then collected criminal records for 6–12 months. None of the studies showed that Scared Straight attendees committed fewer crimes, and most studies found an *increase* in crime among participants in the Scared Straight programs, compared to the controls (Petrosino, Turpin-Petrosino, & Finckenauer, 2000). In one case, Scared Straight attendees had committed 20% *more* crimes than the control group.

At first, people considering such a program might think: If this program helps even one person, it's worth it. However, we always need empirical evidence to test the efficacy of our interventions. A well-intentioned program that seems to make sense might actually be doing harm. In fact, if you investigate further, you'll find that the U.S. Department of Justice officially warns that such programs are ineffective and can harm youth, and the Juvenile Justice and Delinquency Prevention Act of 1974 was amended to prohibit youth in the criminal justice system from interactions with adult inmates in jails and prisons.

Being a skilled consumer of information can inform you about other programs that might work. For example, in your quest to become a better student, suppose you see this headline: “Mindfulness may improve test scores.” The practice of mindfulness involves attending to the present moment, on purpose, with a nonjudgmental frame of mind (Kabat-Zinn, 2013). In a mindful state, people simply observe and let go of thoughts rather than elaborating on them. Could the practice of mindfulness really improve test scores? A study conducted by Michael Mrazek and his colleagues assigned people to take either a 2-week mindfulness training course or a 2-week nutrition course (Mrazek, Franklin, Philips, Baird, & Schooner, 2013). At the end of the training, only the people who had practiced mindfulness showed improved GRE scores (compared to their scores beforehand). Mrazek's group hypothesized that mindfulness training helps people attend to an academic task without being distracted. They were better, it seemed, at controlling their minds from wandering. The research evidence you read about here appears to support the use of mindfulness for improving test scores.

By understanding the research methods and results of this study, you might be convinced to take a mindfulness-training course similar to the one used by Mrazek and his colleagues. And if you were a teacher or tutor, you might consider advising your students to practice some of the focusing techniques. (Chapter 10 returns to this example and explains why the Mrazek study stands up to interrogation.) Your skills in research methods will help you become a better consumer of