



Chapter 1

An Introduction to Psychological Research Methods: Course Content and Pedagogical Considerations

As long as psychology has been a recognized discipline, research methods have played an important role in the development of our rapidly evolving field. In a sense, everything psychologists know about behavior, cognition, and emotion—in other words, all they know about psychology—they have gleaned using well-established research methods, some of which have been around as long as science itself and some of which emerged in more recent times. Therefore, it may not be a stretch to claim that the research methods course might be one of the most important courses, if not the single most important course, in the psychology curriculum.

In this chapter I briefly describe several pedagogical issues that you might wish to consider before teaching your research methods course, whether it is for the first or fifth or twenty-fifth time. I also discuss the history and evolution of the research methods course, because your students will probably be unaware of the fact that research methods have played such a crucial role in the history of our discipline.

A Brief History of the Research Methods Course

With the establishment of numerous psychology laboratories in Germany during the late 1800s, most notably and influentially the



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laboratory of Wilhelm Wundt, curious students from all over the world—including at least 30 from the United States—flocked to Germany in hopes of learning more about, and ultimately earning their degrees in, this new discipline called “psychology” (Benjamin, Durkin, Link, Vestal, & Acord, 1992; Goodwin, 2003).

In contrast to modern-day teaching techniques, which place a heavy emphasis on lecture-based transmission of information (e.g., Benjamin, 2002), students of the new discipline of psychology spent little, if any, time in the classroom, instead learning about their subject matter almost solely by conducting studies in the laboratory. In fact, “the most distinctive characteristic of the German universities was the emphasis placed upon research in all areas of knowledge” (Hilgard, 1987, p. 15). This approach to learning was dominant during the 1800s, a time when academic freedom and an emphasis on research led to an explosion in the number of laboratories using empirical techniques to examine their topics of interest. In step with the prevailing German *zeitgeist*, which emphasized empirical inquiry, Wundt, the “Father of Modern Psychology” and founder of the first psychology laboratory at the University of Leipzig in 1879, set out to examine the human mind using established research methods. In fact, in his classic book *Principles of Physiological Psychology*, Wundt stated that the new discipline of psychology should be a scientific endeavor, rather than purely philosophical in scope (Goodwin, 2005). In essence, then, the history of psychology is really the history of experimental psychology, along with its accompanying methodologies. Your students will probably be unaware of this important fact, so you might want to emphasize it.

After earning their degrees with Wundt in the decade following the opening of his lab in Leipzig, many American students returned to the United States and opened psychology laboratories of their own. Endeavoring to diffuse their new scientific discipline, these psychologists, largely following the model of doctoral training many of them had experienced while studying in Europe, trained other students interested in learning about psychology and the methods it used to examine its subject matter. Although early doctoral education in the United States closely followed the European model of training, there were differences in the way students in Europe and those in the United States learned to be psychologists (Goodwin, 2003). Whereas doctoral training in Germany and other parts of Europe continued to focus mainly on laboratory-based experiences, doctoral training in the United States also included classroom-based





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experiences, or “drill courses,” the primary purpose of which was “[to shape] students to share the values held by those advocating the new scientific psychology” (Goodwin, 2003, p. 19). These drill courses typically included lectures by professors on the process of scientific inquiry and replications by students of “classic” psychology experiments. Although drill courses had their roots in graduate psychology programs, they eventually branched out into undergraduate programs, providing a way for a much larger number of students to learn about the new discipline of psychology.

The presence of drill courses in American psychology programs led to a need for textbooks to serve as guides for both professors and students (Goodwin, 2003). Early textbooks, such as E. B. Titchener’s (1901, 1905) monumental four-volume *Experimental Psychology*, were divided into sections, each describing a specific method for studying one of the relatively few psychological phenomena that defined the early years of psychology (e.g., consciousness, perception, reaction time). As the discipline expanded and began to examine other new and interesting topics, so too did the content of psychology textbooks. Yet because psychology was still mostly academic, and thus experimental in nature, the overall format of the books stayed essentially the same (American Psychological Association [APA], 1999). Textbooks such as Woodworth’s (1938) *Experimental Psychology* and Stevens’s (1951) *Handbook of Experimental Psychology* continued to follow a format in which the authors described topics such as reaction time, attention, emotion, and conditioning, among others, along with the specific research methods for studying each of these topics. Given the emphasis on content in experimental psychology textbooks during the early and middle parts of the 1900s, it is probably safe to assume that courses focusing on research methods followed a similar format.

Beginning in the 1950s and taking hold in the 1960s, the format of experimental psychology textbooks—and presumably the courses in which instructors adopted them—began to change (APA, 1999). As psychology grew, and as psychologists began to study other interesting psychological phenomena, it became impossible to cover each of these topics, along with their accompanying research methods, during a single semester-long course. Additionally, researchers in relatively new areas of psychology (e.g., social and developmental psychology) understood that the methods used by early psychologists, and previously described by Woodworth (1938) and others, were not necessarily unique to certain topics; in fact, researchers



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could easily adapt these methods to study the phenomena that defined these new domains of psychology. Thus the structure of research methods textbooks changed from one that focused on psychology's content areas (and accompanying methods) to one that instead described the various research methods that psychologists used to examine the vast range of phenomena that now characterized the rapidly expanding discipline. McGuigan's (1960) *Experimental Psychology: A Methodological Approach* was the first methods textbook to adopt this format, marking a shift in the nature of both research methods textbooks and their accompanying courses (APA, 1999; Proctor & Capaldi, 2001). Following McGuigan's lead, most research methods textbooks published in the 1960s and beyond rarely, if ever, contained specific chapters on perception, learning, and attention, for example. Rather, they contained chapters on correlational methods, experimental methods, and other emerging research methods that soon became staples in the field. Along with this change in the general structure of research methods textbooks came a change in the way most instructors taught their research methods courses. Today's research methods course, which one can find in a large majority of undergraduate psychology programs across the country (Perlman & McCann, 1999), has mirrored this tradition and thus has remained relatively stable in its general appearance for well over four decades.

Research methods in undergraduate psychology curricula

Despite the rapid development of psychology as a discipline over the last several decades, which seems to be reflected in a burgeoning number of course offerings, there are certain courses that have lingered at the forefront of "Top 30" lists for years and that continue to remain vitally important to the expansion of the discipline (Lux & Daniel, 1978; Perlman & McCann, 1999). One such course is research methods (or related courses such as experimental psychology, see, e.g., Messer, Griggs, & Jackson, 1999), a course that, in one form or another, has remained a constant in psychological curricula since the birth of our discipline over 100 years ago (Goodwin, 2003).

It is not surprising, then, that a large majority of psychology departments across the United States include a course, or several courses, on research methodology (Bailey, 2002; Perlman & McCann, 1999). In fact, since the 1950s, various committees charged with





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examining undergraduate psychology curricula have consistently recommended that a course on research methods be included in undergraduate programs (see Brewer et al., 1993). What's more, Brewer et al. (1993) went so far as to suggest that "The fundamental goal of education in psychology, from which all the others follow, is to teach students to think as scientists about behavior" (p. 169).

In short, the research methods course has been, and will continue to be, one of the most important courses in undergraduate psychology curricula. Not only will this course allow our students to better understand how researchers have studied the different phenomena discussed in other undergraduate psychology courses, it will also allow them to better understand the world in which they live. Given the importance of the research methods course, those of us who teach it have an obligation to do so the best we can. This book is designed to help you do just that.

Changing Trends in Teaching Research Methods

As mentioned earlier, changes in research methods textbooks in the 1960s engendered a change in the way psychology instructors taught their research methods courses. Specifically, prior to 1960, instructors taught content and method simultaneously (e.g., the methods that researchers use to study sensation and perception). Later years, however, saw an increased emphasis on broad methodological issues and less discussion of specific psychological content. The emphasis on methodological issues in research methods courses has continued more or less unabated for over 40 years, but there have been changes in the way instructors structure the course, with hopes of best informing students about psychological research methods. Below I briefly describe some of these more recent trends (see Bailey, 2002, for additional discussion).

Statistics, then methods. The most common trend in teaching research methods has been one in which students first take an introductory course in statistics and then, in a subsequent semester, follow up with a course in research methods. In this way, students (we hope) enter the research methods course with prior knowledge of the statistical concepts that go hand-in-hand with the methodological issues most frequently taught in a research methods course. Because instructors assume that students have preexisting



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knowledge of statistical issues, instruction in these courses tends to focus most heavily on methodological issues, with only a cursory review of certain statistical concepts. Unfortunately, students' retention of statistical concepts is often less than ideal, meaning that research methods instructors often spend more time than desired reviewing statistical information that is necessary for understanding certain methodological issues.

Statistics and research methods concurrently. One recent approach to combating this problem is to arrange for students to take statistics and research methods courses during the same term. Ideally, students progress through the two courses at approximately the same speed, making it possible for information covered at any given time in the statistics course to be related to information concurrently presented in the research methods course. For example, if all goes as planned in the two courses, students should be discussing t tests in statistics at approximately the same time they discuss two-group designs in research methods, and they should be discussing one-way ANOVAs at the same time they are learning about multiple-group designs.

This scenario requires careful planning, especially when different instructors teach the two courses, a common occurrence in many departments. Moreover, despite our best efforts, courses do not always progress as planned. Most instructors, at one time or another, have had to modify their course syllabi in minor or major ways to deal with problems that have thrown into disarray their plans for the semester. As a result, different instructors teaching concurrent statistics and research methods courses might end up presenting information at different times, thus potentially impairing their students' ability to see the relations among important concepts.

Combined statistics and methods. An even more recent trend in teaching research methods is to combine statistics and methods into a single course or series of courses, often taught over two semesters, that integrate statistics and research methods in such a way that students learn about statistical concepts and related methodological concepts at the same time. For example, whereas students in most statistics and methods courses learn about computational and conceptual aspects of t tests during one semester and then focus more on two-group designs the following semester, students in an integrated course learn about these ideas together, thus enhancing



their ability to see how researchers use t tests to examine differences between two groups.

The increasing popularity of integrated statistics and methods courses has led to a need for textbooks that integrate these topics as well. Fortunately, several authors have tried to meet this need (e.g., Davis & Smith, 2005; Furlong, Lovelace, & Lovelace, 2000; Heiman, 2001). The emergence of a number of textbooks that integrate statistics and methods has eased the burden for instructors, who otherwise would need to seek out supplementary materials that do an adequate job of combining statistical and methodological information, or, worse yet—at least in the minds of students—require students to buy more than one textbook.

Clearly, there are costs and benefits to structuring your research methods course in each of the preceding ways. Whereas teaching statistics and research methods in a sequence might be easier from an administrative point of view, such a format may not be optimal for students' retention of material. Teaching the topics together in a two-sequence course might improve learning and retention, but there are practical issues that might make such a course offering less feasible. For example, if students transfer to your institution after having completed a statistics course, will you require them to take the entire sequence? You will likely need to consider factors both internal and external to your course before deciding which format best suits your needs as well as the needs of your department and your students.

Difficulties and Rewards of Teaching Research Methods

For many students, the thought of taking research methods is overwhelming, producing feelings of trepidation, torpidity, and torment—often all at the same time. During their statistics courses, many students probably heard the following statement from their instructors: “Don’t worry. You’ll learn more about this material next semester, in research methods . . .” Unfortunately, such declarations often do little to enhance students’ enthusiasm for their subsequent research methods courses. More often than not, they are thinking, and sometimes even saying, “Oh great, I get to study this stuff again. I can hardly wait!” Such is the life of a research methods instructor and





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hence the reason why the very thought of teaching research methods sometimes produces for both neophyte and veteran instructor alike feelings of trepidation, torpidity, and torment—often all at the same time. Yes, teaching research methods can be difficult and, at times, more than a little frustrating. At the same time, however, it can also be incredibly rewarding. Let's consider some of the difficulties that make research methods a tough class to teach, as well as some of the rewards that come with teaching research methods, rewards that often show up unannounced and usually when we least expect them.

Difficulties

Quite possibly the greatest barrier to overcome when teaching research methods is the fact that many, if not most, undergraduate students become psychology majors in hopes of pursuing careers in something having to do with counseling or clinical psychology. Later, after students have had more courses, many switch gears slightly, choosing instead to pursue careers in another area of applied psychology, such as school psychology, industrial/organizational psychology, or forensic psychology (although many are unaware of what forensic psychology actually entails; see, e.g., Huss, 2001).

Because of their interest in applied psychology, many of our students are under the mistaken impression that knowledge of research methods is not pertinent to them, simply because they are not going to be “doing research,” and especially if they know they are not going to pursue graduate training in psychology or a related field. Even if our students understand, and maybe even appreciate, why knowledge of research methods might be an important goal for some, they feel they would be better served spending their time learning more about abnormal psychology, personality, and other more “interesting” topics that will help them become effective clinicians and counselors.

Unfortunately, our students often underestimate the importance of research methods in helping them pursue their postbaccalaureate goals, whether those goals ultimately include employment or graduate school. Briihl (2001), for example, found that although undergraduate students viewed as important such objective criteria as grade point average for obtaining a job or getting into graduate school, they downplayed the relative importance of research experience and other skills (e.g., analytical skills) often acquired in research methods courses. Regrettably, some of our talented students may



have trouble getting into graduate school or obtaining employment simply because they failed to see the importance of research methods in helping them pursue future endeavors (see, e.g., Keith-Spiegel, Tabachnick, & Spiegel, 1994).

A second reason why teaching research methods can be rather difficult is because students often find the material less interesting than the material they cover in their other psychology courses. I am confident, and I presume many of you would agree with me, that undergraduate students become psychology majors because they are interested in topics such as depression, schizophrenia, personality, and the like—topics they likely know something about or have some experience with—and not in topics such as random assignment, control techniques, threats to internal validity, and factorial designs. Consequently, getting students engaged in the subject matter may take more cajoling than might normally be the case.

A final reason why teaching research methods can be difficult concerns the fact that students often enter our courses with misconceptions about science in general and misconceptions about psychology as a science in particular (e.g., Brems, 1994). These misconceptions likely interfere with our ability to teach students about the importance of research methods in our discipline. Consequently, teaching research methods may be difficult not because students find the material unimportant or uninteresting, but because many of them do not see psychology as a scientific discipline and simply want to move on and learn more about what psychologists “really do.”

Rewards

Just as there are difficulties that often come with teaching psychological research methods—possibly more difficulties than we like to acknowledge—so too are there significant rewards. Most likely, the rewards that come with teaching this course are quite variable and, in many cases, specific to each individual. Yet conversations with my colleagues suggest that there are some common rewards that many research methods instructors experience either during or after teaching their courses.

Arguably the most rewarding aspect of teaching research methods is watching our students come to appreciate the importance of research methods in psychology. As mentioned earlier, it is rather common for students to enter our research methods courses either uninterested in, or already detesting, the material they have yet to





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learn. Slowly, but surely, many of these students come to realize that the research methods course is not the “evil” course they thought it would be and that knowledge of research methods can be both useful and interesting.

A second reward comes when students begin to think both scientifically and critically about issues they may not have considered very deeply before. With additional exposure to the scientific method, they begin to realize that much of the information they encounter in the “real world” is based on tenuous arguments and that faulty conclusions regarding all types of research (e.g., causation inferred from correlational studies) are alarmingly commonplace (Brewer et al., 1993). Critical thinking will serve them well not only in the research methods course, but also in their subsequent courses and, maybe even more importantly, as they venture outside the protective walls of academia.

Finally, as perhaps you have discovered yourself, it can be very rewarding when students, who at the beginning of the semester showed a strong dislike of research methods, approach you later and inquire about possible research opportunities they might pursue. Not only have these students come to understand the importance of research methods in psychology, they have become motivated to put into practice what they have learned in your course. Quite often, students’ negative opinions about research methods melt away once they have the opportunity to use the knowledge they gained in the course to examine some psychological phenomenon that is of interest to them. If their experiences go well, some of these students might even consider careers as research psychologists and academicians.

In sum, there are both difficulties and rewards that you can expect to encounter when teaching research methods, and sometimes the difficulties may outnumber the rewards. However, the satisfaction that occurs when students “see the light” more than outweighs the effort and frustration that often accompany the teaching of this vitally important course.

Course Content and Sequence

As research methods have become more sophisticated over the last several decades, those who teach the research methods course





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have felt compelled to include an increasing number of topics. For example, the last 30 years have witnessed a sizeable increase in the use of qualitative research methods in psychology (Rennie, Watson, & Monteiro, 2002). Consequently, some research methods instructors have started to devote a good amount of class time to such topics as grounded theory, participatory action research, ethnography, and discourse analysis, topics that past research methods instructors rarely, or barely, discussed in their courses. Similarly, with an increased emphasis on effect size (e.g., Cohen, 1992), instructors now frequently spend a good portion of their classes discussing with students how various research methods accomplish the feat of increasing effect size.

Unfortunately, an increase in the length of college and university semesters has not accompanied the increase in the number of topics that research methods instructors feel inclined, or may even be required, to cover in their courses. As a result, many of us who teach research methods frequently feel as though we are attempting to cram an ever-increasing number of important topics into what sometimes feels like a shorter and shorter period of time. Consequently, we are often left asking ourselves, “What content do I absolutely have to cover this semester?”

Perhaps you have spent some time discussing with colleagues what topics they typically cover when teaching research methods; you may have also examined numerous research methods textbooks to see if there is any consistency in the topics they include. In both cases, you may have found, as I have, that there is considerable variability in the topics that research methods instructors include in their courses and that methods textbooks contain. Nevertheless, I believe there are certain topics that all instructors should include in their courses if they wish to provide their students with a relatively thorough understanding of research methods. Below I briefly discuss each of these topics. In addition, I have listed these topics in the approximate sequence that seems to maximize both learning and retention of the material.

History of research methods. As mentioned earlier, you may wish to include only a brief discussion of this topic, but introducing the history of research methods in psychology will put the rest of your course in context, thus giving your students a better understanding of course content and how the discipline has evolved since its humble beginnings (e.g., Goodwin, 2003).



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Characteristics of science. Ideally, your students will remember from their introductory courses that psychology is a science. Nevertheless, you may wish to discuss with them the characteristics of science and why psychology constitutes “science” just as much as so-called “hard” sciences (e.g., physics, chemistry). You would also do well to discuss with them how the scientific analysis of psychological phenomena differs from pseudoscientific approaches (see Stanovich, 2001). In doing so, your students will likely obtain a better understanding of why psychology is scientific in nature and how researchers are able to study topics such as love, self-esteem, and intelligence, phenomena that some consider to be beyond the scope of scientific analysis. Your students will also see how the research methods you discuss later in the semester are central to the scientific method and how these methods help psychologists gain a better understanding of the phenomena that constitute our discipline.

Ethics. As with any scientific endeavor, there are ethical considerations that guide, as well as constrain, the practices of psychologists. Because ethical considerations pervade the work of all psychologists—instructors, researchers, and practitioners—your students should be aware of the principles that serve as a beacon for psychologists who are confronted with the foggy murk of ethical dilemmas. During your coverage of ethical considerations, you should especially focus your discussion on those guidelines that directly affect the practices of psychological researchers (see APA, 2002).

Reliability and validity. As two of the most important concepts in psychological research, reliability and validity should remain at the forefront of your discussions throughout the semester. Early in the semester, you should introduce your students to the ideas of reliability and validity as well as to related topics such as (a) operational definitions; (b) measurement, including variables, scales of measurement, and sources of measurement error; and (c) how each of the preceding topics is related to reliability and validity. As the semester progresses, you should introduce different types of reliability (e.g., interobserver reliability) and validity (e.g., internal validity) when you discuss related topics.

Research design and statistical analysis. Your students likely received exposure to this topic in statistics, but now is the perfect time to reinforce their understanding of the relation between research design





and statistical analysis. However, rather than presenting this material in full prior to subsequent course material, you may want to introduce early in the semester the general idea of statistical analysis—including null hypothesis significance testing, an idea with which they should be at least vaguely familiar—and then discuss in more detail later in the semester the specific hypotheses and statistical analyses that go with each design. In my experience, students really come to understand the relation between research design and statistical analysis once they encounter the information typically covered in the research methods course.

Nonexperimental research methods. Some instructors choose to skim over these topics, which are also known as descriptive research methods. However, given their omnipresence in our field, you would do well to spend considerable time discussing correlational studies, *ex post facto* designs (including predictor and criterion variables), and naturalistic observations. Not only will your students become familiar with the wide range of methods that psychologists use, they will also have the opportunity to compare and contrast these methods with experimental methods, which will likely improve their understanding of both.

Experimental research methods. Most researchers view experiments as the *crème de la crème* of research methods, because of their ability to show cause-and-effect relations between variables. Coverage of experimental methods should include extensive discussion of independent, dependent, and extraneous variables; threats to internal validity; techniques for controlling threats to internal validity; different types of experimental designs, including two-group designs, multiple-group designs, and factorial designs; and the use of control groups.

Large-N vs. small-N designs. Although most textbooks provide extensive coverage of large-N (between-groups) designs, they seldom contain more than minimal coverage of small-N (single-subject) designs. Because small-N designs provide a useful way to study causal relations with one or a small number of subjects, and because they are important in psychology's history (Saville & Buskist, 2003), discussion of these designs might be of interest to students who wish to pursue careers as practitioners, in which they will most likely be working closely with individual clients.





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Writing research reports. Once your students have an understanding of how the research process works, they should learn how to write APA-style papers in which they report the results of their research. Writing these reports will allow your students to synthesize much of the material they covered during the semester and will serve them well in their subsequent courses, many of which will require APA-style papers. Although many instructors wait until the end of the semester to discuss APA-style papers, presumably because their students then have the requisite knowledge to write the papers more effectively, you might also wish to introduce this information early in the semester, so students can work on multiple drafts throughout the semester, as they are learning about the research process (see Chapter 9).

Conclusion

As mentioned earlier, teaching research methods can be both difficult and rewarding. Although many students enter our classrooms with feelings of disinterest, dislike, or even fear, we can take steps to assuage their initial concerns and turn the course into one that students find both useful and interesting. In this chapter, I have addressed general pedagogical issues that you should consider as you prepare for your next research methods course. In the chapters that follow, I turn in more detail to many of the topics that you will likely discuss in your course and attempt to delineate ways to teach these topics more effectively. With concerted effort, research methods can be a course that students look forward to taking, rather than a course that produces apprehensiveness and antipathy.

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