The Practical Researcher

A Student Guide to Conducting Psychological Research

Dana S. Dunn

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THE PRACTICAL RESEARCHER: A STUDENT GUIDE TO CONDUCTING PSYCHOLOGICAL RESEARCH

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PREFACE

Knowledge is learned contextually, but meant to be applied broadly, in general ways; with experience, students should come to know this truth. I teach at a liberal arts college where it is the norm to have the same students in several different classes across their four undergraduate years. Like many teachers, I notice that my students sometimes fail to apply knowledge acquired in one class to related issues in subsequent classes. I notice an acute breakdown between knowledge and application in the case of research methods, an especially troubling occurrence because research methods is arguably the most important course for undergraduate psychology students. Yet I know that my students *know* their methodology: They just are not sure what to do with it or how to go about using it outside the familiar context of a research methods class.

Ideally, students will use *The Practical Researcher* in a traditional first research methods course where some exposure to research occurs. In combining basic theory with a step-by-step guide to developing a research project, this text will also serve as an excellent practical guide for independent studies or honors students embarking on a semester-long or yearlong project.

Experiential

The Practical Researcher addresses the gap between knowing and using the discipline's research methodology. It is written in an intentionally accessible style so students will not wrestle with overly technical prose while learning about the technical processes of research methods. A "practical researcher" is someone who knows how to translate the theoretical side of research methodology into practice. Theory is critically important to the teaching of research methods, but it does little good if students cannot use it effectively in actual research

projects. Generally speaking, most undergraduate research methods books describe essential concepts about what constitutes good psychological research, but rarely provide concrete guidance about how to actually go about *doing* good research. Unlike most books, this text acknowledges that research methodology was created to be used, not merely studied.

Practical

Thus, *The Practical Researcher addresses the "how-to" side of doing psychological research by teaching students to organize a research project from start to finish.* It contains the material that is traditionally presented in solid research methods texts (e.g., the logic of random assignment, measuring and manipulating psychological variables), but supplements it with exercises designed to help students practice research skills (e.g., How do you randomly assign a subject to one of three conditions in your study? How does one keep a record of independent and dependent variables?). I believe that teaching students practical techniques will enable them to more easily conduct psychological research. Additionally, establishing pedagogical links between knowledge and its application, emphasizing theory as well as practice, will help students retain what they learn, thereby preparing them for graduate school or careers where problem solving and familiarity with research methodologies are desirable.

ORGANIZATION

Research Oriented

The text chapters are arranged sequentially, following the basic order of a research project. Because the book is a guide to the practical side of the research process, however, chapters can be read either sequentially or in an order determined by the instructor. As a textbook, *The Practical Researcher* is a hands-on guide that helps students develop research skills, conduct research, and learn to be researchers. Most chapters include one or more practical research exercises. These exercises, which *are designed to enhance writing, interpretive, organizational,* and *time management skills,* appear after a brief conceptual introduction of relevant topics. Students can model these examples for their own work, modify them, or in several cases, "fill in" the blanks or checklists provided in the exercises. Those who engage in collaborative research, for example, will be encouraged to write and sign a research contract with their peers so that an effective division of labor is possible (chapter 1). Chapter 5, which is devoted to ethical issues, provides instruction on developing and writing Informed Consent Forms, debriefing scripts, Human Subject Pool sign-up sheets, and research participation credit slips. In chapter 8, students learn to interpret basic statistical results by putting into words the relationships that common inferential tests examine, a required skill invariably neglected by many existing methodology texts. Chapters close with brief summaries and lists of key terms with page numbers where explanation or examples can be found in the text. Recommended readings with short annotations conclude each chapter, building upon themes discussed therein.

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Each chapter contains one or more boxed features called "Research Digressions." The Research Digressions are meant to provide the reader with contextual information that supplements the main text. The boxes variously answer questions provoked in the reader, present practical applications of the material, indicate advanced topics for further study, or clarify discussions in the main text by exploring detailed examples.

Writing Oriented

The importance of writing well and often is stressed throughout the book, and I have taken a decidedly different approach than most methods texts where writing is concerned. Unlike most informal research methods textbooks that give short shrift to writing, I devote an entire, early chapter to writing in psychology (chapter 3). This text does far more than place its discussion in a final or "throwaway" chapter, or focusing exclusively on American Psychological Association (APA) writing style issues (though the latter are discussed in great detail). I also avoid the worst sin of all, which is to consign matters of writing to oblivion—or simply an appendix.

What do I do about writing? I make the case that writing is—or should be—the first and last consideration of all teachers, researchers, and students of psychology. Beyond learning to present research results in prose form, I discuss how to generate research ideas through writing, how to outline papers, and how to give and receive effective peer feedback on written material. As will be evident to many readers, I am indebted to pedagogical strides made by writing instructors over the last decade or so (and it is my fond hope that psychologists will embrace, even extend, this good work done by their colleagues in the humanities). Writing is germane to the majority of the book's aforementioned exercises, and a necessary skill for developing research ideas, searching the psychological literature, laying the ground work for the eventual research project, and presenting results to peers in formal or informal settings.

Studying the methodology of psychology matters a great deal, but learning to use these methods to explore research questions matters still more. I hope this book will help students to gain disciplinary knowledge as well as practice, to use the particular to interpret the general.

SUPPLEMENTS

The Practical Researcher is accompanied by an Instructor's Manual/Test Bank (ISBN 0-07-018324-4). I wrote the Instructor's Manual/Test Bank, which provides the instructor with additional course tools that will expand on the course material presented in the text. It contains complete and detailed outlines for each chapter, lecture suggestions, chapter exercises, additional class activities (including debate topics, guest speakers, field trips to campus sites, discussion suggestions), suggested readings, and class discussion/essay questions. Each chapter is followed by approximately 30 multiple-choice questions, which are classified as factual, conceptual or applied. These test questions are also available in both Windows (0-07-025184-3) and Mac (0-07-025200-9) versions of a computerized

test bank. Please contact your local McGraw-Hill representative for details concerning policies, prices, and availability, as some restrictions may apply.

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Writing often involves listeners before readers, and in any case, it is never a solitary pursuit. I am grateful to the many individuals who assisted me with this project. Editor Sarah Dunn was, at turns, compassionate or appropriately ruthless about my prose. Stacey Zaremba good naturedly heard my complaints, offering insights and references in return. The usual suspects—Steve Gordy, Robert Stinson, and Peter von Allmen—offered advice, quips, and sometimes solace. As she has done on so many prior occasions and projects, Mrs. Jacqueline Giaquinto helped in ways great and small with manuscript preparation, organization, and details too numerous to track. The Moravian College Faculty Development and Research Committee provided a summer grant enabling me to finish the work. Bob Brill, Reeves Library's crack Reference and Interlibrary Loan Departments, and my students, Carolyn Vicchiullo, Brett Stoudt, Barbara Loecher, and those enrolled in my statistics and research methods classes, provided comments or materials for particular sections of the manuscript. Dah K. Dunn merits special thanks for her perpetual enthusiasm for the book.

The peer reviewers who read and critiqued various and sundry chapter drafts offered me wisdom, occasional wit, and pedagogical advice. I am grateful for the exceptionally helpful editorial comments made by Carolyn Gosling, Marion Harrell, and Demarie Jackson of the American Psychological Association. The manuscript was much improved by the thoughtful and substantive comments of Bernard Beins (Ithaca College), David B. Conner (Truman State University), Susan Dutch (Westfield State College), Kathleen Hart (Xavier University), Rosemary Hornak (Meredith College), John C. Jahnke (Miami University), Brenda Kirby (Le Moyne College), Donna J. LaVoie (Saint Louis University), Leslie MacGregor (Berry College), Dennis Musselman (Humboldt State University), Mark A. Pitt (Ohio State University), Kirk Richardson (Georgia State University), Jerome Siegel (The City College of New York), Christopher Silva (Dickinson College), Benjamin Wallace (Cleveland State University), and several anonymous reviewers. I relied upon many of the ideas, suggestions, and insights given by these teacher-scholars, though by no means all; remaining errors are mine alone.

Any author should have the good fortune to work with dedicated professionals like those inhabiting the McGraw-Hill College Division. Craig Brooks initiated contact about this project, and then Jane Vaicunas, Brian McKean, Susan Elia, with their collective editorial prowess, moved it forward. Meera Dash, Joe Terry, and Susan Kunchandy helped to refine the book's scope in its later stages, and drew the writing and editorial process to a successful close. Sarah Greer Bush copyedited the manuscript with aplomb. The support and interest of all of these professionals in the book was unstinting, and therefore, most gratifying.

Naturally, I am keenly interested in faculty and student reaction to the book. Comments concerning what you liked, disliked, missed, or wanted more of are most welcome. A short questionnaire appears at the end of the book. I urge you to complete it and mail it to the publisher, who will share it with me. You may also contact me directly at the Department of Psychology, Moravian College, 1200 Main Street, Bethlehem, PA 18018-6650; via e-mail: dunn@moravian.edu.

In the end, I am especially grateful to my family—Sarah, Jacob, and Hannah—for their love, tolerance, and understanding throughout the project.

Dana S. Dunn

CONTENTS

Preface x

1 THE WHY AND HOW OF PSYCHOLOGICAL RESEARCH 1

Why Do Research? 1

Reasoning Before Research 2

The Scientific Method 3

BOX FEATURE 1.A A Research Digression: Is Psychology a Science? 6

The Research Loop of Experimentation 7

Using the Research Loop 9

Becoming a Healthy Skeptic 14

The How of Research: Practical Issues When Beginning a Project 16

Organizing a Project: An Overview 16

Exercise 1.A: Creating a Realistic Project Time Line 22

Record Keeping 23

BOX FEATURE 1.B A Research Digression: The Data on "Data" 25

Small Is Beautiful 25

To Collaborate or Not to Collaborate? 27

The Lone Researcher 27

Research Teams 29

BOX FEATURE 1.C A Research Digression: Authorship Credit, Author Responsibility 30

Individual Versus Group Responsibility and the Division of Labor 31

Exercise 1.B: Developing a Peer Research Contract 32

Summary 34

Key Terms 35

Suggested Readings 35

2 RESEARCH APPROACHES AND GENERATING IDEAS 36

Some Approaches to Research 37

Distinguishing Between Qualitative and Quantitative Research 37

Observational Research 38

Case Studies 42

Archival Research 45
Questionnaire Research 47
Experimental Research and Applied Research in Brief 49
BOX FEATURE 2.A A Research Digression: *Caveat Emptor:* Method Can Drive Results 50
Generating Research Ideas 52
Self As a Source of Ideas 52
Happenstance 54
Paradoxical Events 55
Building Upon Previous Research 57
Exercise 2.A: Keeping a Notebook of Research Ideas 58
Exercise 2.B: Freewriting to Generate and Refine Ideas 61
Exercise 2.C: Brainstorming to Generate Project Ideas with Peers 62
Variation of Exercise 2.C: Individual Brainstorming 65
Critiquing Research Ideas 65
Seek Peer Opinion 66
Use a Research Team's Collective Wisdom 67
Trust and Conducting Research 67
Summary 68
Key Terms 68
Suggested Readings 69

3 WRITING: A FIRST AND LAST CONSIDERATION 70
Mastering APA Style 71
BOX FEATURE 3.A A Research Digression: *Nota Bene*—Save and Back Up Your Work 78
The Format of an APA Style Paper 78
A Brief Overview of APA Style: The Hour Glass Model 80
Title 81
Abstract 81
Introduction 82
Method 84
Results 86
Discussion 88
References 89
Author Note 92
Tables and Figures 92
Appendix 93
Final Advice on Paper Preparation 93
Practical Issues for Writing 94
Freewriting Revisited: Benefits and Focus 94
BOX FEATURE 3.B A Research Digression: Overcoming Writer's Block 95
Exercise 3.A: Doing an Outline 96
Drafting: A Recommended Order of Steps for the APA Style Paper 98
Revising 99
BOX FEATURE 3.C A Research Digression: Maladaptive Myths About Writers and Writing 100
Sharing Paper Drafts 101
Exercise 3.B: Receiving Feedback on Writing 102
Exercise 3.C: Giving Feedback on Writing 104
Writing All the Time 104
Summary 105
Key Terms 105
Suggested Readings 106

4 SEARCHING AND READING THE PSYCHOLOGICAL LITERATURE 107
Why Are Journals Emphasized? 107
Locating the Literature 108
Developing a Search Strategy 109
Literature Chains: Existing References Contain Other References 124
Using Library Resources: Befriend a Reference Librarian 125
How to Read an Empirical Journal Article or Book Chapter 125
Exercise 4.B: Evaluating a Research Article 128
Exercise 4.C: Evaluating a Book Chapter 129

Keeping Track of Research Materials 131
Maintaining Key References 131
Organizing Materials 132
Note Taking 133
BOX FEATURE 4.A A Research Digression: First Things First 134
Exercise 4.D: Using Notecards 135
Avoiding Plagiarism: Document Sources and Don't Quote 136
Summary 138
Key Terms 139
Suggested Readings 139

5 ETHICAL CONSIDERATIONS IN THE PRACTICE OF RESEARCH 140
Human and Animal Research 141
Human Research 141
BOX FEATURE 5.A A Research Digression: What's in a Name? 143
Animal Research 143
Balancing Participant Welfare and Scientific Advancement 145
BOX FEATURE 5.B A Research Digression: Controversial Studies and Peer Reaction 147
Institutional Review Boards (IRBs) 148
Exercise 5.A: Preparing an IRB Form 148
Exercise 5.B: Forming an In-Class IRB 150
Informed Consent 152
Obtaining Informed Consent from Participants 153
Exercise 5.C: Writing an Informed Consent Form 153
Recruiting Research Participants and Administering Credit 155
Exercise 5.D: Creating a Research Participant Sign-Up Sheet 156
Course Credit and Record Keeping 157
Exercise 5.E: Creating a Course Credit Slip 157
What If No Human Subject Pool Exists? 158
How to Treat Research Participants 159
Humane Treatment for Animals 160
Debriefing Human Participants 161
Sensitivity Regarding Deception 162
Exercise 5.F: Conducting a Debriefing and Creating a Debriefing Survey 163
Exercise 5.G: Writing a Debriefing Sheet 165
Ethics Outside the Laboratory 166
Beyond Ethics: Telling the Truth with Research 168
Summary 169
Key Terms 170
Suggested Readings 170

6 EXPERIMENTAL RESEARCH 171
Formulating a Testable Hypothesis 171
Developing an Experimental Hypothesis 173
Operational versus Descriptive Definitions 173
Exercise 6.A: Developing Operational Definitions 175
Reliability and Validity 175
Reliability of a Measure 175
Construct Validity 177
Manipulating Independent Variables 179
Control Groups are Essential 180
Exercise 6.B: Creating an Experimental Script 180
Exercise 6.C: Keeping a Record of Experimental Conditions 182
Exercise 6.D: Using a Manipulation Check 183
Special Cases: Subject Variables 184
BOX FEATURE 6.A A Research Digression: A Variable by Any Other Name 186
Error 186
Measuring Dependent Variables 188
BOX FEATURE 6.B A Research Digression: Realism in Experiments 189
Exercise 6.E: Creating a Dependent Measure Record 192

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Avoiding Bias 193
Pilot Testing 193
Demand Characteristics 194
Experimenter Bias 195
Sampling and Assigning Participants 196
Sampling Issues 196
Simple Assignment Techniques 199
Exercise 6.F: Using a Table of Random Numbers 200
Research Design: Factor and Factorial 202
One Factor Designs: Posttest-only and Pretest-Posttest 202
BOX FEATURE 6.C A Research Digression: How Many Participants Do I Need? 203
2 × 2 Designs and Beyond 205
BOX FEATURE 6.D A Research Digression: Identifying Main Effects and Interactions 208
Other Design Options: Subject Variables Revisited 209
Within-Subjects Designs 209
Between and Within Factors Combined: Mixed Designs 212
Single Participant Experiments 212
Conclusion: A Model of the True Experiment 215
Summary 216
Key Terms 216
Suggested Readings 217

7 APPLIED AND FIELD RESEARCH 218
Validity and Context 219
Trading Off Internal or External Validity 221
BOX FEATURE 7.A A Research Digression: Defending External Invalidity? 223
Project Contexts 224
Threats to Internal Validity 227
Quasi-experiments 230
Nonequivalent Group Designs 230
BOX FEATURE 7.B A Research Digression: What If There Is No Control Group? 231
Time-series Designs 233
Surveys 234
Characteristics of Good Surveys 239
BOX FEATURE 7.C A Research Digression: Carry-Over Effects and Questionnaires 240
Exercise 7.A: Writing Good Survey Questions 240
BOX FEATURE 7.D A Research Digression: Research as Community Service 242
A Gentle Warning: An Advantage Can Sometimes Be a Disadvantage 242
Remaining Practical Concerns in Applied and Field Research 243
Sampling Revisited: Issues and Biases 243
Exercise 7.B: Keeping a Record of Potentially Related Variables 245
Field Sites and Gaining Permission 246
Working with Protected Groups 249
Exercise 7.C: Creating A Special Informed Consent Form 250
Starting Early 252
External Validity as Opportunity 253
Summary 253
Key Terms 253
Suggested Readings 254

8 PLANNING ANALYSIS AND DISPLAYING DATA 255
Statistics As a Tool 256
BOX FEATURE 8.A A Research Digression: Familiarity with Statistics Breeds Content 257
Review of Basic Statistical Issues 257
Descriptive and Inferential Statistics 257
Scales of Measurement 258
Measures of Central Tendency 260
Measures of Variability 262
Hypothesis Testing and Statistical Significance 263

BOX FEATURE 8.B A Research Digression: Results Are Significant or Non-Significant, *Not* Insignificant 265

Parametric versus Non-Parametric Tests 266

BOX FEATURE 8.C A Research Digression: Significance Testing is Dead! Long Live Significance Testing! 267

A Short Intermission: The General Linear Model 269

Selecting the Appropriate Statistical Test 269

Planning Analysis: Do It Before, Not After 269

Exercise 8.A: Developing an Analysis Plan 270

Review of Some Common Statistical Tests 273

Concluding Comment on These Common Tests 277

What Do the Statistical Results Mean, Anyway? 277

BOX FEATURE 8.D A Research Digression: Power and Effect Size 278

Exercise 8.B: Putting Statistical Results into Words 279

Displaying Data 282

Coda: Keeping Data and Analysis Records 285

BOX FEATURE 8.E A Research Digression: A Cautionary Tale on Caring for Data 287

Summary 288

Key Terms 288

Suggested Readings 289

9 PRESENTING RESEARCH 290

Writing: A Brief Reprise 290

Giving A Research Presentation 291

Speaking Before an Audience 291

BOX FEATURE 9.A A Research Digression: Beginnings and Endings 293

Presenting a Paper: KISS Revisited 294

Exercise 9.A: Organizing a Student Research Symposium 296

Concluding Comments on Giving a Paper 298

Poster Sessions 298

BOX FEATURE 9.B A Research Digression: Stage Fright Is Common 299

Forums for Research: Where Can You Present? 300

Undergraduate Conferences 300

Professional Conferences 301

Exercise 9.B: Answering a Call for Papers: Writing a Conference Abstract or Proposal 301

Journals: Undergraduate and Professional 304

Conclusion 308

Summary 308

Key Terms 309

Suggested Readings 309

10 CLOSING THOUGHTS AND FUTURE DIRECTIONS 310

Exercise 10.A: Bringing It All Together—A Checklist for Research Projects 310

Asking the Right Questions in Psychological Research 313

The Place of Research: Skills Acquired, Skills Applied 314

BOX FEATURE 10.A A Research Digression: "No Pressure—Just Lovely, Interesting Discussions" 316

Loving the Research Process: A Responsibility 317

Summary 318

Key Terms 319

Suggested Readings 319

Appendix A: Sample Student Manuscript Written in American Psychological Association (APA) Style 320

Appendix B: Statistical Analyses 334

Appendix C: Statistical Tables 357

Appendix D: Professional Issues for the Future: Presenting Yourself 366

References 372

Index 383

CHAPTER 1

The Why and How of Psychological Research

A practical researcher is one who knows how to cleverly transform the theory behind psychology's research methodology into practice. Most research methods text books describe essential, though often abstract, concepts about what constitutes good psychological research, but they rarely provide concrete guidance about how to actually *do* good research. Theory is obviously very important—even crucial—to research methods, but so is being able to effectively implement key ideas and techniques in actual research projects. This book will combine these two perspectives in order to teach you to be a practical researcher. Indeed, by the time you have finished reading it, you will be able to conduct a theory-based research project in psychology from start to finish.

Chapter 1 is an overview of the issues presented in the remainder of the book. The first half of this chapter will introduce the theoretical orientation of the field of psychology. Practical issues to consider when beginning psychological research will be the focus of the second half of the chapter.

WHY DO RESEARCH?

An obvious question relevant to any book on research methods in psychology is the following: Why study human behavior? In a sense, we need to think about why research is important or worth doing before we launch into an entire book devoted to the mechanics and intricacies of actually doing it. In what ways does research allow us to move from

armchair musings to the active exploration of a topic? Here are some of the things that research allows you to accomplish:

- To move beyond idle curiosity into formulating questions.
- To reduce error and bias in the process of answering these questions, thereby improving both the answer and your own reasoning skills.
- To test competing interpretations of events against one another so that a best account of some phenomena can be isolated.
- To use quantitative and qualitative skills to solve problems.
- To gain perspective on questions, to obtain a broader view, to go beyond the given information.
- To add to collective knowledge, as well as your own personal store.
- To create connections among otherwise disparate sources of information.
- To apply results to the benefit of humanity.
- To effectively communicate your ideas, written or spoken, to other people.

This list is by no means exhaustive. Some of the points are lofty goals, whereas others are more concrete. Some may be accomplished in an initial research effort, whereas others may only be achieved after much experience. Collectively, however, these points all suggest that research allows us to make claims about the world—and events that occur within it—that are supported by other sources besides mere opinion, conjecture, and belief. In essence, we conduct research to provide an objective rather than a subjective description of the world. We will now consider the issue of objective versus subjective descriptions in more detail by discussing reason, a precursor to the scientific method.

Reasoning Before Research

There are two general types of reasoning—inductive and deductive—that scientists use in order to begin to think about research questions, and each satisfies a different sort of research problem depending upon what information is currently available. *Inductive reasoning* is the process of generalizing from one or more observations in order to develop a more general idea about a phenomenon. Such reasoning occurs when psychologists begin to think about a relatively novel topic (e.g., daycare and its effects on children) and they do not know what to expect (e.g., Does daycare promote or hinder child development? Does daycare's effect depend on particular circumstances?). They may collect various sorts of observations on children in daycare settings, examine them, and then formulate some preliminary ideas about the possible psychological consequences of the experience.

Induction is very useful when it comes to formulating preliminary hypotheses and, eventually, an integrated theory to explain some set of events. The downside to inductive reasoning is that it may miss unobserved factors that could be responsible for the effects we encounter. Knowing that an especially aggressive child has been in daycare since one year of

age might lead to the conclusion that nonparental care leads to behavior problems. This sort of inductive reasoning is not valid because it ignores a host of other situational or individual factors besides daycare that could cause childhood aggression (e.g., parenting styles, temperament).

Inductive reasoning is said to be the hallmark of a younger science, one that lacks a unified theory and methodology. By this standard, psychology is an inductive science because currently there is no single, dominant theory of behavior. Indeed, your prior exposure to the field probably revealed a host of competing theories, some of which were no doubt inconsistent with one another. Similarly, there is no single, agreed upon psychological method, but a variety of different and still emerging techniques.

In contrast to psychology, older, more established sciences, notably physics, rely more heavily on *deductive reasoning.* Deductive reasoning involves the use of an existing theory to create specific *deductions,* or conclusions, regarding how an as-yet-unexamined phenomenon operates. Thus, a general idea about relations among some collection of variables in the world is examined in terms of its specific consequences for related variables. Deductions lead to specific, logical predictions that can be proposed in an "If-Then" analysis ("If event A occurs, then event B should follow") and eventually tested in some investigation, experimental or otherwise.

Not all psychology is inductive, of course; deductive reasoning is employed as well. An intriguing case of deductive reasoning in developmental psychology, for example, concerns the origins of inhibited or socially restrained temperaments in some children. Is temperament environmental or dispositional in origin? If inhibition is genetically inherited, then a greater degree of inhibition should be observed between identical twins than between members of the general population (e.g., Kagan, 1994). Support for the prediction—a greater percentage of inhibited temperaments is found among twins than strangers—implies that there is a genetic link. The absence of support would also be useful because it challenges the researcher to re-evaluate the assumed link between temperament and genetics. Deductive reasoning, then, allows researchers to make inferences about what variables did or did not lead to some outcome.

Figure 1.1 illustrates the difference between inductive and deductive reasoning by highlighting the direction of the inference process. When observations lead a researcher to create a theory, a "bottom-up" process, the reasoning process is inductive. When the reverse occurs and an existing theory is used to predict particular observations—reasoning begins in a "top-down" fashion—the process is deductive. Psychology is a largely inductive enterprise, but both types of reasoning are essential to the field and, more generally, to the scientific method.

The Scientific Method

Across time, both natural and social scientists have focused reasoning and formalized procedures of inquiry into what has come to be called the

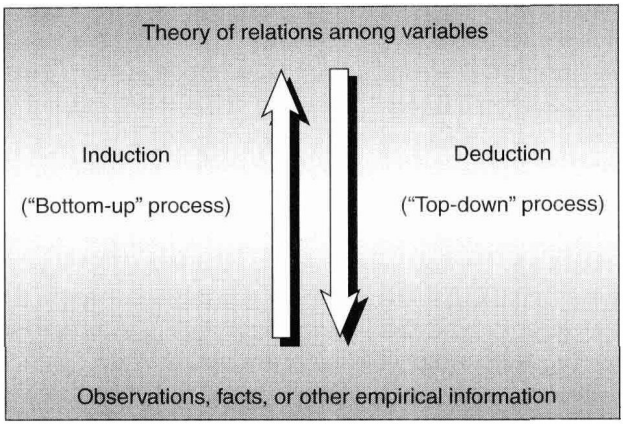

FIGURE 1.1
The Process of Inductive Versus Deductive Reasoning

scientific method. Although there is no completely agreed upon definition, the scientific method is an organized way of both asking and answering questions about how the world works. The eventual goal of the scientific method is to determine cause and effect relationships in the world: that is, what particular event or series of events can definitively be said to lead to—to *cause*—some subsequent state of nature.

The logic behind the emphasis on *causality* is very straightforward: If a change in one event predictably leads to a change in another event, then we can argue that the first event caused the change in the second. The link between the two events allows us to draw a tentative conclusion about the world. This conclusion is a basis for systematically changing other events, observing their effects on still others, and ruling out alternative explanations so that both knowledge about the events and our confidence in our conclusions grow.

With its emphasis on establishing causality among observable events, the scientific method relies very heavily on *empiricism.* Empiricism is a philosophy relying on direct experience to draw conclusions about the world and events in it. For example, if I see a cue ball strike another billiard ball, sending the latter flying across the pool table into a corner pocket, then I can say that the first ball caused the second one to fall into the pocket. Not only am I identifying cause and effect, but I do so by relying on my visual sense.

The scientific method, however, requires that we verify our empirical knowledge of the world in particular ways that reduce the possibility of error or bias; after all, my eyesight may not be 20:20. We will discuss four generally accepted criteria that comprise the scientific method.

First, the scientific method requires that researchers make careful observations about the world so that general conclusions—or facts—can be drawn. A *fact* is a statement that is known to be true. For example, one fact is that the average body temperature of a human being is 98.6 degrees Fahrenheit. Facts are useful because they allow scientists to assume that if certain states of nature are true, then other ideas may logically

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