empowerment series

essential research methods for social work

FOURTH EDITION

Allen Rubin ▪ Earl Babbie

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Council on Social Work Education Educational Policy and Accreditation Standards by Chapter

Essential Research Methods for Social Work, Fourth Edition now includes explicit references to the Educational Policy and Accreditation Standards' (EPAS) ten core competencies and 41 recommended practice behaviors. The column on the right informs the reader in which chapters the icons appear.

The 10 Competencies and 41 Recommended Practice Behaviors (EPAS 2008):	Chapter(s) Where Referenced:
2.1.1 Identify as a professional social worker and conduct oneself accordingly	
a. Advocate for client access to the services of social work	
b. Practice personal reflection and self-correction to assure continual professional development	
c. Attend to professional roles and boundaries	
d. Demonstrate professional demeanor in behavior, appearance, and communication	
e. Engage in career-long learning	2
f. Use supervision and consultation	
2.1.2 Apply social work ethical principles to guide professional practice	
a. Recognize and manage personal values in a way that allows professional values to guide practice	
b. Make ethical decisions by applying standards of the National Association of Social Workers Code of Ethics and, as applicable, of the International Federation of Social Workers/International Association of Schools of Social Work Ethics in Social Work, Statement of Principles	1, 4, and 5
c. Tolerate ambiguity in resolving ethical conflicts	4 and 5
d. Apply strategies of ethical reasoning to arrive at principled decisions	
2.1.3 Apply critical thinking to inform and communicate professional judgments	1 and 2
a. Distinguish, appraise, and integrate multiple sources of knowledge, including research-based knowledge and practice wisdom	1, 2, 3, 4, and 7
b. Analyze models of assessment, prevention, intervention, and evaluation	3 and 4
c. Demonstrate effective oral and written communication in working with individuals, families, groups, organizations, communities, and colleagues	9
2.1.4 Engage diversity and difference in practice	
a. Recognize the extent to which a culture's structures and values may oppress, marginalize, alienate, or create or enhance privilege and power	4 and 5
b. Gain sufficient self-awareness to eliminate the influence of personal biases and values in working with diverse groups	6
c. Recognize and communicate their understanding of the importance of difference in shaping life experiences	
d. View themselves as learners and engage those with whom they work as informants	

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Essential Research Methods for **Social Work**

Cengage Learning Empowerment Series

Fourth Edition

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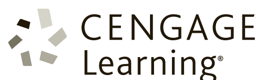

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To our wives, Christina Rubin and Suzanne Babbie

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Preface

More than 25 years ago we wrote the text *Research Methods for Social Work*, which is now in its eighth edition. Although that text was an immediate success and continues to be widely adopted, some colleagues who really like that text suggested that we create a less advanced version. At the same time, these colleagues expressed dissatisfaction with the existing less advanced texts, which they characterized as too sketchy and simplistic. What they wanted was a sort of middle-ground text—one that is less advanced than our other text but that still provides *essential* research methods content in sufficient depth and breadth, with social work illustrations and applications throughout, and with a constant focus on the utility of social work research in social work practice.

We wrote the first three editions of this text, *Essential Research Methods for Social Work*, to meet that need. Those editions retained most of the content of the more advanced version, but presented it in a simplified fashion and organized into fewer and shorter chapters. The success of those editions suggests that we met the needs of instructors who deemed the original content to be too advanced for students at the BSW level (and perhaps some at the MSW level).

Although we presented the material in a more simplified fashion, we attempted to maintain the strengths of the more advanced text. For example, we integrated quantitative and qualitative methods and showed how using both can enhance a research study. We attempted to balance the attention we give to both types of inquiry and to their respective advantages and limitations. At times we discussed the strengths and weaknesses of quantitative and qualitative methods in general. At other times we discussed the strengths and weaknesses of specific types of quantitative or qualitative methods. We attempted to do this without implying that either of these two complementary approaches to inquiry has more strengths or weaknesses than the other.

Despite the success of the previous editions of this text, we appreciated the excellent suggestions made to improve them by colleagues who used or reviewed them. This fourth edition contains most of their suggested improvements as well as some that we envisioned ourselves.

EPAS CORE COMPETENCIES

In this edition we continue to show how its contents pertain to the core competencies delineated in the Council on Social Work Education's (CSWE) Educational Policy and Accreditation Standards (EPAS). Each chapter has icons indicating which of the core competencies and recommended practice behaviors apply to the material in that chapter. Some of the icons match a particular chapter section with its corresponding core competency or practice behavior. Others indicate that the entire chapter pertains to several competencies and practice behaviors.

At the end of each chapter, we added competency notes to elaborate upon the core competencies and practice behaviors addressed in the chapter. For example, Chapter 2, on Evidence-Based Practice, contains icons pertaining to seven of the ten EPAS core competencies. One of those seven competency icons in Chapter 2 pertains to engaging in career-long learning. In the competency notes at the end of that chapter, we explain how content in that chapter pertains to each core competency icon. For the icon pertaining to engaging in career-long learning, we explain that evidence-based practitioners recognize that practice-related knowledge can change as newer and better research emerges, and that therefore they must engage in career-long learning to stay abreast of those changes and incorporate them into their practice.

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MIXED METHODS

One of the significant additions to our previous edition was its increased attention to mixed methods research. We have expanded that coverage in Chapter 3 of this edition in several ways. We have added a case example box summarizing a published mixed methods study regarding engaging child welfare clients in working relationships. We added a major section describing Creswell's (2014) three basic mixed methods designs. Each of the three designs is described in subsections that include examples of each. Another new section summarizes Creswell's three advanced mixed methods designs.

SIGNIFICANT ADDITIONS AND MODIFICATIONS IN OTHER CHAPTERS

The philosophical section in Chapter 1 on objectivity and paradigms has been removed from that chapter in keeping with suggestions that it is too advanced to appear so soon in the book. Content on that topic already appeared in Chapter 4, so we expanded it somewhat in that chapter. We added a box providing a case example of a social worker exposing the pseudoscientific aspects of thought field therapy and how they weaken critical thinking. We also added a brief discussion of Karl Popper's principle of falsifiability in science.

In the section of Chapter 2 on formulating an evidence-based practice (EBP) question we added a box that illustrates examples of EBP questions about effectiveness, predictors of desirable and undesirable consequences, understanding client experiences, and assessment tools. We also expanded our coverage of systematic reviews and meta-analyses to make searching for evidence more feasible. In another box we expanded our list of Internet sites for reviews and practice guidelines.

In Chapter 4, in addition to the increased coverage regarding objectivity and paradigms we significantly expanded our coverage of longitudinal studies, including more attention to panel attrition as well as a new figure that compares cross-sectional studies to the three types of longitudinal studies.

In response to requests from reviewers, we have moved the section on ethical and cultural issues in social work research up from Part 7 to Part 2. Those areas are now covered in Chapters 5 and 6.

This edition has one fewer chapter because we merged the chapter on reviewing the literature and developing research questions with the chapter on conceptualization. The merged chapter (now Chapter 7) is titled *Problem Formulation*, as it combines those aspects of problem formulation that were previously covered in two separate chapters. The merger involved moving the section on using the library to a new appendix on that topic. The section on writing the literature review overlapped with coverage of that in the appendixes on writing research proposals and reports, so we moved that coverage to those appendixes.

In Chapter 8 on measurement (previously Chapter 7) we added a box near the end of the chapter to further illustrate the difference between reliability and validity. In Chapter 10 on surveys (previously Chapter 9) we added a new section on emerging developments in online surveys to address various technological advances such as the use of tablets and smartphones. We also referred readers to sources for keeping abreast of these developments. Also in this chapter is expanded attention to issues regarding cell phones in telephone surveys.

In Chapter 12 (previously Chapter 11) we elaborated the section on attrition in experiments and quasi-experiments by discussing the use of intent-to-treat analysis. We also added a box clarifying the difference between random assignment in experiments versus random selection in surveys.

Significant revisions were made in Chapter 14 on program evaluation (previously Chapter 13). The chapter has been reorganized so that coverage of the purposes and types of program evaluation and how to plan one follow immediately after the historical overview section. We think that this will give readers a better grasp of the basics of program evaluation before getting into issues regarding its politics and practical pitfalls. The historical overview section is expanded to include more content on accountability and the importance of demonstrating that programs are effective and not harmful, and the connection of accountability to our professional ethics. Also added to the historical

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coverage is a section on evidence-based practice and the utility of meta-analyses and effect-size statistics. A section on the utility of preexperimental designs in program evaluation that appears later in the chapter returns to those two concepts to show how they can enhance the value of preexperimental designs. That later section also discusses why preexperimental designs are commonly used in program evaluation and why their limitations are less problematic in a program evaluation context. Another significant addition is a section on logic models.

In the quantitative data analysis chapter we expanded the coverage of effect sizes to include odds ratios and risk ratios along with *Cohen's d*. We also added a figure to illustrate how distributions with different degrees of dispersion can have the same central tendency and how reports of descriptive findings that rely exclusively on central tendency can be incomplete and possibly misleading. Also regarding effect sizes, a new Appendix (E) has been added that discusses a novel approach being advanced by one of us (Rubin) for calculating within group effect sizes which might enhance the value of preexperimental designs in program evaluation and reduce the gap between research and practice in a way that aims to advance evidence-based practice to a new level.

We hope you'll find that the above additions and modifications have improved the usefulness of this book. We would like to know what you think of this edition and to receive any suggestions you might have for improving it. Please e-mail us at arubin@mail.utexas.edu.

ANCILLARY PACKAGE

Book Companion Website

For students, the Book Companion Website at www.cengagebrain.com offers practice quizzes and web links.

Instructor's Manual

Also, as with our other text, an *Instructor's Manual* mirrors the organization of this text, offering our recommended teaching methods. Each chapter of the online manual provides an outline of relevant discussion, behavioral objectives, teaching suggestions and resources, and test items. This *Instructor's Manual* is set up to allow instructors the freedom and flexibility needed to teach research methods courses.

The test questions for each chapter include multiple-choice and true–false items and several essay questions that may be used for exams or to stimulate class discussion. Page references to the text are given for the multiple-choice and true–false questions.

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An Introduction to Scientific Inquiry in Social Work

part
1

Part 1 of this text lays the groundwork for the rest of the book by examining the value and fundamental characteristics of scientific inquiry in social work. In Chapter 1 we will begin by discussing the relevance of research to social work practice. We will also explore the use of the scientific method as a basis for how social workers come to know things, and how it helps safeguard against some of the risks inherent in unscientific sources of practice knowledge. Chapter 2 will extend the ideas discussed in Chapter 1 by delving into the evidence-based practice process, which is the primary way that research can be used by social work practitioners.

CHAPTERS IN THIS SECTION:

1
Why Study Research?

2
Evidence-Based Practice

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chapter 1

Why Study Research?

1.1 Introduction

1.2 How Do Social Workers Know Things?

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1.4a Personal Experience
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1.7 Practice-Related Exercises

1.8 Internet Exercises

1.9 Additional Readings

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1.1 INTRODUCTION

You may be wondering why social work students are required to take a research course. Part of the answer is that social work research aims to provide the practical knowledge that social workers need to solve everyday practice problems.

You are likely to encounter numerous situations in your career in which you'll use your research expertise and perhaps wish you had more of it. For example, you may administer a substance abuse program whose continued funding requires you to conduct a scientific evaluation of its effectiveness in preventing or alleviating substance abuse. You may provide direct services and want to evaluate scientifically your own effectiveness or the effects certain interventions are having on your clients. You may be involved in community organizing or planning and want to conduct a scientific survey to assess a community's greatest needs. You may be engaged in social reform efforts and need scientific data to expose the harmful effects of current welfare policies and thus persuade legislators to enact more humanitarian welfare legislation.

Even if you never do any research, you'll need to understand it and use it to guide your practice. That's because our profession remains quite uncertain about what really works in many practice situations. Some agencies provide interventions that research has found to be ineffective. Someday you may even work in such an agency and may be expected to provide such interventions yourself. By understanding research and then reading studies that provide new evidence on what is and is not effective, you can increase your own practice effectiveness. By doing so, you will have taken a major step toward establishing an *evidence-based practice*.

The evidence-based practice process (which we will examine in depth in Chapter 2) involves using the best scientific evidence available in deciding how to intervene with individuals, families, groups, or communities. Despite recent advances in identifying evidence-based interventions, social workers today continue to use some interventions and procedures that have not yet received adequate testing. In fact, new interventions continually emerge and are promoted without adequate scientific evidence as to their effectiveness. Some will have received no scientific testing whatsoever. Others will have been "tested" in a scientifically unsound manner in which the research design or measurement procedures were biased to produce desired results. Some will have been tested with certain ethnic groups but not with others. Professional social workers are often bombarded with fliers promoting expensive continuing education training workshops for new interventions. These interventions, of course, are touted as being effective, but such claims may not be warranted. In the face of this reality, understanding scientific inquiry and research methods becomes practice knowledge, too. Learning how to critically appraise whether adequate scientific evidence supports particular interventions in certain practice situations becomes at least as important as learning how to apply interventions in general.

Why can't we just let the researchers produce the needed studies and then tell practitioners the results? First of all, there is a vast range in the quality of the social work research produced and published. Some of it is excellent, and some of it probably should never have been published. It is not hard to find studies that violate some of the fundamental principles that you will learn in this book. If social work practitioners are going to rely on the findings of social work research studies for guidance, then they must understand social work research methods well enough to distinguish strong studies from weak ones. Moreover, the quality of social work research ultimately depends not just on the researchers' methodological expertise but also on their practice knowledge and the practitioners' research knowledge. Without a partnership between practice-oriented researchers and methodologically informed practitioners, there is not likely to be a climate of support in agencies for the type of research our field desperately needs—research that is responsive to the real needs of agency practitioners under conditions that permit an adequate level of methodological rigor. Even if you never produce any research, an understanding of research methods will help you critically appraise and use research produced by others, communicate with researchers to help ensure that their work is responsive to the needs of practice, and ultimately help foster an agency environment conducive to carrying out cogent, relevant studies.

Being professional involves striving to make sure we provide our clients with the most effective

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services available. How do we do that? Do we just ask our supervisors what they think is best? Such a tactic may be a starting point, but practitioners who conform only to ongoing practices without keeping abreast of the latest research in their fields are not doing everything they can to provide clients with the best possible service.

Given how frequently social work services have been found to be ineffective, and the recent emergence of studies identifying new and apparently effective interventions, failure to keep abreast of the research in the field is a serious shortcoming. We cannot justify disregarding research with the rationalization that we are too busy helping people. If our services have not been tested for their effects on clients, then chances are we are not really helping anyone. In that case, who benefits from our blind faith in conventional but untested practice wisdom? Not our clients. Not those who pay for our services. Not society. Do we? In one sense, perhaps. It is less work for us if we unquestioningly perpetuate ongoing practices. That way, we do not make waves. We do not have to think as much. There is one less task—reading research reports—in our daily grind. In the long run, however, practitioners who keep up on the research and know they are doing all they can to provide the best possible services to their clients might experience more job satisfaction and be less vulnerable to burnout.

The main reason to use research, however, is compassion for our clients. We care about helping them; thus we seek scientific evidence about the effects of the services we are providing and of alternative services that might help them more. If the services we provide are not effective and others are, then we are harming our clients by perpetuating our current services. We are wasting their time (and perhaps money) by allowing their problems to go on without the best possible treatment. Because we are inattentive to the literature, we deny our clients a service opportunity that might better help them.

Thus, understanding research methods and using research discriminately have much to do with basic social work values such as caring and compassion. The practitioner who understands and uses research shows more concern for the welfare of his or her clients, and ultimately is more helpful to them, than the one who does not take that trouble, perhaps misguided by erroneous assumptions about research.

However, studies on the effects of social work interventions are just one prominent example of useful social work research. A long list of other examples of completed research studies would also convey the value of research to social work, and why students preparing to become practitioners should know research methods so they can use and contribute to such research. Many of these studies will be cited as illustrations of the methodological concepts addressed throughout this text.

We also could cite countless examples of additional topics on which you might someday want to see research findings. Only a few will be cited here. For example, why do so many of your agency's clients terminate treatment prematurely? What types of clients stay with or drop out of treatment? What reasons do they give? What services did they receive? How satisfied were they with those services? In what part of your target community or region should you locate your outreach efforts? Where are you most likely to engage hard-to-reach individuals such as the homeless or recent immigrants? What proportion of your target population does not understand English? Why are so few ethnic minorities being served by your agency? What does your agency mean to them? What is the agency atmosphere like from their viewpoint? We could go on and on, but you get the idea: The possibilities are endless.

EP 2.1.2b

Ethics is one of the most important concerns of social workers as they consider research and appears as a recurring topic of discussion throughout this book. The Code of Ethics of the National Association of Social Workers specifically requires social workers to keep current with and critically appraise practice-related research in the professional literature, and to include evidence-based knowledge as part of the knowledge base for their practice. When we use research discriminatingly, we uphold and advance the values and mission of the profession, and thus are more ethical in our practice. Still, social work students quite commonly approach research methodology with skepticism about the ethics of many research studies. We will address those ethical concerns in various chapters of the book, not just in the chapter devoted to ethics. We hope that by the time you finish reading this book, you will have a better understanding not only of the ethical dilemmas involved in social work research, but also of the

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reasons why our professional code of ethics comes to bear on our responsibility to understand, use, and contribute to research.

Perhaps more than ever before, social work research offers all social workers an opportunity to make a difference in the problems they confront. Whether you become a direct service practitioner seeking to maximize the effectiveness of your services, or a social activist seeking to promote more humane social welfare legislation (or perhaps both), the success of your efforts to help people will likely be enhanced by your use of scientific inquiry and research. In the hope that this introduction has whetted your appetite for what you are about to learn in this book, let's now examine the various ways social workers seek to know things.

1.2 HOW DO SOCIAL WORKERS KNOW THINGS?

Social work students study various theories about human behavior and alternative perspectives on social welfare policies and social work intervention. Sometimes these theories and perspectives seem compatible. Sometimes they do not. How will you decide which of them should guide your future practice? Will you base your decision on which author or professor is most esteemed? Will you just take your field supervisor's word for things, or accept without question long-standing agency traditions? To what extent will you rely on your own direct social work experience as the basis of your practice wisdom? This book aims to help you develop a scientific approach for answering questions like these now and throughout your career as a social worker.

Let's begin by examining a few things you probably know already. You know that the world is round and that people speak Japanese in Japan. You probably also know it's cold on the planet Mars. How do you know? Unless you've been to Mars lately, you know it's cold there because somebody told you, and you believed what you were told. Perhaps your physics or astronomy instructor told you it was cold on Mars, or maybe you read it in *Newsweek*. You may have read in *National Geographic* that people speak Japanese in Japan, and that made sense to you, so you didn't question it.

Some of the things you know seem absolutely obvious to you. If someone asked how you know the world is round, you'd probably say, "Everybody knows that." There are a lot of things everybody knows. Of course, at one time, everyone "knew" the world was flat.

Most of what we know is a matter of agreement and belief. But we also can know things through direct experience and observation. If you sleep outside like a homeless person on a cold winter night, you won't need anyone to tell you it's cold—you notice that all by yourself. When your experience conflicts with what everyone else knows, though, there's a good chance you will surrender your experience in favor of the agreement.

Let's take an example to illustrate this: Imagine you're at a party. It's a high-class affair, and the drinks and food are excellent. You are particularly taken by one type of appetizer the host brings around on a tray. It's breaded, deep-fried, and especially tasty. You have a couple, and they are delicious! You have more. Soon you are subtly moving around the room to be wherever the host arrives with a tray of these nibblies. Finally, you can't contain yourself anymore. "What are they?" you ask. "How can I get the recipe?" The host lets you in on the secret: "You've been eating breaded, deep-fried worms!" Your response is dramatic: Your stomach rebels, and you promptly throw up all over the living room rug. Awful! What a terrible thing to serve guests!

The point of the story is that both feelings about the appetizer would be real. Your initial liking for them, based on your own direct experience, was certainly real, but so was the feeling of disgust you had when you found out that you had been eating worms. It should be evident, however, that the feeling of disgust was strictly a product of the agreements you have with those around you that worms aren't fit to eat. That's an agreement you entered into the first time your parents found you sitting in a pile of dirt with half a wriggling worm dangling from your lips. When they pried your mouth open and reached down your throat to find the other half, you learned that worms are not acceptable food in our society.

Aside from the agreements we have, what's wrong with worms? They're probably high in protein and low in calories. Bite-sized and easily packaged, they're a distributor's dream. They are also a delicacy for some people who live in societies that lack our agreement that worms are disgusting.

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We learn some things by experience, others by agreement. This young man seems to be into personal experience.
SOURCE: Allen Rubin

Other people might love the worms but be turned off by the deep-fried breadcrumb crust.

Reality, then, is a tricky business. You probably already suspect that some of the things you "know" may not be true, but how can you really know what's real? People have grappled with that question for thousands of years. Science is one of the strategies that has arisen from that grappling.

1.3 THE SCIENTIFIC METHOD

Science offers an approach to both agreement reality and experiential reality. That approach is called the **scientific method**. One key feature of the scientific method is that *everything is open to question.* That means that in our quest to understand things, we should strive to keep an open mind about everything we think we know or that we want to believe. In other words, we should consider the things we call "knowledge" to be *tentative and subject to refutation*. This feature has no exceptions. No matter how long a particular tradition has been practiced, no matter how much power or esteem a particular authority figure may have, no matter how noble a cause may be, we can question any belief—no matter how cherished it may be.

Another key feature of the scientific method is the search for *evidence based on observation* as the basis for knowledge. The term *empirical* refers to this valuing of observation-based evidence. As we will see later, one can be empirical in different ways, depending on the nature of the evidence and the way we search for and observe it. For now, remember that the scientific method seeks truth through

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scientific method An approach to inquiry that attempts to safeguard against errors commonly made in casual human inquiry. Chief features include viewing all knowledge as provisional and subject to refutation, searching for evidence based on systematic and comprehensive observation, pursuing objectivity in observation, and replicating studies.

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Key Features of the Scientific Method

A mnemonic for remembering some of the key features of the scientific method is the word *trout*. Think of catching or eating a delicious trout,* and it will help you remember the following key features:

T	**Tentative:**	Everything we think we know today is open to question and subject to reassessment, modification, or refutation.
R	**Replication:**	Even the best studies are open to question and need to be replicated.
O	**Observation:**	Knowledge is grounded in orderly and comprehensive observations.
U	**Unbiased:**	Observations should be unbiased.
T	**Transparent:**	All procedural details are openly specified for review and evaluation and to show the basis of conclusions that were reached.

*If you are a vegetarian, you might want to just picture how beautiful these fish are and imagine how many of their lives you are saving.

observed evidence—not through authority, tradition, or dogma—no matter how much social pressure or political correctness may be connected to particular beliefs, and no matter how many people embrace those beliefs or how long they have been proclaimed to be true. It took courage long ago to question fiercely held beliefs that the earth is flat. Scientifically minded social workers today should find the same courage to ask whether adequate evidence supports interventions or policies that they have been told or taught to believe in.

They should also examine the nature of that evidence. To be truly scientific, the observations that have accumulated that evidence should have been *orderly* and *comprehensive*. The *sample* of observations should have been *large* and *diverse*. The observational *procedures should be specified* so that we can see the *basis for the conclusions* that were reached, and be able to judge whether the conclusions are indeed warranted in light of the evidence and the ways in which it was observed.

The specified procedures should also be scrutinized for potential bias. The scientific method recognizes that we all have biases that can distort how we look for or perceive evidence. It therefore emphasizes the *pursuit of objectivity* in the way we seek and observe evidence. None of us may ever be purely objective, no matter how strongly committed we are to the scientific method. No matter how scientifically pure their research may be, researchers want to discover something important—that is, to have findings that will make a significant contribution to improving human well-being or (less nobly) enhancing their professional stature. The scientific method does not require that researchers deceive themselves into thinking they lack these biases. Instead, recognizing that they may have these biases, they must find ways to gather observations that are not influenced by their biases.

Suppose, for example, you devise a new intervention to prevent child abuse. Naturally, you will be biased in wanting your intervention to be effective. It's okay to have that bias and still scientifically inquire whether your intervention really does prevent child abuse. You would not want to base your inquiry solely on your own subjective clinical impressions. That approach would engender a great deal of skepticism about the objectivity of your judgments with regard to the intervention's effects. Thus, instead of relying exclusively on your clinical impressions, you would devise an observation procedure that was not influenced by your own biases. Perhaps you would see if the parents receiving your intervention had fewer child abuse incidents reported to the child welfare department than parents who received a different intervention. Or perhaps you would administer an existing paper-and-pencil test that social scientists regard as a valid measure of parental child-raising knowledge and attitudes. Although neither alternative can guarantee complete objectivity, each would be more scientific than your subjective judgments, reflecting your effort to pursue objectivity.

EP 2.1.6b

Because there are no foolproof ways for social science to guarantee that evidence is purely objective, accurate, and generalizable, the scientific method also calls for the *replication* of studies. This is in keeping with the notion that all knowledge is tentative and refutable.

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Replication means duplicating a study to see if the same evidence and conclusions are produced. It also refers to modified replications in which the procedures are changed in certain ways that improve on previous studies, or determine if findings hold up with different target populations or under different circumstances. The need to replicate implies that scientifically minded social workers should have the courage to question not only cherished beliefs that were not derived from scientific evidence but also the conclusions of scientific studies and the way those studies were carried out. The box "Key Features of the Scientific Method" summarizes these features and provides a handy mnemonic for remembering them.

1.4 OTHER WAYS OF KNOWING

The scientific method is not the only way to learn about the world. We also can learn from personal experience, tradition, authority, common sense, and the popular media. Let's now examine each of these ways of acquiring knowledge and compare them to the scientific method. As you will see, some of the things people believe from these alternative sources of learning may not be true. When thinking critically and with a scientific orientation, people would want to consider observations that might contradict or disprove some of the things they "learn" from these other ways of "knowing." Some conclusions people reach from these other sources may well be true, but no matter how much they cherish a belief, unless it is possible to state observations that would contradict or disprove, it no conclusion can be considered to be "scientific." Karl Popper (1934) described this as the principle of *falsifiability* in science. This is what distinguishes scientific conclusions from religious, political, or philosophical *beliefs*.

1.4a Personal Experience

As mentioned earlier, we all discover things through our personal experiences from birth on, and from the agreed-on knowledge that others give us. Sometimes this knowledge can profoundly influence our lives. We learn that getting an education will affect how much money we earn later in life and that studying hard will result in better examination grades. The term *practice wisdom*, also as noted earlier, refers to social workers learning things about social work practice via their personal practice experience. Despite the value of such experience, it is important to recognize its limitations and the ways in which the scientific method can augment it and safeguard against some common errors. Sometimes information that we believe to be knowledge acquired through our practice experience actually comes from observations that are casual and unsystematic or influenced by our predilections. We will examine these errors more closely later in this chapter. For now, you should remember that the scientific method safeguards against these errors through observations that are systematic, comprehensive, and unbiased.

1.4b Tradition

One important secondhand way to attempt to learn things is through tradition. Each of us inherits a culture made up in part of firmly accepted knowledge about the workings of the world. We may learn from others that planting corn in the spring will gain the greatest assistance from the gods, that sugar from too much candy will cause tooth decay, or that the circumference of a circle is approximately twenty-two sevenths of its diameter. We may test a few of these "truths" on our own, but we simply accept the great majority of them. These are the things that "everybody knows."

Tradition, in this sense of the term, has some clear advantages for human inquiry. By accepting what everybody knows, you are spared the overwhelming task of starting from scratch in your search for regularities and understanding. At the same time, tradition may be detrimental to human inquiry. If you seek a fresh and different understanding of something that everybody already understands and has always understood, you may be seen as a fool. More to the point, it will probably never occur to you to seek a different understanding of something that is already understood and obvious.

When you enter your first job as a professional social worker, you may learn about your agency's preferred intervention approaches. Chances are you will feel good about receiving instructions about "how we do things in this agency." You may be anxious about beginning to work with real cases and relieved that you won't have to choose between competing theories to guide what you do with

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