Research Methods
in Crime, Justice, and Social Problems

A MIXED METHODS APPROACH

Mark M. Lanier | Lisa T. Briggs

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A Mixed Methods Approach

Second Edition

Mark M. Lanier
University of Alabama

Lisa T. Briggs
Western Carolina University

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Preface

This is the second edition of the original mixed methods book published in 2014. Our original objective was for a short, simple to read, yet comprehensive, book about research methods. Based on reviews we successfully met that goal; however there is always room for improvement and primarily based on student and faculty feedback we have made several significant changes: we have broadened the appeal to include additional academic disciplines, we have added color to the text to enhance visual appeal, we have enhanced the critical thinking skills exercises and improved the free, open access website.

Importantly we have retained the original features that made the book unique and successful. The original text was written primarily for students in the social sciences who examine crime and deviance, generally students of criminal justice and criminology. Therefore, most of the original examples and illustrations were from those disciplines. However, many of the faculty who adopted, reviewed and assigned the original book were from disciplines outside criminal justice and criminology. Consequently, the primary change, and improvement, is the inclusion of numerous illustrations and examples from other disciplines. Furthermore, increasingly academic boundaries are blurred and quite often researchers from different disciplines collaborate with one another, so this multidisciplinary approach is beneficial for the advancement of science and solving social problems. This is particularly relevant with mixed methods research since interdisciplinary research teams are often employed. Furthermore, research methods vary very little between the social sciences; students of sociology, public health, psychology, interdisciplinary studies, political science, emergency and disaster management, and many others will find it useful.

As we argue throughout this book, the use of rigorous research methods is critically important for individuals, institutions, society, and the planet itself. For example, the often illegal overfishing of certain species may lead to depletion of ocean fisheries which will have global consequences. While illegal fishing appears just as a criminal justice issue, it is very interdisciplinary. The sciences, which research methods are based on, greatly contributed to humans' ability to fish wide areas for long periods of time, albeit with disastrous long-term results. Yet at the individual level you may enjoy fishing and have "scientifically" determined the best bait, time, and location to pursue your hobby. Crime, environmental health, law, political science, geography,

and criminology are all at the heart of the example—since who controls the world's resources? How are the resources protected? Who should protect them? Who has jurisdiction? How will the depletion of fish affect human health, ocean resources, and the overall food chain? How can fishing, far from any shore or national border be policed? Is preservation of natural resources the responsibility of self-appointed groups like Greenpeace in the absence of effective government intervention? Or, are groups like Greenpeace criminal for interfering with commerce? The research questions to be asked and addressed from this one example are vast and can be targeted from many different academic disciplines. Science can be at the individual level, such as how a person who enjoys fishing has "scientifically" determined the best bait, time, and location to pursue the hobby. They have determined the best way to preserve the fish, clean the fish, and perhaps cook the fish. At the same time, science can be at the macro or societal level and must be studied from a multidisciplinary approach. International law and agreement may specify amounts of specific species that can be harvested. The example also introduces issues of personal and societal ethics. Our vegan friends question if we should fish at all.

The ethics involved in overfishing remind us of the importance of critical thinking and ethical discussions in each chapter of this book. In this second version of the text, we have enhanced and challenged readers to consider ethical issues in society and ethical issues between scientist and researchers. For example, if laws are created to benefit society as a whole, then ethical individuals will conform to these rules and regulations. Even in offshore or in remote fishing areas where little chance of government intervention exists, ethical individuals would conform to the regulations for the greater good. Likewise researchers are obligated to adhere to accepted, codified social science research ethics and methodological practice. Future researchers, for example students, may need to be reminded (or taught) what research ethics are. Thorough and accurate research skills, as will be delineated in this text, are relevant and vital. Critical thinking skills are equally important. Critical thinking entails questioning everything, and accepting "facts" after careful, rigorous scientific investigation. This text will show that even the research methods employed need critical contemplation.

We are cognizant of student apprehension. Despite the critical importance of research methods, students often fear it. In conducting the research necessary to write this book alone, more than 50 texts on research methods were reviewed. It was disconcerting to discover how many actually started with a discussion of students who "fear," "dread," "delay," and so forth, a course in research methods. Quite often, students will delay taking this course until their final semester, which necessarily inhibits their ability to perform well in other classes absent the important research skills and

critical thinking ability. Part of this apprehension to research methods is due to the subject matter being perceived by the student as outside his or her particular field of study in the social sciences.

Unfortunately, the authors of many of the textbooks may also unwillingly create part of the apprehension. This apprehension is unwarranted. Using this text to obtain a basic understanding of research methods should allay your anxieties and bolster your confidence while enhancing your researching and thinking skills. The majority of students will greatly benefit from this course and some will even enjoy the subject. Bear in mind, however, that this course does differ from other courses. Virtually everyone in society has some concept of what social problems exist, they just do not know how to address the problems. For example, one problem unique to "police, courts, and corrections" involves the influence of television programs, movies, and the news media. The addition of internet-based media to the old standbys of broadcast and print media has made it virtually impossible for anyone outside of undeveloped countries to escape a basic knowledge of "police, courts, and corrections." However, with the recent exception of shows like "CSI" and "Dexter," most mass media formats rarely discuss research—and fewer, including "CSI" and "Dexter", do it accurately. Further, do not assume the mass media accurately reflect actual criminal justice practice (Surrette, 1999) any more than the media unbiasedly represents political campaigns. Through our critical thinking exercises, we challenge students to acknowledge these problems and incorporate relevant research methods techniques to address them.

The easy-to-understand, conversational style of writing employed in this book should relieve some of student apprehension. It is intended to provide useful skills as well as explaining the ethical and critical theoretical basis underlying research methods. Also, the students who take research methods sooner, rather than later, will derive more benefit from the course by being able to apply this knowledge to other classes. It is perhaps the most important, vibrant and invigorating subject addressed by university curricula.

While we cover both qualitative and quantitative research methods in this text, we also advocate mixed methods research. Thus, further discussion of the scope of this book is warranted. Prior to the 1960s, qualitative methods (ethno methodology, participant observation, unobtrusive methods, etc.) dominated the social sciences. Two factors changed this focus. One was the desire of many social scientists to have their research taken more seriously, like the conception of the "physical sciences" which used experimental research designs and statistical analysis. The second factor was the advent of personal computers, which made it much easier and faster to manipulate large data sets. Consequently, the research emphasis in the social sciences shifted towards

quantitative methods (statistics and large-scale survey research). Despite this shift, qualitative methods remain the preference for some fields of study, and for some researchers, despite often being given second-rate treatment in research methods textbooks and journal publications. The fact existed, and sometimes still does, that journals were more likely to publish quantitative studies.

This disparity needs to be addressed for several reasons. First, the research topic itself should dictate which research method is employed, not the researcher's training or available software. Second, different theoretical paradigms prefer, and often demand, different research methods. Positivists often rely on quantitative methods while postmodernists and critical researchers may lean toward qualitative methods. Often the theoretical perspective of the author dictates which research method is utilized. In this text neither quantitative nor qualitative methods are given preferential coverage; it is hoped each are covered adequately enough to enable students to utilize each method.

Consequently, like the first edition, this book presents what has been termed *mixed methods research*. We move beyond that, however, to include what we term *fluid research*. This is explained in great detail in subsequent chapters, but for now just be aware that research methods are as much an art as a science. In other words, if it were a "science" the same rules would apply to every researcher, in every study, at all times and, therefore, all researchers would be equally dependent on a cookbook formula, or recipe for designing studies. This would lead to little variation, stifle creativity, and generally inhibit research breakthroughs and scientific progress. The reality is that some researchers are brilliant, others are average, and some are poor. What differentiates researchers is intuition and the artistic application of varied research methods (just as some fisherpersons are more accomplished and successful than others). You, even as students, must learn all of these methods to become proficient researchers. Equally important you must be flexible, or FLUID. Fluid research coupled with a mixed methods strategy allows and encourages a variety of decisions to be made at every stage of the research process. This is something that has been missing from most other research methods textbooks.

The whole point of this book is to help you *do* research effectively. The best way to learn something is to actually do it. You can watch mixed martial arts (MMA) or soccer for years, but until you participate in the sport you will only be a spectator, never really appreciate it, and certainly not master the necessary skills. Have you ever watched a televised football game with a former player? If so, you are probably aware that they can turn the volume down and provide better commentary and explanation than most TV announcers (except for those announcers who are

former players as well). Research is the same. You will learn more by actually *doing* research projects. This book shows you how.

A NOTE TO STUDENTS

It has been our mutual experience that Research Methods is a course that many students are not overly excited about taking, or have an appreciation for the true value of. It is our hope that with the right textbook (which of course must be read), students will begin to see the significance of the subject matter and can begin to conceptualize research methods as beneficial tools. The basics learned from this book can assist in ALL of your course work, as well as provide career benefits later.

This book is written in a conversational style that should help students disarm anxieties, move beyond simple regurgitation of information, and think critically about science and the research methods used to produce it. Some new terms specific to the subject are introduced, but the book, as much as possible, is devoid of overly technical or verbose language. Learning these new terms will be important to your success, and most students should already appreciate that utilizing a single word to represent an entire process is a convenient way to communicate. For example, consider how people communicate via text messaging: you probably recognize "lol" immediately as "laugh out loud," and soon you will understand words like "operationalization" with similar ease. Just embrace the terms as they come your way, instead of making them more complicated than they are.

Overall, the right attitude will enhance the experience you have in research methods. Use this book to empower yourself. We have considered the factors that our own students have struggled with and have tried to address them in this book. In the next several paragraphs those issues are addressed more specifically.

WHY WE WROTE THE BOOK

There are several reasons we wrote this book. First, student apprehension can be lowered, interest can be increased, math anxiety can be reduced, and critical thinking skills can be enhanced with the right approach in the text (and supplemental materials). We also think it is important to present *each* of the various types of research (qualitative, quantitative and mixed methods) in a single book. Typically, the authors of research methods books predominately align either with one or the other, but do not expose readers sufficiently to all approaches to research. In fact, "mixed

methods" is a newer term (although the concept has been used for years) and typically absent in the many existing research methods textbooks, as is fluid research. Third, we believe a restructuring of the order in which the material is presented will be beneficial to students. For example, in this book, unlike many others, the sampling discussion comes after research designs because the type of sample selected is dependent on which research design is utilized. Also, a focus on ethics needs to come earlier rather than later in the book because such standards serve as a guide to all other decisions made.

Through the experiences of teaching research methods we find some students come into the course absent some basic, but important, skills that most books on the topic do not address. For example, not all students are on the same writing level. A solid writing foundation is critical. The inability of students to present their research in a professionally written form is a large barrier to success in a research methods course (or any course, for that matter), so a chapter dedicated to that purpose is included. Neither of us claims to be an English professor, but most students could use some help and confidence building in how to write and, importantly how to c*ite* others' work, so we have provided such resources in this text.

Similarly, students are typically not trained in *how* to locate existing research and how to identify quality work from lesser quality. Too often students rely on the internet and fail to note the difference between the more common resources. This text includes a section on the procedures and resources for identifying and locating peer-reviewed research.

Again, part of the motivation in this book's approach is to address obstacles that have existed in our classes (we will continue to discuss those more specifically in the next section). As a result of addressing those barriers through the years, we have developed techniques and material for our own classes that we believe will assist our colleagues in their own courses. We hope that this book and the supplemental materials that accompany it will make the Research Methods course more effective, more productive, less feared, and even fun!

THE APPROACH AND PRIMARY FEATURES

Many reasons exist for students' apprehension of research methods, including their **D**isinterest, **R**elevance **A**rgumentation (viewing statistical skills as detached from the "real world") and **M**ath **A**nxiety (aka ***D.RA.MA.***; Briggs, Brown, Gardner & Davidson, 2009). This **D.RA.MA.** focus is a key differentiating feature of this book. Many college students majoring in the social sciences are *disinterested* in research

methods, because often students perceive their degree as not requiring math-based, scientific, research, or quantitative skills. Dealing with disinterest is a related, but different, challenge from dealing with *math anxiety*. While dealing with math anxiety is difficult enough, another potential obstacle arises when students do not appreciate the value or "relevance" of the course they have been forced to take in order to fulfill degree requirements. It is not uncommon for professors teaching research methods or statistics to find themselves addressing complaints from students as to why they have to take the course to begin with, or what research methods have to do with their specific disciplines anyway. This type of obstacle is best understood as *relevance argumentation* (Briggs et. al, 2009).

We will focus on relevance argumentation throughout this book. The very first chapter of this book attempts to help establish for students "why research at all?" As argued throughout this book, the use of rigorous research methods is critically important for individuals, institutions, society, and the planet itself. A goal of this book is to reveal the science associated with many things that are taken for granted. Through detailed examples (e.g., the fishing example above), students can begin to make the connection between social phenomena and ethical, even criminal issues, and see that the intersections with social phenomena, science, ethics, and legal issues are complex, fascinating, and important to understand.

In this book, we attempt to address student relevance argumentation by providing simple (yet often socially complex) examples that students should be able to relate to, such as the ability through research to develop ways to treat and even cure cancer and other disease; we then get students thinking about the benefits of research to all social disciplines. Keeping with the critical aspect, we also challenge students to consider how some of the research advances have also caused problems.

One hallmark of advanced education is the ability to think critically and so, rather than presenting the research methods and concepts in an unquestioned manner, they are offered alongside alternative, critical views for consideration. One of the defining features of an educated individual is the ability to critique, that is, to critically analyze something, rather than simply accepting what one is told or has read. As Aristotle noted, it is the mark of an educated mind to be able to entertain a thought without accepting it. As thinking individuals, students must decide which is "correct," "best," or of "most" value; however, students should recognize that the "best" decision is based on situational, political, and contextual contingencies and will inevitably change. These are value judgments and require flexibility and fluidity. As students (and even instructors) progress as researchers and scholars, the choices

they make and the positions they hold may change. This is acceptable, understandable, and inevitable. We encourage students to allow the research problem to dictate the research methods employed rather than letting a certain type of training, the quickest or easiest method, or the opinions of others provide the rationale for choosing a research strategy. A background in research methods that fosters intuition and artistic style, as well as adhering to "science," will provide the most solid research. Ultimately, the answers scholars seek through research may be best ascertained through qualitative methods, quantitative methods, a combination of both, or neither.

It is typical in research methods texts to focus on either quantitative *or* qualitative methodology. Our goal is to develop a text that avoids that segregated approach. It is important that students be equipped with an appreciation of both types of methodology. For example, most current research methods texts allocate only one chapter to qualitative research approaches, and few (to none) acknowledge the possibility of combining both types of methods into one study, often termed *mixed methods*. In this book, focused attention is given to *each* type of methods of research; both the positive and negative aspects of the various approaches are presented with an ultimate goal of fostering students' ability to be critical consumers of information themselves.

Because we include qualitative analysis, some instructors may categorize this as a *qualitative* research methods book. It is not. It is a book that is simply trying to avoid aligning with only one "camp." For example; we dedicate chapters to quantitative data analysis (statistics). Some universities have a two-part course offering: research methods and statistics. In those cases, a two-part process is effective; cover research methods in one and quantitative data analysis in the other. Some programs, however, may only offer the research methods course. Therefore, we believe it is beneficial to at least provide cursory exposure to data analysis for both qualitative and quantitative methods. An overview of statistics does not detract from the equally valuable qualitative methods (qualitative researchers may also rely on statistics). Rather than just a description of the math and equations the statistics chapter is focused more on reading and understanding what the statistics mean. This addition is important in pulling all of the pieces of the puzzle together and will help prepare students for understanding the entire process of research methods and data analysis. This basic understanding of statistics should also help bolster confidence when students read empirical research of others.

Quite often, students will delay taking research methods until their final semester, which inhibits their ability to perform well in other classes because they may

be lacking in important research skills and critical thinking abilities. Part of many students' apprehension to research methods is due to the subject matter being outside the customary and widely understood academic disciplines. Some research methods textbooks may unwittingly be creating part of the student apprehension by the *way* the material is presented. With the right text and pedagogical approach, perhaps students will take a methods course sooner in their academic careers. Then, the knowledge base can be applied to other classes, making for a more successful academic experience. It is perhaps the most important, vibrant, and invigorating subject addressed by university curricula.

ORGANIZATION

In order to provide a variety of perspectives, several prominent researchers and colleagues wrote short sections, or inserts, for this book. All the inserts are original and are provided by the best researchers on each subject. Each of these authors has a different *voice* and perspective, which allows for readers to experience variety in research methods. The astute reader will note differences between how qualitative and quantitative researchers write. We purposefully did not edit their work since we desire students to recognize the importance of *voice* and tone.

The book is organized in a logical and, with a few exceptions, traditional manner. The first chapter provides an overview of the history of research methods and introduces why science is important at all. It also presents the various types of research and the changing role of science. It includes examples of how research has improved (and in some cases harmed) social and physical conditions.

The second chapter presents the usual stages associated with conducting a typical research project. The chapter is designed to aid students through these stages and enable them to have a better understanding for conducting research on their own. This chapter provides readers with a basic "map," or conceptualization, of research methods before subsequent chapters diverge into more specific details regarding components of research processes. We believe this overview will empower students by providing a typical approach that is followed when conducting research.

The third chapter focuses on research ethics. Surprisingly, research ethics have not been a formalized part of research for very many years. This chapter begins with a general discussion of ethics, follows with ethics specific to research, and concludes with examples of studies having ethical problems. The role and problems associated with Institutional Review Boards (IRBs) are also articulated.

Chapter 4 examines issues related to validity and reliability. Regardless of the methodology employed, threats to validity and reliability will always be present. This chapter provides a comprehensive discussion of the internal and external validity including subsections of each type (history, maturation, testing, instrumentation, statistical regression, selection, mortality, etc.). Special attention is given to how issues of validity and reliability vary between qualitative and quantitative methods.

Qualitative research strategies are covered in chapter 5, and chapter 6 presents the more common experimental designs and includes a large section on survey research. Strengths and weaknesses of each design are illustrated. This chapter examines topics such as questionnaire development, how to create and apply survey instruments (questionnaires and interviews), and problems with each.

Chapter 7 begins with a synthesis of chapters 5 and 6 by presenting a detailed discussion of mixed methods research. While this chapter presents the benefits of combining the best of qualitative and the best of quantitative approaches into one study, it reminds readers that not all studies are conducive to a mixed methods approach and it describes other factors that serve as barriers to a mixed methods research project.

Chapter 8 deals with sampling strategies. Sampling is of critical importance and depending on the research subject, different strategies are preferred. This chapter shows the strengths and weaknesses of each strategy and provides examples of their use and misuse from actual research. Again in this chapter, both quantitative and qualitative sampling strategies are covered, although it features a greater emphasis on quantitative methods, since sampling is often a larger component of this type of research. Some texts present sampling *prior* to introducing research designs; however, since the type of sample drawn is dependent on the specific research design employed we contend that a more logical placement is to first introduce the different types of research designs before providing a discussion on how samples are selected.

The best and more commonly used analytical strategies for making sense of and presenting data are discussed in chapter 9. This chapter covers very basic descriptive and inferential statistics at the univariate and qualitative level and includes a discussion on how to present data through the use of tables, charts and graphs. Unlike the wide acceptance of statistical techniques there is no consensus on the best way to analyze and present qualitative data. Some researchers prefer to "quantify" qualitative data and other researchers argue that this detracts from the rich, narrative understanding provided by the data. These, and other debates, are presented. The development of themes and theory is included along with the

best methods of presenting the qualitative findings. The companion discussion of quantitative analysis also appears in the chapter. Chapter 9 presents elementary data analysis typically associated with bivariate and multivariate analysis. This chapter also touches on a few more advanced (actually intermediate) statistical techniques that are commonly used by social science researchers. Chapter 10 is a brand new chapter on qualitative data analysis. While qualitative analysis predates quantitative analysis new software (and hardware) have dramatically altered how this type data is collected and analyzed. We try to present a brief overview of these changes.

The final and eleventh chapter covers, in great detail, how to improve writing abilities so that research projects can be presented in a professional manner. It has been our experience that not all students are equally equipped with the foundation that enables them to be effective writers. We have taken great pains to provide a chapter that will assist in their writing success.

Please do not hesitate to contact either of us with concerns, suggestions or questions. It was this type of correspondence from the first edition that led us to revise the original book.

ACKNOWLEDGMENTS

Never is a book the product of only one or two writers; rather, it reflects an accumulation of a lifetime of experiences and influential people. For Mark those influences include Robert "Bob" Langworthy at the University of Central Florida (UCF) and Doug Klutz at the University of Alabama (UA). Other influences came from unlikely places, mostly my blue collar biker and surfing companions, whose intellect often surpasses that of those more formally educated, some are Jim Santore (IMC), Dennis Harrison, Ken Morris, Greg Ashcraft (Skinworx), Brad Talley (BFMC) and Cody Wood (BFMC). My Graduate Assistant, Conner Birdsong was a help, as were several undergraduates who are passionate about research, including Neisha Riley.

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DEDICATIONS

My part is dedicated to the Murfee legacy as best exemplified by Ann Murfee Sullivan.

Mark M. Lanier, February 13, 2018

This one is dedicated to Kent, thanks for so many exciting, adventurous experiences through the years, and for trying to let me be me.

Lisa T. Briggs, February 13, 2018

CHAPTER 1

Why Research at All?

CHAPTER OBJECTIVES

After reading this chapter, students should:

- Be able to better comprehend the utility of science and the research methods associated with it.
- Have a better understanding of common terms such as positivism, inductive reasoning, and deductive reasoning.
- Distinguish the primary differences between qualitative and quantitative research.
- Be knowledgeable about the mixed methods approach to research.
- Understand the different research designs and components common with qualitative, quantitative, and mixed methods.
- Have an increased awareness of the evolution of science, as well as the challenges facing early scientists.
- Realize there are positive and negative outcomes associated with the advancement of science.
- Be reassured in knowing it is beneficial to critically analyze scientific information, how it is gathered, and who gathers it.
- Understand what causality is and the necessary conditions associated with it.
- Be able to defend a fluid research strategy.

"*I love Brian Piccolo and I want you to love him too*" is a famous line spoken by National Football League (NFL) legend Gale Sayers to honor his Chicago Bears teammate Brian Piccolo. Sayers gave the emotional speech when he was awarded the NFL's George Halas Most Courageous Player Award in 1969. Most who have watched the classic movie *Brian's Song* (the story of a teammate who contracted cancer) would

agree that it resonates the appreciation one person can have for another. If a similar sentiment can be conveyed regarding research methods presented through this book, then the text will have been a success. We hope that likewise research methods are something students come to appreciate and, yes, maybe even love! Even if students do not experience "love at first sight" for science, research methods, or statistics, it is our hope that they will have an epiphany when realizing how relevant and important these are to our daily lives.

While learning effective research methods can be a challenging endeavor for some, we hope that the process and outcome of good research can be greatly valued by all. Even if students do not experience "love" for science, research methods, or statistics, we hope they will recognize how relevant and important research is to peoples' daily lives and professional careers.

For many, after the initial trepidation and perhaps even fear, research methods will become a favorite course. The authors' intent is for students to have a clear, concise, engaging, and useful book, rather than one that is intimidating. Although no one expects for all students to "love" research, the goal is that this text will make research less intimidating by providing criminal justice, criminology, sociology, social work, interdisciplinary studies, political science, psychology, and public health (and many other disciplines) students a practical, easy-to-understand, comprehensive, and yet *critical* coverage of traditional, and some nontraditional, research methods.

Regardless of the academic discipline, the methods of good research in the social sciences are virtually the same. Denzin and Lincoln note that in the last 40 years in the social sciences, there has been a "methodological revolution" (2008, p. viii) in large part because there has been a blurring of disciplinary borders. While psychologists may rely more on scales and inventories, lawyers on document analysis, criminologists on questionnaires, and sociologists on participant observation, the methods are interchangeable among disciplines. The topic under examination (e.g., mental stability, legal statutes, crime) is what varies. Most of the illustrations in this book focus on crime, justice, and related social problems, but regardless of the topic, the research methods employed can, and should, be utilized by any and every academic discipline. Further, it is often advantageous to develop research teams comprised of people from different disciplines. This cross-fertilization between disciplines can have many positive effects. The probability of scientific breakthroughs is enhanced when the autonomy among disciples is reduced and problem solving and contributing to the advancement of science is a multidisciplinary endeavor. This text intends to demonstrate the interconnectedness of social problems and to demonstrate how similar research methods are across disciplines, and how they can be used to address societal issues and advance science.

When NFL player Brian Piccolo died from embryonal cell carcinoma on July 16, 1970, that form of cancer was 100% fatal; today it is 95% curable. Why the dramatic improvement in chances of surviving this once-deadly cancer? This is because of science and the research methods that accompany it. Every person reading this book probably knows of someone with an illness such as cancer and is thankful scientific methods exist to find cures and prolong the lives of loved ones. However, it is not just medical (hard sciences) advances that help cancer patients. Studies have found that a positive attitude and healthy outlook (social sciences) have a profound impact on a patient's recovery and rehabilitation (as shown by Gale Sawyers in the movie *Brian's Song* during his strenuous and multiple knee surgeries). There are many examples of research influencing our lives, and as time passes, students' appreciation for research methods should increase. As students develop and conduct their own research projects, many will realize this process can actually be very enjoyable and rewarding. Research methods should prove to be among the most helpful of academic subjects, providing benefit to careers, education, and even quality of life.

Research allows the quest for knowledge and information to be fulfilled in the most rigorous manner. Answers, knowledge, edification (teaching and learning), and perhaps even enlightenment can come from numerous sources, including religious, artistic, drug-induced, spiritual, or other personal "moments of clarity." For example, long-distance runners, after experiencing a "runner's high" (technically a rush of endorphins), report clearer thinking and a euphoric-like state of heightened awareness. Great ideas, or answers to questions, can occur during a long run. Some people have knowledge conveyed to them through dreams. Intense spiritual moments, meditation, and prayer may reveal insights not previously grasped. Many doctoral candidates have prayed for clarity while writing or defending their dissertations. (A dissertation is a piece of original, hopefully significant, research required to earn the doctor of philosophy [PhD] degree.) Other people rely on meditation and self-induced states of awareness for ideas and intellectual clarity. All these methods, as well as others, may provide help, insight, guidance, and assurance in the quest for answers.

A field of study called epistemology examines all these sources of knowledge. **Epistemology** examines the means of determining *how* it is we know what we know. In other words, epistemology seeks to determine what the legitimate sources of knowledge are. Although there are many "methods" of acquiring knowledge, only one means of creating and verifying knowledge is widely accepted among business, academic, government, and social organizations: science and the tools employed by scientists, *research methods*.

Epistemology: A branch of philosophy that focuses on understanding how we know what we know.

The most reliable and most widely accepted source for acquiring and validating knowledge is by using the time-tested principles associated with science. It is by

creating quality studies, which can be replicated by others, that we arrive at answers with a sound scientific basis. Keller and Casadevall-Keller, in a nicely titled book, *The Tao of Research*, note the following:

> Research—the word itself puts us on the path to understanding its mission and its methods. Say it slowly . . . re-search. Research is looking again, trying once more to find something that was not found before. At a fundamental level, it is a search for truth, and nothing is harder to find or more tenuous to hold.
>
> *(2010, p. viii)*

The term *methodology* is derived from three Greek words: *meta* (along which), *hodos* (path), and *logos* (knowledge). Literally, in this context, methodology means "the path along which knowledge is gained." Thus, research methods are the procedures used to gain knowledge in order to contribute to science.

It is important to learn some vocabulary associated with research methods. Throughout this text, some new terms will be introduced; some are more important to understand and remember than others, but they will all serve to provide a deeper understanding about the field of research methods. For some, the terms may be intimidating, but this is likely due to the fact that the words are just unfamiliar. Comfort will come as the words are used more frequently. The great thing about research methods verbiage is that one or two words can be used to describe complete processes. For example, the novice researcher will be able to utilize the word *operationalization* instead of having to define the process of taking abstract concepts and putting them into forms that can be measured quantitatively and qualitatively.

Positivism: Knowledge acquired through direct observation or experimental observation.

Deductive reasoning: Logic that begins with a theory and then tests that theory.

Social sciences: The study of human behavior, including the fields of criminology, sociology, political science, psychology, and others.

The basis for knowledge derived from the use of science is called *positivism*. Positivism is thus simply the theoretical basis for science. **Positivism** is a method for using precise empirical (scientific) observations to confirm or deny rules that can predict human (or other) behavior. As such, positivism is generally a **deductive reasoning** process (meaning it starts with an idea but seeks verification through scientific means of study). The basic principles are derived from natural, or "hard," science research, which often takes place in a laboratory setting and involves experiments. Some scholars think that the procedures used in the natural sciences can and should be replicated in the **social sciences** (to explain human interaction and social problems). Other scholars completely reject positivism and, consequently, advocate alternative methods of inquiry in the social sciences. In other words, some contend we can inform, or create, knowledge by means other than following scientific formulas or experimentation.

Science is not a "cookbook"; otherwise, all researchers would be equal in their capabilities. In reality there are very good, marginal, poor, and everything in between

in regards to the quality of research studies and researchers themselves. One difference that exists between researchers is that some argue science should operate in a circular manner. Researchers can start at different points (e.g., theory testing or observation) and still arrive at valid conclusions. Some traditionalists may argue that science must start at a specific point, with a predetermined process.

In a further contrast to a predetermined process, some researchers also advocate for what is termed "**fluid research.**" A research strategy is not "set in stone" but can be altered as needs and circumstances dictate. A quick example will illustrate this guiding principle. Early in a research career (in fact, while completing a Master of Science [MS]

Fluid Research: An acceptance that research methods and focus may be altered during the course of a study to take advantage of new situations.

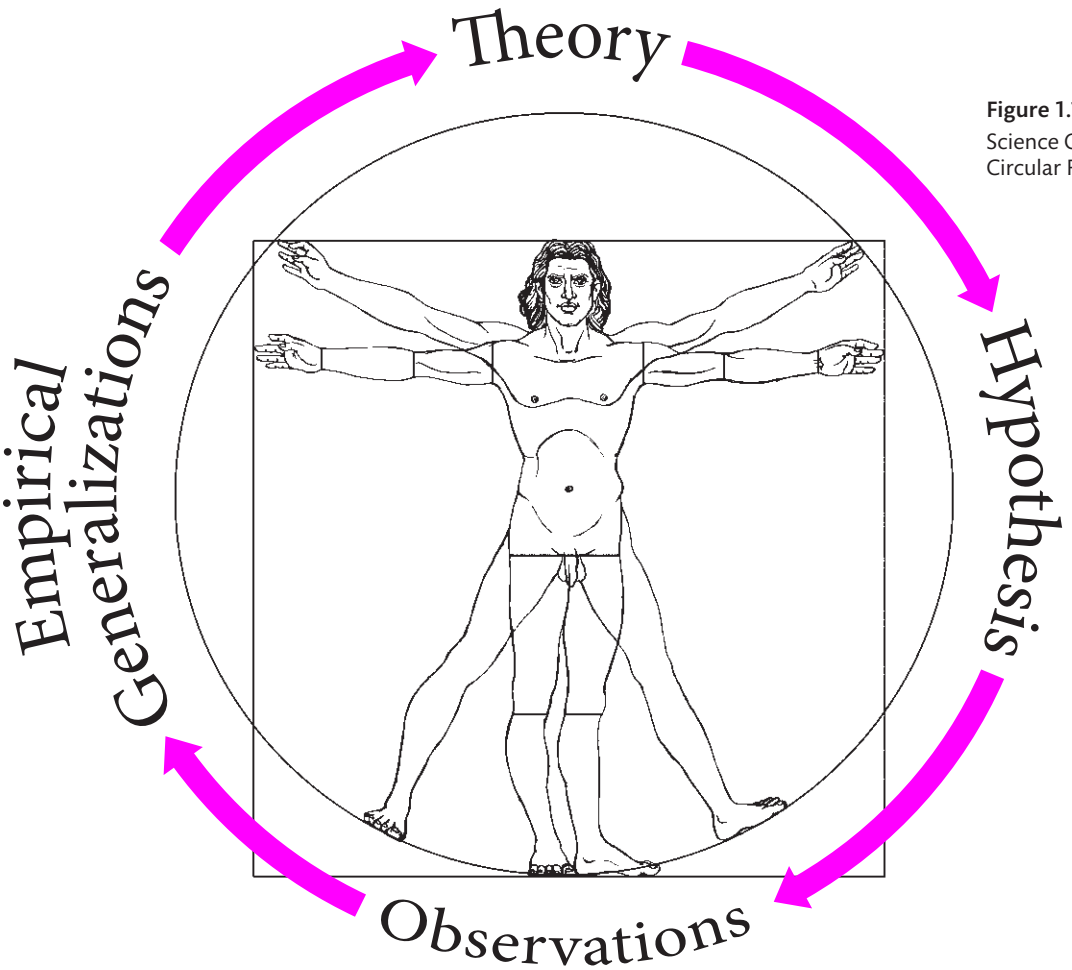

Figure 1.1
Science Operates in a Circular Fashion

thesis) a study was undertaken to examine the knowledge, attitudes, and behaviors of all incarcerated juvenile delinquents in the state of Alabama (DiClemente, Lanier, Horan, & Lodico, 1991). The research was scheduled to take place over one year in 13 different locations. Unbeknown to the researchers, the Alabama Department of Youth Services quickly provided an AIDS education program to all the juveniles. This was an obvious contaminant to the study and would have biased the research outcome as originally conceived. However, the study was quickly altered since fluid research allows change and modification to take advantage of new opportunities. Approximately one third of the juveniles received the entire 5 days of AIDS education, another third received 3 days, and the remaining juveniles received no AIDS education. By a slight change in focus, the "new" study now examined the impact of AIDS education on juvenile delinquents (Lanier & McCarthy, 1989) and became the first study ever to identify this population as being at high risk for HIV/AIDS. One problem with fluid research revolves around IRB approval (which is discussed in a later chapter). There are still other areas of variation between researchers.

Researchers who do not accept positivism as being the only method, or even the best method, for acquiring scientific knowledge typically adhere to underlying philosophical arguments most visibly reflected in the research methodologies employed by qualitative research. In other words, qualitative methods have a different underlying theoretical or philosophical basis (this is discussed later) compared to quantitative methods. A theme of this book is to expose the novice researcher to *both* of these methods, and each method is discussed in every chapter. Many researchers prefer one method to the other; however, it is important to become familiar with each methodology, since the research question should actually determine which is the best research methodology for a particular study. Over time, the *best practices of research* have evolved, which guide efforts in our pursuit of knowledge and understanding, but a more recent approach uses both qualitative and quantitative methods in the same study. Each of these approaches—qualitative, quantitative, and mixed methods—is presented in this text. Professors and students will likely favor one method over the other; however, it is our objective to initially provide a review of each so that researchers will be better informed to choose a method and to illustrate that it is the particular research question that should determine which research approach is employed.

THE HISTORY OF RESEARCH

Historically, or at least since humankind began recording its progression, knowledge advanced very slowly until about two hundred years ago—when positivism and scientific principles (research methods) were first introduced. Initially, since science

refuted many religious ideas of the time, scientists were persecuted and even killed for their beliefs. One of the most notable examples is Galileo Galilei, typically referred to as "Galileo," who is often touted as being the father of modern science. Galileo was forced to stand trial before the Catholic Church on suspicion of heresy (questioning established religious beliefs) and was condemned for his heliocentric hypothesis, which merely observed (hypothesized) that the *sun* is the center of the universe, and the earth and planets revolve around it. Galileo was originally summoned to Rome to defend his hypothesis that Earth is not the center of the universe (completely radical thinking for the time and against religious indoctrination). When Galileo refused to comply with the Inquisition's sentence requiring him to denounce his findings, he was ordered imprisoned, a sentence that was later commuted to house arrest. His *Dialogue Concerning the Two Chief World Systems* (Galileo, 1632) was banned, and publication of any of his prior or future writings was forbidden as well. Although Galileo died in 1642 while still confined under house arrest, it was not until 1718 that the Inquisition's ban on publishing any of his writings was lifted, and not until 1758 that the general ban on publication of writings advocating the heliocentric viewpoint was lifted. Even though the Pope and the Catholic Church ultimately acknowledged their error in the handling of the Galileo controversy, it was almost three hundred years after his death before the blemish on his contribution to science was completely removed by the Catholic Church. In 1939, Pope Pius XII, in his first speech to the Pontifical Academy of Sciences, within a few months of his election to the papacy, described Galileo as being among the "most audacious heroes of research . . . not afraid of the stumbling blocks and the risks on the way, nor fearful of the funereal monuments" (1939, p. 34).

Throughout history, many religious leaders have denied the validity of science and have persecuted scientists. The various inquisitions (Medieval Inquisition, Spanish Inquisition, Portuguese Inquisition, Roman Inquisition, etc.) during the Enlightenment, Renaissance, and Reformation, as well as a number of witch trials, are prime examples. Religious resistance to science, it should be noted, was not limited to Catholicism or to any specific scientific discipline or specific geographic region. The reasons for this resistance are abundant and include fear, panic, rigid adherence to personal and traditional belief systems, economic concerns, and apprehension of what could cause the "powers that be" to lose control of the masses or their followers, whose actions were governed by the existing belief system.

Historically, scholars and critical, forward thinkers have been doubted, persecuted, or sometimes killed for their willingness to promote scientific methodology, especially when it conflicted with established religious principles. Today, failure to acknowledge and use scientific principles is considered primitive (yet the science supporting phenomena such as global warming is still critiqued by some, as it should be). Over time, humankind has begun to rely on scientific principles rather than

superstition, religion, or tradition as the means of understanding human behavior and social problems. Along with this growing body of knowledge came the "technology explosion" (e.g., electronic advances and developments) and a "data explosion" (e.g., the abundance and ease of data recording and analysis) that further increased knowledge founded on science and the scientific method (Bezuidenhout, 2006).

Many of the classical theorists laid the groundwork for varied social science research methodologies that are still in use today. Men (we refer to "men" here because, with a few notable exceptions such as Oberlin College in 1833, Antioch College in 1853, and Bates College in 1955, most major institutions of higher education did not admit women until the mid-1900s) such as Auguste Comte, Émile Durkheim, Karl Marx, and Max Weber all presented theoretical paradigms that led to different types of research strategies. Each was also very influential in establishing separate academic disciplines. More recently, other contemporary "great thinkers" such as Michel Foucault and Jürgen Habermas have questioned some of the previously held, and widely accepted, premises on which science is based. A goal of this book is to emphasize that science "happens" because we question and build on previous paradigms and thoughts of others. As mentioned previously, it is helpful to remember *research* means just that: "re-search." Replication of studies over time is a key to the development of scientific foundations.

In the 19th century, it took about fifty years to double the world's knowledge. Today, however, the base of knowledge doubles in less than a year (Emory University, Commission on Teaching, 1997), and some argue that knowledge now doubles every 12 hours (Schilling, 2013). Contrast this with the stagnant state of knowledge that existed for thousands of years.

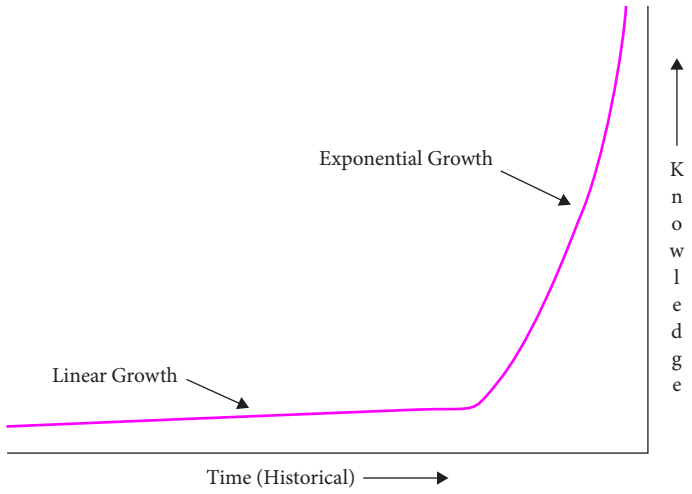

Figure 1.2
The Knowledge Doubling Curve

http://www.futuristgerd.com/bing.com

Some common examples of this change illustrate the difference that science has made in contemporary life. Consider that many elderly people alive today did not have televisions, cars, or even telephones in their youth. Middle-aged people today grew up with only a few television stations when they were young, and most did not have access to computers or ATMs, Facebook, or cell phones. The youth of today have available hundreds of television stations, as well as other forms of visual stimulation, information, and resources on their cell phones. In fact, parts of this text were written from an iPhone. Certainly, technology contributes to science, but science is what developed the technology.

With the vast development and growth in technology also came more and varied types of crime. Brown, Esbensen, and Geis (2004) affirm that technological changes have resulted in more valuable and more portable items that are easier to steal, such as personal computers, cell phones, and media devices. Routine activities theory in the 1970s started noting that as technology changed, so did crime. The technology explosion also has led to the proliferation of new types of crime such as identity theft, and science is needed in order to understand and reduce the negative consequences of technology. There is an abundance of topics to study (criminal events) that have been fueled by technology. For example, Sameer Hinduja has had a stellar career examining "cyberbullying"—a newer type of crime based on technological changes (Hinduja & Patchin, 2015; Patchin & Hinduja, 2016).

Technological advancements, brought about by science, present fresh challenges and raise new questions, which translate into new research endeavors, including the examination of technological crimes; it will be scientific methods that will help address new social problems created by technology. Because there is widespread agreement on the importance of science, it is surprising there is no single agreed-upon definition for the term *science*. Some even argue that a social science (such as criminology, which is applicable to the study of human behavior) is not even really possible; however, we put those arguments aside and proceed under the (sometimes-contested) assumption that science does exist and can be used in the social sciences (just as in the physical sciences). **Science** simply reflects a way to go about obtaining knowledge that provides some confidence that standards are met before conclusions are drawn. Science helps us understand the world we live in and helps solve some of society's problems, although science and the advancement of technology can be the very cause of some societal and human woes. While the authors of this text are willing to promote the idea that scientific methods can be used to help understand *human behavior*, importantly, we want students to be *critical* of science and its methods. Part of our duty as researchers is to question everything and to be critical thinkers—and yes, it is indeed acceptable—even desirable—to be critical of science.

Science: A rigorous process used to provide a reliable method or means of knowing things.

GOOD, YET CRITICAL, SCIENCE

Do not assume that society's reliance on science is all "good"; science itself is neither good nor evil. It is a tool that, like any other tool, has the potential for producing a good product or a bad product. With that being said, how *people* might use science *can* be evil or good. It is dependent upon "whose hands the tools are in" and how that individual or group (or sometimes an entire subculture, culture, or nation) chooses to use, or abuse, the possibilities of science. Some of the consequences of science are in fact horrific. For example, science allows greater mechanical fishing, and now our oceans are rapidly being depleted of fish, turtles, and other marine life. Coral reefs are dying at an alarming rate due to the advancement of science. Science and its contribution to the use and abuse of fossil fuels have led to major ecological disasters worldwide.

After 25 years, the *Exxon Valdez* oil tanker accident is still harming Alaska. A more recent event, the horrific British Petroleum (BP) Deepwater Horizon oil well disaster in the Gulf of Mexico, will likely cause harm for many decades. The future impact is still uncertain, but it is assured that fish exports and sea life were damaged, and some species such as the yellowfin tuna may actually face extinction as a direct result of this massive oil spill. We do not yet know what the ramifications will be, and science is currently being used to ascertain them. Science provided the means for humans to drill for oil a mile deep under the ocean's surface, but the science has not yet been developed to stem the flow quickly or successfully when an accident occurs.

Solutions to this type of problem are not without controversy; some even appear bizarre. For example, it was argued that the leak might have been contained very

Source: curraheeshutter

rapidly if BP and the U.S. federal government were willing to "bomb" the pipeline and seal it forever. The former Soviet Union has successfully used this strategy since 1966, when a test in sealing an underground gas well in southern Uzbekistan was successful. The Russians have used nuclear bombs four more times since then for capping runaway wells (Hsu, 2010). With this strategy, however, the well could no longer be used, companies would lose their financial investment, and certainly public sentiment would be heightened about the use of nuclear devices. These reasons contribute to a capitalistic company like BP instead looking for alternative methods. This example underscores how effective science had *not* been developed to deal with potential problems. Recall the mass request for ideas or solutions to be submitted over the Internet (by anyone), which resulted in a plumber from Tampa, Florida, submitting a crude drawing of a "cap" founded on the same principles as a fire hydrant.

A strikingly similar cap was ultimately built, tested, and used to abate the flow of oil into the Gulf. It is not likely that this plumber considered himself a scientist, yet it was his idea that put things in motion to fix a significant problem.

Like the plumber, students of research methods (yes, you) are able to arrive at accurate, verifiable, and useful solutions to many social problems. It is through the process of formulating (testing and retesting) ideas that knowledge is advanced. For example, consider how forms of communication have been altered over time. Text messages now outnumber "traditional" phone conversations by four to one. In earlier periods, scientifically created technology, letters to replace smoke signals, telegraphs to replace letters, telephones to replace telegraphs, , and so on. While these technological advances are useful, many argue that texting and e-mailing have replaced face-to-face interaction, and that this change could come with its own social consequences. In addition, while some studies have been conducted, the physical or medical consequences of such advanced technology are still unknown. It will be important to continue to utilize science to determine the connection between new technology and health problems.

Because of science, Brian Piccolo in all likelihood would have survived his cancer today (and perhaps some of our own loved ones have survived what were once fatal illnesses). Scientific medical breakthroughs have alleviated much pain and suffering. Science has even helped reduce crime, but we must remember that science has also created harm (we explore this further in the chapter on ethics). For students of research methods, it is important to acknowledge that science has contributed to the well-being and greater understanding of society, but it is also important to be critical thinkers. Be aware that science has contributed and will continue to contribute its own unique problems; the hope is that science will also find a solution to these human-made, scientifically enabled problems.

RESEARCH DISTINCTIONS

A review of science and the research methods scientists employ will show that science is multifaceted and the methods employed are varied. Several distinctions are used to classify types of research. The main ones are discussed next.

Inductive or Deductive Reasoning?

Inductive reasoning: Logic that begins with data (a problem) and then tries to develop a theory or explanation.

The first scientific distinction to be made is in how a problem is viewed. Some methods first look at a problem or situation and then try to develop a theory or explanation. This is called inductive reasoning. **Inductive reasoning** moves from the narrow to the broad, from the specific to the general, from the problem to the theory. For example, the police may have data demonstrating a particular problem in their jurisdiction. Then, as information is shared about their data (numerical account of a problem), a pattern is identified (consider a spike in a particular type of crime). Inductive research would consider the data provided and then develop a theory to explain the increase in crime. If there is an increase in burglaries (data), is it occurring because the local factory has closed due to economic pressures and more people are unemployed (theory)?

Conversely, one may first have a grand idea or theory and subsequently apply it to a specific case, problem, or situation. For example, one person may have a notion that security systems will reduce burglaries. This is an argument based on a theory of deterrence (potential offenders will be deterred and avoid homes with security systems). This theory could be tested. Research that begins with a theory and then tests that theory is called deductive reasoning.

Deductive reasoning goes from the general to the specific. It can be difficult to distinguish between *in*ductive and *de*ductive reasoning. Think of it in a simplistic form: *in*ductive as *in*venting, *in*vestigating solutions to deal with *i*dentified problems (the data exist first). *De*ductive is *de*veloping, *de*ciding intellectual reasoning first (theory), which then can be tested with data. Scholars and philosophers throughout time have advocated different methods for arriving at knowledge or truth. In examining the various schools of thought, students will be better equipped to determine the best method, or combination of methods, that can be used to increase knowledge.

Quantitative research: Provides *a numerical or statistical analysis* of social issues in order to contribute to science.

Quantitative, Qualitative, or Mixed Method?

The second major distinction is based on research type: quantitative, qualitative, or mixed method. **Quantitative research** deals with data and numbers and relies

on statistics to address research problems. **Qualitative research** methods provide an in-depth personal experience or understanding of something to contribute to knowledge. An easy way to remember the difference is by noting the *n* in quantitative and the *l* in qualitative. *Quantitative* is derived from the word *quantity*, so to quantify something it is necessary to take counts, measures, numbers, and statistics. Thus quantitative is *numerically* based (hence the *n* in the middle of the word). *Qualitative* is derived from the word *quality*; researchers are better able to understand the quality of something when it has been personally experienced (either by themselves or by the person they are researching). Quality, then, provides an in-depth, personal experience, or a *lived* experience; hence the letter *l* in the middle of the word. One can also look for the *quan* and *qual* and use the terms literally. Think about analyzing existing letters or diaries of someone's life or talking to the person directly to have a better understanding of his or her experience. The research goal would not necessarily be to conduct statistical analysis but to garner a richer understanding of the lived experience. Qualitative research is aimed at providing the researcher an in-depth, comprehensive understanding of the research topic by reliance on all empirical sources, including but not limited to sight, hearing, scent, and feeling. Qualitative methods are essentially and generally non-numerical, and they focus on an actual experience to provide knowledge and insight (although "themes" in the research can be counted). The intent of qualitative research includes understanding processes and how things are, and how they came to be that way.

Qualitative research: Provides an *in-depth personal experience* or understanding of social issues in order to contribute to science.

If large amounts of data are collected with numerical representations (e.g., a group of students' grade point averages (GPAs), the number of burglaries in a neighborhood, the statistical association between gender and criminal behavior), then the methods employed are quantitative. The researcher can also try to establish the relationship between variables (e.g., whether the number of burglaries and the closing of the neighborhood factory are statistically associated). Thus, specific numerical measurements are necessary for quantitative research. This approach provides the fundamental connection between empirical observation and the mathematical demonstration of quantitative relationships between variables (Bezuidenhout, 2011).

To contrast qualitative with quantitative research, consider the following example. As part of a class project, a student may go to the county jail and give a questionnaire to the last 1,000 people arrested for the criminal offense of driving under the influence (DUI). The survey may ask the respondent to answer questions about what happened, what it cost, how it feels to be arrested or incarcerated, and so forth. Typically, for quantitative research, the options to the questions are provided, and the respondent selects the answer that best identifies with his or her situation (i.e., close-ended questions). For example, a closed-ended question might read,

"How many DUIs have you had? 0, 1, 2, 3, etc." Basically, a numerical measurement of the DUI arrest experience would be gathered from each of the 1,000 participants in a quantitative analysis.

Alternatively, if the student was actually arrested for a DUI, experienced a strip or body cavity search, had his or her car towed, had no way to contact someone for assistance because the cell phone (with the numbers needed to summon help) was in the towed car or was confiscated, heard the bars clanging shut, smelled the body odor of jail mates, or feared what the other inmates may do, he or she has had a qualitative experience and a better understanding of what a DUI arrest experience really *means*. A qualitative research process would be an attempt to capture the true essence of the experience. Qualitative researchers may also use a questionnaire or interview to assess the experience, but the process would be more "free-flowing." Respondents would typically be asked "open-ended" questions that allow the researcher to gain a deeper understanding of the research participant, such as this: "Please describe what a typical night in jail is like." *Survey research*, which we present later, is common with either a qualitative or a quantitative approach; however, the way the survey is constructed and the type of information desired distinguish the two.

Table 1.1 is a synopsis of the major features differentiating the basic research elements of qualitative and quantitative strategies. Some of the items will make more sense as the book is read. Use this table as a resource throughout the course. It is also important to note that new approaches to research are being developed to combine the traditional methods of qualitative and quantitative methods in a process called **mixed methods research.** For example, certainly a survey could include both qualitative- and quantitative-based analysis. Much more on mixed methods is discussed later in the text.

Mixed methods research: Combines research practices from both qualitative and quantitative analysis of social issues in order to contribute to science.

As shown in Table 1.1, the intent, purpose, or reason for conducting the study is one difference between qualitative and quantitative research. Qualitative researchers are seeking an in-depth understanding of one particular phenomenon or group, and so they often rely on inductive methods. Quantitative researchers more often seek to test a theory and want their results to apply to a broad group. This is achieved most often by relying on deductive methods.

At this early stage in the course and in the text, Table 1.1 might be useful for guiding students through the steps necessary to complete research-related projects. For example, an important element of a research project is the literature review (greater detail on this is provided in the next chapter). Generally, however, the reason that quantitative researchers conduct a literature review is to identify similar studies, provide the rationale or reasons for the study they are conducting, and help develop

TABLE 1.1 *Mixed Methods Research Matrix*

Elements of Qualitative Research Tend Toward . . .	Process of Research	Elements of Quantitative Research Tend Toward . . .
• Understand meaning individuals give to a phenomenon inductively	**Intent of the research**	• Test a theory deductively to support or refute it
• Minor role • Justifies problem	**How literature is used**	• Major role • Justifies problem • Identifies questions and hypotheses
• Ask open-ended questions • Understand the complexity of a single idea (or phenomenon)	**How intent is focused**	• Ask closed-ended questions • Test specific variables that form hypotheses or questions
• Words and images • From a few participants at a few research sites • Studying participants at their location	**How data are collected**	• Numbers • From many participants at many research sites • Sending or administering instrument to participants
• Text or image analysis • Themes • Larger patterns or generalizations	**How data are analyzed**	• Numerical statistical analysis • Rejecting hypotheses or determining effect sizes
• Identifies personal stance • Report bias	**Role of the researcher**	• Remains in background • Takes steps to remove bias
• Using validity procedures that rely on the participants, the researcher, or the reader	**How data are validated**	• Using validity procedures based on external standards, such as judges, past research, statistics

Adapted from *Designing and Conducting Mixed Methods Research*, by J. W. Creswell and V. L. Plano Clark (Thousand Oaks, CA: Sage, 2007), p. 29.

study questions and the hypothesis that will be tested. Consequently, the literature review is of great importance to quantitative researchers. The literature review actually "sets up" and justifies the entire project.

This is not necessarily true for qualitative researchers. Qualitative researchers may use the literature on the topic to help them articulate the need for the study and may reference other studies at the conclusion of their project. More often, the literature in a qualitative study is scattered throughout the final paper or report in contrast to a quantitative study, where it is generally placed at the beginning of the paper. For either case, conducting a literature review is very important in order to determine what has already been reviewed or established on the subject. There is very little that has not been studied in some form already, so good researchers find out all they can about their topics before they undertake their own studies to avoid "reinventing

the wheel" or omitting important information. Gathering information is therefore an important aspect of the research process regardless of the research approach.

As mentioned earlier, a major difference in research methods is *how intent is focused*, which simply means how issues or questions are approached. Qualitative researchers would be more likely to ask "open-ended" questions and normally examine one situation, or a single location, in great detail. For example, qualitative researchers would ask inmates to convey the details of their experiences and let the incarcerated persons dictate their own responses. The researcher may then compare the responses of several inmates to look for common themes or patterns of experience that might contribute to a greater understanding of the overall experience of being incarcerated. Another qualitative researcher may actually subject himself or herself to the entire process of being arrested, booked, and incarcerated to gain a better, or richer, understanding; this researcher would contribute to knowledge by sharing this personal experience. By contrast, a quantitative researcher seeks to test the hypothesis and variables that were predetermined prior to collecting the data, thus more often relying on close-ended measures. The objective of quantitative researchers in the fields of criminology and criminal justice is to study social issues by assigning numerical values, which can then be analyzed through the use of statistics. These values allow the application of statistical techniques in order to create formulas that are used to verify or refute hypotheses. Because we have not yet defined what hypotheses are, simply think of them as "educated guesses" about the relationship between variables; variables are simply social phenomena or abstract concepts that have been expressed in forms that can be statistically measured.

A quantitative researcher examining incarceration as a research topic will prepare in advance a questionnaire that addresses incarceration issues and will usually provide responses from which the respondents select the most appropriate answers. An example of a survey question of this sort would be to ask an inmate his or her marital status; the response categories could be single, married, separated, divorced, or widowed. The respondent would simply select from the options provided.

There are valid reasons for providing predetermined responses as opposed to asking open-ended questions in quantitatively designed studies, but primarily it assists in the data entry and data analysis stages. It basically aids in researchers' ability to analyze the survey results statistically. We address this process of coding and entering data later in the text, but it is important to raise this issue here because it helps provide clarity on the difference between qualitative and quantitative survey research. We also dedicate an entire chapter to validity and reliability, but for now we emphasize that in quantitative research, it is important that all respondents be

given the exact same questions and the exact same answer choices. This helps one trust the statistical outcomes of the data a bit more.

The next major difference between qualitative- and quantitative-based research is the means by which data are collected. Qualitative researchers examine a very limited number of study participants in a specific location at one point, although perhaps for an extended period of time (sometimes years). By contrast, quantitative researchers want to gather as much numerical data as possible and therefore rely on many participants, multiple locations, and less lengthy time frames. That is one reason survey instruments are so popular. They can be given to large numbers of people, in a relatively short period of time, at relatively low cost.

Obviously, the type of data collected will also have a huge bearing on the analytical tools used. Quantitative researchers rely heavily on statistics and statistical analysis packages such as Statistical Package for the Social Sciences (SPSS), Stata, or Statistical Analysis Software (SAS), whereas qualitative researchers look for themes or patterns of action that can be identified in the data. Increasingly, qualitative researchers employ software and other forms of technology to help synthesize the data (e.g., NVivo, MAXQDA, Quirkos). Mixed methods research relies on both approaches. These analytical strategies are examined in greater detail in later chapters.

The type of study to be conducted also determines the role "played" by the researcher. Qualitative researchers generally acknowledge that their mere physical presence influences the study and research participants and will often have a biasing effect on the outcome of the study. This issue and subjectivity are acknowledged and addressed, but they are included as an accepted, though perhaps unfortunate, part of research. Some qualitative researchers remain committed to minimizing biasing influences of their presence by taking precautions to limit their involvement in the study. Quantitative researchers, in contrast, take *every* precaution possible to limit their influencing the study and take rigorous steps to remain objective and eliminate or reduce any type of bias. While some people question whether this can ever really be achieved, it is an optimal goal of quantitative-based researchers to make all attempts possible. With either approach, it is important for the researcher to remember his or her role in the study; certainly, research is more likely to be trusted by others if the researcher is able to remain objective, neutral, and committed to avoiding any behavior that could influence the study's outcome.

The final major difference is the means used to confirm, or validate, the data collected. The quantitative researcher will compare his or her study results with those of similar studies, with the use of impartial "peer" reviewers or through the application of rigorous statistical procedures. The qualitative researcher, however, must rely on his or her own judgment and on the opinions of the study participants.

While this method has more potential for researcher bias, as well as participant bias and/or misleading responses from participants (whether intentional or unintentional), qualitative work is praised for collecting "richer" data.

The biggest difference, which is not reflected in Table 1.1, is based on the underlying *theoretical* basis of the study. Quantitative researchers rely on positivism and the scientific method. As discussed earlier, positivism is the notion that if proper scientific methods are followed, there are universal truths about human behavior that can be identified. Some qualitative researchers, by contrast, argue that there is no one, or universal, truth and that each person may have his or her own version of reality. Chapter 5 examines this inherent conflict in greater detail, but the theoretical approach of research designs distinguishes them from each other. For example, some (in fact, many) qualitative researchers reject the principles of positivism (Denzin & Lincoln, 2008), which serve as the foundation for quantitative methods. In the social sciences, positivism infers acceptance of the validity of the natural sciences research model. This gives rise to a scientific view based on the premise that universal laws determine human behavior. This research approach is therefore based on objective (controlled) observation and measurement. On the other hand, some qualitative researchers, and many antipositivists, insist that human behavior cannot be investigated in the same way as the natural sciences (e.g., biology and chemistry), which study things such as plant growth and cell development. Philosophical debates persist concerning the nature of social sciences and which research approach should be used. While this debate will never be resolved, there are coping mechanisms.

In general, the nature of the social problem or question should determine which method or combination of methods should be used; many times in reality, however, researchers prefer a specific method. Sometimes this is simply based on what they *have* or *have not* been exposed to. Certain academic programs evolve to specialize in one methods or another. For example, in the doctoral-level field of criminal justice, the University of Maryland is known as a quantitative program, while Florida State University was traditionally considered more qualitative, and Michigan State University stresses each method. To highlight the contrast between the two paradigms, qualitative researchers acknowledge that the human experience is *socially constructed* and not necessarily designed in a way to be experimentally, statistically measured in terms of "quantity, amount, intensity or frequency" (Denzin & Lincoln, 2008, p. 14). This is in direct contrast to the logic of quantitative studies, which emphasize the quantification of the human experience and analysis of causal relationships between variables. Qualitative researchers acknowledge biases and value judgments in research; quantitative researchers promote the idea that scientific investigation of human behavior can, in fact, be value-free.

Even though there are areas where qualitative and quantitative researchers seem to diverge on philosophical grounds, the two approaches can be combined to make a study stronger. This is often referred to as "mixed methods." By joining qualitative methods with quantitative methods—in the same study—much can be gained. In fact, some argue that mixed methods research is emerging as the third major methodological approach in crime studies (Kraska & Neuman, 2011, p. 269). Chapter 7 covers the strategy of mixed methods in greater detail, but we discuss the approach in nearly every chapter. Mixed methods are increasingly being employed, and some scholarly journals are now devoted to examination of the methodology.

Recall from the preface that not all researchers are equal in ability, intellect, or *agreement on best approaches*. Different techniques are used to address research questions, solve problems, and contribute to science. It is our opinion that it is a "good problem to have" that not all researchers agree on *one*, single best approach. This is what science is all about because it causes us to continue to critically analyze methods more completely. If researchers agreed on only *one* way of gaining knowledge, science could become too routinized and mundane. If all knowledge were actually determined by only one type of researcher, this could be more problematic than disagreeing on best approaches. A beginning researcher may find it difficult to ascertain which method of research has more merit. Again, it is worth repeating that the subject or topic of interest should dictate which method or combination of methods is actually best; as a researcher gains more experience and confidence in research methods, this will become more evident.

Applied or Pure?

Another distinction of research is based on the underlying motivation, or reason for the study. This distinction is between what is termed pure/basic research and applied research. The type of research depends on the purpose the researcher has and the practical application thereof. **Applied research** is defined as the "scientific planning of induced change in a troublesome situation" (Fouché & De Vos, 2005, p. 105) with the focus on a specific problem (Neuman & Wiegand, 2000, p. 22). For example, a researcher may assist the local sheriff with determining the best means of preventing home invasions.

Basic research is defined as research that is concerned with "extending the knowledge base" (Fouché & De Vos, 2005, p. 105) and can focus on disproving, or supporting, theories that explain social problems (Neuman & Wiegand, 2000, p. 21). Basic research is often conducted without the researcher having a specific problem or application in mind, and also, often with no idea of what the ultimate

Applied research: A type of research with a specific goal in mind, typically directed at program evaluation or policy analysis.

Basic research: A type of research driven by the curiosity of the researcher, typically designed to expand knowledge in general, often with no specific goal in mind.

outcome will be. When the National Aeronautics and Space Administration (NASA) developed Velcro, the scientists involved had no idea it would have such widespread and practical usage.

Other aspects of pure and applied research also need consideration. Much more common than pure research is applied research, in which a specific problem exists (e.g., crime) and solutions are sought. Most corporations and government agencies that fund research will not provide funding without first having a clearly defined problem to be addressed. Increasingly, government is involved in research. The role played by government is largely financial, and the studies that are most often funded are quantitative. For example, during the Bush administration, embryonic stem cell research encountered a ban on federal funding, in large part due to pressure from the religious "right wing" (Pittman, 2006). Pittman interjected:

> The federal government funds most scientific and medical research in this country. Without federal financing, there would not be enough money for such research, nor would there be the type of quality control and federal regulation that some believe is necessary to ensure that the research adheres to acceptable standards.
>
> *(2006, p. 133)*

In-house research: Research conducted by someone *within* the organization seeking the information.

Hired-hand research: Research conducted by someone *outside* the organization seeking the information but hired directly by that organization.

Third-party research: Research conducted by an *outside* researcher not paid by the organization seeking the information.

Yamamoto provided further affirmation of the increasing role government plays in research: "The only possible source for adequate support of our medical schools and medical research is the taxing power of the Federal Government" (2004, cited in Pittman, 2006, p. 1712). Whether the funding is being requested from the federal government or another agency, it is necessary for most research projects to obtain money to finance the study. As an aside, being able to write a comprehensive and effective grant proposal is another important skill for researchers to master because such funding is often necessary.

In-House, Hired Hand, or Third Party?

Fitzgerald and Cox (1994) have also argued for a fourth distinction between research types founded on "who" conducts the research: in-house, hired hand, or third party. **In-house research** is conducted by a person within the organization, whereas **hired-hand research** is conducted by someone external to the organization but paid by the organization. **Third-party research** is conducted by a person external to the organization and paid for by means outside the organization. This categorization of who conducts the research is not as commonly referenced as the first three, but it does merit consideration primarily because it has serious implications. For

example, it would be difficult to trust the police to research their own use of excessive force, right? Even though they would have better access to data on police use of excess force than would outside agencies or independent researchers, the results are less likely to be taken seriously or trusted if such a study was conducted internally.

The distinction of who conducts the research seems simplistic and noncontroversial, but it is not. Consider this: large institutions and governments have trained researchers on staff and have sufficient resources to employ the very best researchers. Why, then, are most researchers located in universities and working as professors (for much lower pay)? The answer is to provide either objectivity or the *illusion* of objectivity. **Objectivity** means the conclusions are founded on careful observation rather than personal bias. Objectivity may be hard to achieve, however. Quantitative researchers attempt to achieve objectivity (or the illusion of it), whereas qualitative researchers are more likely to just acknowledge its elusive nature.

Objectivity: Means that conclusions are founded on careful observation rather than personal bias.

Exploration, Description, Evaluation, or Explanation?

Another distinction of research is based on its purpose. Most textbooks in the field acknowledge exploration, description, or explanation as the basis of research, and more recently evaluative research has been favored. Avoid feeling any anxiety over what these terms mean because the basic goal or purpose is actually embedded in the word itself. Just think about what the word means. Exploration is designed to explore or to investigate; description is to simply describe; explanation is to explain or tell why; and evaluative is to evaluate.

Let's begin with **exploratory research.** This approach to understanding a social phenomenon is very common—at least in crime and justice. For example, the neighborhood crime problem of burglaries mentioned earlier could entail exploratory research as an initial step to determining the extent of the perceived problem. How many, if any, burglaries are actually occurring? It is necessary to determine if there is an *actual* spike in burglary or if there just seems to be an increase because of media hype or sensationalism. The problem would need to be *explored* by a researcher to determine the scope of the situation. The same can be said of another social problem such as the spread of sexually transmitted disease among the prison population. One may think this problem is confined to the field of criminology, but in fact it is a far-reaching problem that transposes many disciplines including the medical and health care profession, economics, the fields of psychology, sociology, and social work just to name a few. In exploratory research, a first step will be to determine the scope of sexually transmitted disease among this segment of the population. Is it a problem? Has a spike in sexually transmitted disease occurred? Does it vary by type of prison or level of custody?

Exploratory research: "Explore"; a method of research used when a problem is not yet clearly defined; involves developing an initial understanding of the issue under consideration.

Descriptive research: "Describe"; a method of research focused on describing (counting or documenting) the details of the social issue under consideration.

The second and related distinction is **descriptive research** and is conducted to describe a problem, policy, or program. A researcher would need to document enough information to be able to effectively describe the problem, policy, or program to another. The synthesis of information allows others to have more clarity. An example would be describing how community policing works in a particular neighborhood. A researcher could describe the agency's approach to this type of police work, how many officers participate, whether the officers like or dislike the method, how the public perceives the policing style, and so forth. Descriptive research is also very common for criminal justice and criminology researchers, but is equally important in all methods of inquiry. For example, oftentimes K9s are used to assist in the location of missing persons. One can analyze and describe the various types of breeds used and techniques used to train the dogs can be descriptive and important in contributing to knowledge.

Evaluation research: "Evaluate"; a method of research focused on assessing a program, problem, or policy.

Evaluation research, or "program evaluation," involves evaluating an actual program, policy, or initiative. Evaluation research, which is becoming increasingly common, uses the same skills, techniques, and methodologies common to all forms of research. The fundamental difference is that this takes place in a political or organizational context. In other words, evaluation research is conducted within an organization (e.g., a police department) to see if the agency's practices are effective. This is becoming more common in all disciplines because it is important to determine whether "attempts" of addressing social problems are successful. Because costs (typically taxpayers' dollars) are involved in supporting programs and initiatives, it is important to determine if such attempts are really effective. Evaluation research is designed with that goal in mind. Think about any rehabilitative, correctional, or preventative program that has been discussed in a typical criminal justice course. Or think about whether an awareness campaign in the health care field to reduce the spread of the swine flu or Zika virus is effective. Think about the millions of dollars elected officials spend on commercials; is it truly cost-effective? From a business investment model, does the use of cameras really reduce the probability of theft or violent crime? Think about the importance of evaluating whether the efforts are really beneficial. One justification for the death penalty is based on a theory of deterrence. When killers are executed, other would-be killers should be deterred from committing murder themselves; however, evaluative research on the deterrent effects of capital punishment suggests otherwise. Also consider, for example, recidivism rates (the probability an inmate will return to prison). A controversial topic related to both controlling the inmate population and reducing recidivism rates is conjugal visits (allowing inmates to have intimate relations with their spouses while the inmate is incarcerated). Some may be appalled by the idea, but what if

helping facilitate "intact" relationships reduces the likelihood of inmates returning to prison? If evaluative research determines the utility of conjugal visits, taxpayers could save a lot of money by avoiding the cost of housing and caring for the same inmates over and over again.

Explanatory research is a type of study where causes, motivations, and reasons are revealed and explained. This type of research examines why some people chronically abuse drugs while others abstain or are only causal or occasional users. Why do some college students binge drink while others do not drink at all? Why is it that some individuals are racist or sexist when others are not? Why do some officers use excessive force while others employ de-escalating techniques in the line of duty? Why is it that some individuals are extremely successful in their jobs or in obtaining their education, but others fail at such attempts? Why is it that some babies are born with mental or physical disabilities? What are the specific explanations for why the behavior of males and females may vary under certain situations? Explanatory research is one of the more challenging methods because it is difficult to state with certainty *why* people do the things they do. If we can confidently list the reasons for human behavior, then we should be able to *predict* the behavior of others. Having this predictive ability would greatly benefit policy makers, criminal justice professionals, and people in their everyday lives. One tenet of positivism is this idea, or elusive goal, of prediction. For prediction or predictive hypotheses to be reliable, the researcher must be able to ascertain causal factors, or determine causality. Statistical analysis is important in determining causality and is the reason that positivism and quantitative research are closely associated.

Explanatory research: "Explain"; a method of research focused on explaining *why* the specific social issue or problem exists.

In light of the "critical" and thus questioning tone of this text, the astute reader may well wonder if these steps to establishing causality are valid. Qualitative researchers in particular may reject these steps (see chapter 10), whereas quantitative researchers will champion their necessity. To that avail, another area where there is a divide among the two research approaches is identified; let's examine the criteria of causality because it is very important in quantitative research.

From a positivistic research perspective, **causality** means being able to ascertain the effect that one variable has on another. It can be extended to making deductions from other propositions and assumptions; causality is also needed to show what an intervention has accomplished. In other words, causal explanation means that the researcher is confident that the variable or variables being examined are the actual source of any change in the study. In order to have confidence in these predictions, the researcher must be able to establish a causal relationship. There are three necessary steps, or requirements, to being able to determine a "cause-and-effect" relationship. These are concomitant variation, temporal sequencing, and the elimination

Causality: Specifying the cause for why things occur. In order to have confidence that one thing really *causes* another, three criteria have to be met: (1) the two variables must "covary" (as one variable changes, so does the other), (2) the cause must *precede* the effect, and (3) no other variable may be affecting the relationship between the independent and dependent variables.

Concomitant variation: A way to say there is a true relationship between variables: as one variable changes, so does another.

of rival casual factors. **Concomitant variation** is simply a scientific term that means covariance or a relationship must exist between variables. In even simpler terms: when one variable changes, the other changes with it. For example, the more one eats high-fat foods, the more weight one will gain. The more one associates with binge drinkers, the more likely it is that one will also binge drink. Basically, concomitant variation means that when there is an increase or decrease in one variable, there is also an increase or decrease in the other variable. As the amount of time spent studying for an exam increases, the score on the exam also increases.

The *direction* of change does not play a role in establishing causality. It can be a positive relationship, as when one variable increases (caloric intake) and the other also increases (weight gain), or the relationship can be "inverse," meaning when one variable changes, the other variable changes in the opposite direction. As physical activity *increases*, body fat *decreases*. Or, the more alcohol a student drinks, the worse his or her grades become. Concomitant variation simply establishes that there is a relationship, or association, between the variables. It is just a fancy word that means the variables are statistically associated.

Temporal sequencing: One of the fundamental requirements for determining causality; it means the cause must precede the effect.

Temporal sequencing means the *cause* must precede the *effect*. A person must increase calories *prior* to gaining weight. Increased physical activity precedes a reduction in body fat. This seems elementary, but temporal sequencing can be difficult to establish. In an earlier example, we mentioned an association between increased alcohol use and reduced grades; suppose, however, the school failure came *before* the alcohol use. Suppose a heroin addict ordered by the court to participate in a drug rehabilitation program successfully quits using heroin before the program even begins. Could the researcher say with any certainty that the drug program caused the addict to stop using heroin? In this case, the answer is no (based on the information that we have). The reason is that some other unknown factor(s) may have accounted for the motivation to stop using drugs. We don't know what came before or during the participation in the program. Was someone hurt as a result of the addict's drug use? What were the family pressures on the addict? Did the addict have a spiritual awakening? Was the addict at risk of losing his or her job? These other factor(s) could account for, or be responsible for, the discontinuation of heroin use. The drug rehabilitation program could be the cause, or it could also be a consequence of one or more other, unknown causal factors. This leads to another important distinction in determining causality.

Rival causal factors: Determines if all the factors influencing the relationship between independent and dependent variables are considered.

The third criterion needed to establish causality is the elimination of other **rival causal factors,** or accounting for factors that may have influenced the change. What other variables might have accounted for the addict quitting heroin use? Perhaps the addict's arrest itself motivated him or her to stop; perhaps the addict was diagnosed with a disease prior to appearing before the judge.

Fortunately, there are ways to help identify these important issues. If the study was set up properly, the researcher can use statistical techniques to determine the "weight," or influence, of these other possible factors. The issue of considering whether some other variable is the actual cause of the observed change is referred to as spuriousness. **Spuriousness** occurs when an apparent causal relationship between variables is actually due to some alternative, unrecognized variable. Maybe the heroin addict had a bad physical reaction to the drug, and thus was motivated to discontinue its use (and the discontinuation of heroin had nothing to do with the court-ordered drug rehabilitation program). The bottom line is that, for a researcher, it is important to think through and "control" for all influencing variables. It is essential to be a critical thinker!

Spuriousness: When the relationship between dependent and independent variables is really due to some variable that is not known or accounted for in the study.

We hope that, after reading this chapter, the student has a better understanding of *why* science is so important. Science can improve the quality of life and inform many social problems. Consider the effort people had to go through to store their food before the invention of refrigeration. Imagine how difficult it was to travel before the invention of motorized transportation. Think about how challenging it was to conduct research and write papers before the invention of computers. Remember that people once died from smallpox, and now vaccines prevent it. Finally, specifically related to criminal justice, think about the importance of finding ways to reduce pain and suffering, reduce crime, have a more efficiently functioning criminal justice system, and have programs and policies that meet the goals they are intended for and not waste taxpayers' money or make situations worse. As a researcher, be a critical thinker. Embrace research methods, be a scientist, because it is students of research methods who will soon be the ones using science to contribute knowledge and solve problems.

KEY TERMS

Applied research
Basic research
Causality
Concomitant variation
Deductive reasoning
Descriptive research
Epistemology
Evaluation research
Exploratory research
Explanatory research
Fluid research
Hired-hand research
Inductive reasoning
In-house research
Mixed methods research
Objectivity
Positivism
Qualitative research
Quantitative research
Rival causal factors
Science
Social sciences
Spuriousness
Temporal sequencing
Third-party research

CRITICAL THINKING EXERCISES

1. Identify the difference between qualitative and quantitative research. Discuss at least four distinctions.
2. From a historical standpoint, what challenges did early scientists have to endure? Has this changed?
3. Draft a statement regarding why research is important. How has science contributed to social development? Provide examples.
4. Has science created any negative consequences for society? Provide examples.
5. What is the underlying theoretical or philosophical basis for each research method? Does this create a problem for mixed methods research?
6. What determines which research methods should be used? Why?
7. Why might fluid research be controversial? Discuss the pros and cons of fluid research. Develop a scenario that would demonstrate the benefits of fluid research. Develop a scenario whereby a fluid approach would not be beneficial.
8. Review the following link and provide a critical discussion on how and why knowledge is changing so rapidly. What are the benefits and risks associated? http://www.industrytap.com/knowledge-doubling-every-12-months-soon-to-be-every-12-hours/3950

CHAPTER 2

The Stages of Research: A General Overview

CHAPTER OBJECTIVES

After reading this chapter students should:

- Have more confidence in picking a research topic and be more aware of the reasons to avoid a topic that is too broad.
- Understand the importance of theory development and know the difference between a philosophy and a theory.
- Distinguish the difference between independent, dependent, and exogenous variables.
- Understand what research replication is and why it is important.
- Be more confident in locating quality research and understand the benefits of using "peer-reviewed" work.
- Be able to develop a literature review and avoid simply summarizing one article after another.
- Understand the process of operationalizing variables.
- Know how to code variables and understand why this process is important for data analysis.
- Be able to identify the level of measurement of variables and what can be done statistically with each level.
- Identify the different types of research designs.
- Know the difference between univariate, bivariate, and multivariate analysis.
- Know what a sample of the population is, and why certain sampling strategies are superior to others.
- Know and understand why response rates are important.
- Formulate the "steps" associated with a research project.

Before getting further into the specifics of research methods, this chapter provides an *overview* of the typical research process; however, it should be noted that each study is different, so no true "typical study" exists; this is a survey of the common sequence of steps. It is helpful to have a broad overview of the research process before addressing the specific issues surrounding the science, ethics, and politics associated with conducting research. Most of the issues addressed in this chapter are developed more fully in the remainder of the text. Also be aware that even the ideal research design will often be altered as the study progresses, as first mentioned in chapter 1, this is called **fluid research.** We do not intend to present research as a concrete formula, but for beginning researchers this step-by-step approach can be helpful until more confidence is gained. Conducting research studies can be fun and, as mentioned in chapter 1, beneficial to society. After reading this chapter, it is our hope that novice researchers will have a better comprehension of the complete process.

Fluid research: A research approach providing flexibility (not viewing the process of research as a set concrete formula) and the ability to adapt to changing circumstances, including taking advantage of new research opportunities that may present themselves during a study.

STEP ONE: SELECTING A RESEARCH TOPIC

The first research step is to select a topic, or identify a researchable problem. As easy as this sounds, it is often very difficult. There are so many interesting things to study that it can seem overwhelming. Often students have not thought about problems from the position of how to best study and eventually help solve them. It is important when selecting possible topics to pick things of interest, and these will vary among individuals. Become conscious of what is most important and most interesting. A good habit to start in college (the earlier the better, of course) is questioning everything. In other words, think *critically*. Why do things happen the way they do? Why do certain things exist? Do programs and policies actually work? Why do people act the way they do? What are the sources of problems? What are possible solutions to problems? Notice the issues that spark the most classroom discussion, and become aware of topics that are personally motivating. In addition, notice that problems and issues are usually multifaceted. There are multiple directions that can be taken with *any* problem, and issues are often embedded in other issues. When a topic is chosen, consider the many different ways it can be studied. By first reading the literature, one can determine what has already been done and then perhaps develop a plan of action that will provide an even better method of analyzing the problem, or simply replicate an earlier study (discussed later in this chapter) to determine if the findings are still true in a different location and time. Many students are apprehensive about literature reviews, but reviewing what studies have already been conducted on a topic is a

rewarding, crucial, and necessary process. Furthermore, reviewing existing studies is also intellectually empowering, and will guide research questions, hypothesis development, and theoretical orientations, and it will advance research designs.

Events in one's life might also help determine a research topic to select. For example, some students' parents divorce, some students are raised in foster homes, very strict religious homes, or very lenient homes, some experience physical or verbal abuse, some have changed schools often, some have medical problems, some have family members who are addicted to drugs, or perhaps have been arrested, and maybe some have witnessed a serious crime or the death of a loved one. A person's life experiences can motivate interest and academic inquiry; however, it is very important to be careful that a personal experience does not interfere with the ability to be neutral and **objective** in conducting research. Some experts question the ability of a researcher to remain truly neutral; others question whether objectivity is really as important as once thought. Lacey (2016) explains that his research reveals that he has not been able to identify any scientist or philosopher who has been able to adequately defend that science should be responsive to the concept of values being absent in science. What he proposes to those who argue for completely value-free science is instead rehabilitating the notion of neutrality. He argues for democratic oversight committed to the ideal of *impartiality* and suggests that values might even promote better science by developing more "robust methodological pluralism." By forgoing the ideal of "value-free" science, by not trying to *deny* the role of values, better science can actually occur. He believes in setting the priorities of science so that social life benefits from its development through the commitment to "inclusiveness and evenhandedness" (p. 83), not to the commitment of complete neutrality.

Objectivity: The ability of the researcher to remain "neutral" and avoid allowing any influencing factors to taint or bias the study or the conclusions reached.

Regardless of one's position about values and neutrality in science, researchers should be careful that their biases do not influence the *outcome* of the research. It is acceptable to allow personal experiences to motivate research interest, it is acceptable that researchers desire to affect positive social change, but researchers need to remain aware of the potential problems associated with letting that passion jeopardize ethical standards. Make sure that perceived opinions or biasness are not influencing the study. It is also advisable to make any known biases explicit and to discuss steps taken to counteract potential concerns with biases. Being willing to accept the data even if it does not support your preconceived notions is an obligation in science. In other words, the data should always speak for itself. Agent Daniel McKenzie of the U.S. Immigration and Customs Enforcement (ICE) agency was the regional supervisor on a multistate human trafficking task force. He conducted his master's thesis on the actual number of human trafficking cases that occur. Due to his occupation and experience, he anticipated a high number of human trafficking

cases. The data, however, showed a relatively small number of cases (McKenzie, 2017; Lanier and McKenzie, 2017). His research reported the actual smaller number even though it counteracted his hypothesis and personal expectations.

Sometimes the World Wide Web (www), social media, current events, newspapers, historical occurrences, or the library can help provide research possibilities. Reading academic literature is a great way to get ideas for potential research projects. The limitations of existing research and suggestions for future studies are helpful; this can often (and should) be found in the concluding section of published research articles. It is also common and beneficial in the field of social science to replicate other studies. As mentioned in chapter 1, *research* means to search again ("re-search"). **Replication** is conducting the same study again to determine if the same results will be found. In other words, do not be worried about choosing topics that have already been studied (most everything has); doing so can actually be very beneficial to science (just be sure to cite the original study). It is through reproducing research, and coming to the same conclusions over time, that true knowledge is actually established. Also, if future replications (similar studies) find dissimilar results, this must be explained, and further research is warranted when inconsistencies are found. Making slight modifications can be a worthy contribution to science, however; remember that replication does not always mean the study has to be an exact copy (a different sample could be used or new variables can be introduced, for example). It is unlikely that a student's research project will involve novel, never previously researched subject matter. Most studies deal with research topics that have already been examined. The key is to be able to locate what has been done and *advance* the knowledge in some meaningful way. This is what science is all about.

Replication: The practice of duplicating existing studies in order to validate or refute previous research findings.

The review of the literature on a topic is not only crucial in the development of a study, research questions, and a hypothesis, it can also help guide the theoretical orientation used to explain social science phenomena being examined.

Theories, or ideas, about human behavior, group action, or how agencies operate are a vital part of research. A **theory** is basically a *logical proposition* to help make sense of reality. Students who have already completed theory courses (e.g., criminology, political science, public health, sociology, environmental science) may thus be at an advantage in research methods. For those who have not had exposure to theory, the process of reviewing the literature becomes even more important. The connection between discipline-specific theory and research methods is strong. One very fruitful strategy is to take a theory from one discipline and apply that theory in a different context to another social problem. For example, Lanier, Pack, and Akers (2010) took a public health theory about how disease spreads and applied it to how gang-related drug use spreads. This is often done in interdisciplinary studies.

Theory: A proposition developed to help make sense of reality. The researcher would need to ask, "Are the propositions [logical guesses about reality] testable?" If logical explanations about reality cannot be tested (i.e., are not falsifiable), then they are not recognized as legitimate theories.

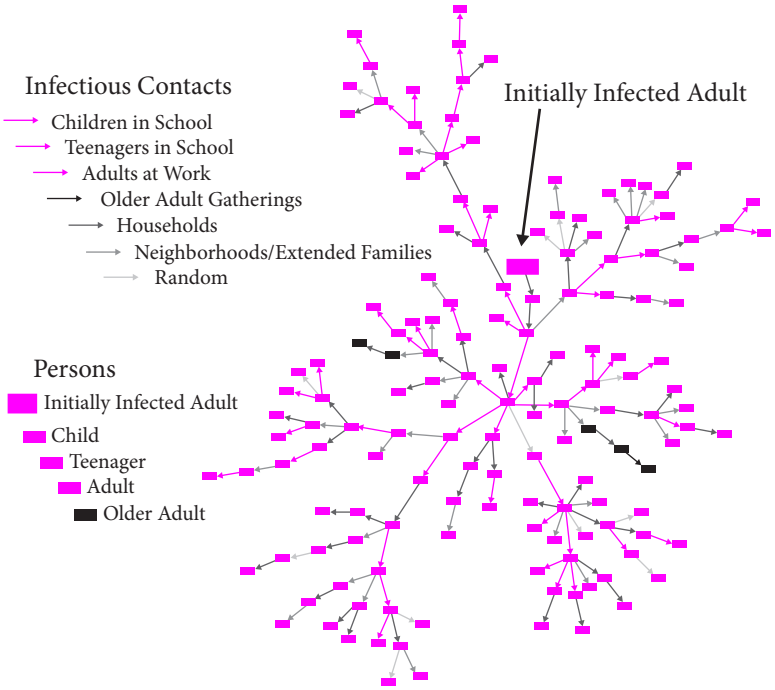

Figure 2.1
Can the visual below be used to explain crime as well?

For illustrative purposes, consider how the chart shown in Figure 2.1 shows how a disease might spread. Replace the term "disease" with a specific type of crime and see if it works as well. For example, some female students are increasingly engaging in the "Sugar Daddy" means of support. There are even websites specifically devoted to the practice (e.g., www.sugardaddyforme.com; www.honeydaddy.com/a/honey-daddy). As this practice grows in popularity it spreads much the same as the disease vectors shown in Figure 2.1. Can the chart be used to explain gang-related drug use or another type of crime of interest?

Theories are a great source of research ideas and questions. In turn, research findings can stimulate theory development. One often fosters the other. This was suggested in chapter 1 when deductive and inductive reasoning were presented. Theories suggest testable hypotheses about issues, and research evaluates whether those theoretical hypotheses have heuristic value. Typically, one of the most important requirements of a good theory is that its propositions are testable (falsifiable). A good way to think of theory is to remember that if the logical propositions cannot be verified (and some suggest they have to be *empirically* verified, which means using statistical data analysis), then it cannot be considered a credible theory. Those things that cannot be verified might be considered philosophies instead, because

according to the principles of the Scientific Method theories should be scientifically and statistically verified.

Developing practical theories, and then empirically evaluating them, is one of the most important functions of the sciences (both physical and social). Good researchers want to know why things happen the way they do and have confidence that it can be scientifically validated. While that is often challenging, especially in the social sciences, research methods and the tools employed are the necessary processes to advance science.

It is a good idea when choosing a topic to keep it *narrow*. A common barrier to a successful project is that the focus is too large. Some students who choose a very broad topic may find 250,000 related articles (internet "hits"). For example, a search for "mental illness and pedophilia" will yield too many hits to be useful. It is difficult to begin to review the literature when the amount is so overwhelmingly large. Doing so can create a situation in which the student's work is disorganized and incoherent, and frustrating both for the student and for the advising professor. The key is to keep the topic as specific as possible at first, and then widen the scope later, if necessary. For example, instead of taking on the grand project of researching pedophiles, narrow the focus to the recidivism of pedophiles, correctional programs for pedophiles, causes of pedophilia, or victims of pedophiles. When conducting the research, select only those trustworthy and credible articles that are directly connected to the specific topic. For example, if the topic is the *victims of pedophiles*, do not include reference material on the different treatment programs available for sex offenders. Keep all research reviewed focused on the *victims* of sexual predators for this particular study. Approaching the topic this way will help reduce the probability that the student's research is disorganized and thus confusing.

Hypothesis: Is based on an informed, educated guess about the relationship between variables in a study.

Null hypothesis: Is based on the logic that there is *no* relationship between the variables in a study.

STEP TWO: IDENTIFYING A TESTABLE RESEARCH QUESTION

Part of the researcher's task is not just selecting a researchable topic but developing a testable research question (or multiple questions). The approach to addressing a specific research question will vary depending on whether the investigation is qualitative or quantitative. In a quantitative design, the research question is generally framed as a **hypothesis,** which is a testable proposition about the relationship between two or more variables. Basically, a hypothesis is an informed, educated guess about the relationship between variables. A **null hypothesis** means there is no expected relationship between the variables and is actually what is

tested statistically in quantitative analysis (more on this later). It is necessary to rule out that there is no true statistical relationship between the variables of interest. Much like the brief examples in chapter 1 on the relationship between alcohol use and grades, one can hypothesize that as the use of alcohol increases, the grade point average (GPA) of a college student may decrease. Researchers are just guessing (although educated and guided by the literature review) about the relationship between the two variables. Statistical formulas are useful to aid in determining if these "guesses" are valid. The *dependent* variable (Y) is what the researcher is trying to explain (the social phenomenon of interest), and *independent* variables (X) are what the researcher expects will explain or influence the dependent variable. For example, GPA could be the dependent variable. In this case, the researcher is trying to determine what is causing variation in GPAs among students in her class; could it be due to alcohol use, study habits, class attendance, etc.? The independent variables *influence* the dependent variable, and in this case the researcher is questioning whether alcohol consumption could have anything to do with the change in GPA. It is worth repeating: the dependent variable is what the researcher is trying to explain (determine), and the independent variables are what are thought to explain or *influence* the dependent variable. Remember: *d*ependent variable (*d*etermine), and *i*ndependent variable (*i*nfluence). If one increases or decreases the independent variable, if there is a true statistical relationship between the variables, it has an influence on the dependent variable. If alcohol consumption is increased or decreased, does the subject's GPA change? There are also other variables, called exogenous or intervening variables (Z), that can be expected to influence study findings. For example, a chronic drinker might be able to function and maintain grades,, whereas a binge drinker might experience difficulty. Weight, age, and gender are other potential exogenous variables that could impact findings. A good research project will "control" for these influences when designing the research project. The following is an example of a research problem stated in the form of research questions, with hypotheses and theoretical propositions provided.

Research problem: Binge drinking of alcoholic beverages among college students.

Research questions: What are the causes of binge drinking? Who is more likely to binge drink? Are university programs designed to reduce binge-drinking working? Is binge drinking harmful to individuals? Is binge drinking more of a problem at urban or rural universities? Is binge drinking more common among student-athletes or general students? Is binge drinking more common among college freshmen or college seniors? Are students with an alcoholic parent or guardian more likely to

binge drink? Does binge drinking influence one's grades? Is binge drinking more common among males or females?
Note: A research question can take many forms. For now, just focus on one question.

Null hypothesis: There is no difference between the likelihood of binge drinking between males and females.
Note: A null hypothesis is what is typically "tested" in quantitative studies.

Research hypothesis: Males are more likely to be involved in binge drinking than are females.
Note: We simply made an educated guess about the relationships between variables.

Now let's think about *why* we would make such a guess.

Theoretical assumption: Hegemonic masculinity, opportunity theory, peer pressure, male bonding, and self-control theory are theories that can be used to inform the hypothesis that *males* are more likely to binge drink.
Note: See why it is so important to turn to the literature? Quality information already exists!

Justification of research attention: By identifying who is more likely to binge drink, university education campaigns can be geared accordingly. Perhaps student safety and academic success can be increased?

Dependent variable: Binge drinking (this is what is trying to be better understood).

Independent variable: Gender (this is one variable that is thought to influence the rate of binge drinking). Note that there are many other independent variables, such as year in school, student-athlete status, Greek affiliation, alcoholic parent/guardian, and so on. The possibilities are vast. That is what is interesting about research.

There are many positions that can be taken, and each may present different research possibilities. This is the case with most social issues. Besides hypothesis testing, program reviews also are worthy of a researcher's attention. For example, consider whether the university has already implemented educational programs regarding binge drinking. A researcher could evaluate the effectiveness of the program. Is it really making a difference? There are so many options to study that this is what often makes selecting a research topic and developing a research question difficult, but at the same time fun—it allows one to actually think! As mentioned earlier, if given a choice, pick an interesting topic and assess whether the study can