2 THE PROCESS AND PROBLEMS OF RESEARCH

LEARNING OBJECTIVES

1. Describe the primary motivations for developing research questions.
2. Highlight the important steps taken in reviewing the literature after a research question has been established.
3. Highlight what a theory is and how it is related to research.
4. Illustrate how the research circle includes both deductive and inductive research along with the specific differences across both research strategies.
5. Compare and contrast the differences between the concepts of validity, reliability, generalizability, causal validity, and authenticity.

At the end of the semester, a professor asked if I would be interested in doing some research on sexual harassment in the workplace for her over the summer. For the research, I had to read research articles and summarize them for the professor. While I was reading the articles, I would come across the research methods the authors used, which included multivariate analysis, OLS regression analysis, SPSS, and ANOVA tables. I thought it was incredible how I came full circle back to the research methods I learned! My research methods class set me on a course that has changed my time in college and possibly influenced my future career.

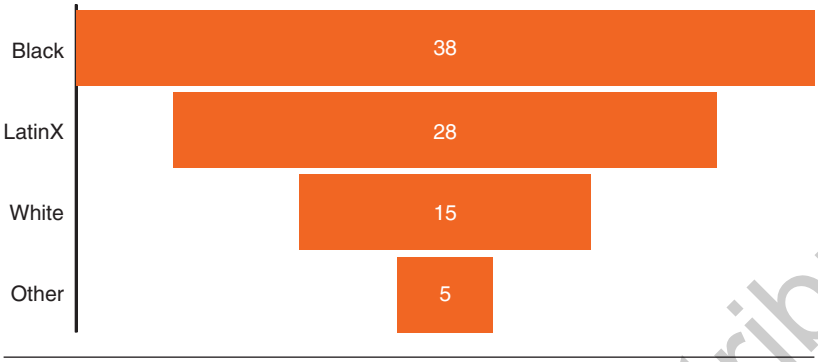
—Emily G., *Student*

Michael Brown, Eric Garner, George Floyd. Their names and those of many other black victims of police shootings highlight racial inequities in the U.S. criminal justice system. Over their lifetimes, we now know that the risk of black men being killed by police is about 2.5 times higher than it is for white men (Exhibit 2.1). But even as widespread protests erupted after the 2014 fatal shooting of Michael Brown in Ferguson, Missouri, "the absence of definitive official data" made it difficult to estimate the prevalence of police-involved deaths (Edwards, Lee, & Esposito, 2019, p. 16793). Then-FBI director James Comey called this lack of adequate data "unacceptable" and "embarrassing" (Peeples, 2019). Distinguished criminologist Lawrence W. Sherman (2020, p. 8) called for "reflective inquiry."

Undertaken by a range of talents, disciplines, and professions, working together to ask now not just how each death might have been prevented, but how patterns of death might be predicted and interrupted.

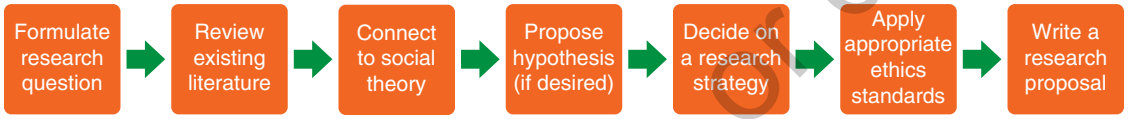
In this chapter, we shift from examining the *why* of social research to an overview of the *how*—the focus of the rest of the book. We will consider how to develop a question for social

EXHIBIT 2.1 ■ The Rate of People Killed by Police by Race/Ethnicity



Source: Data from *The Washington Post*, https://www.washingtonpost.com/graphics/investigations/police-shootings-database/.

EXHIBIT 2.2 ■ Launching a Research Project



research and then how to review the existing literature about this question while connecting the question to social theory and, in many studies, formulating specific testable hypotheses (see Exhibit 2.2). We will then discuss different social research strategies and standards for social research as a prelude to covering the details about these stages in subsequent chapters. You will find more details in Appendixes A and B about reviewing the literature. The chapter also expands on the role of social theories in developing research questions and guiding research decisions. We will conclude by identifying the standards that guide this process. You will find more details in Appendixes A and B about reviewing the literature.

Although we cannot end the chapter by showing that research has already led to a decline in police shootings, you will find throughout the chapter examples of how social science research has improved understanding of police behavior and provided a foundation for effective change. By the chapter's end, you should be ready to formulate a research question about any issue, critique previous studies that addressed this question, and design a general strategy for answering the question.

IDENTIFYING A RESEARCH QUESTION

How does a researcher interested in criminology and criminal justice–related issues decide what to study and research? A **research question** is a question about some aspect of crime or criminals that you seek to answer through the collection and analysis of firsthand, verifiable, empirical data. The types of questions that can be asked are virtually limitless. For example, "Are children who are violent more likely than nonviolent children to use violence as adults?" "Does the race of a victim who is killed influence whether someone is sentenced to death rather than life imprisonment?" "Why do some kinds of neighborhoods have more crime than others? Is it due to the kinds of people who live there or characteristics of the neighborhood itself?" "Does community policing reduce the crime rate?" "Has the U.S. government's war on drugs done anything to

reduce the use of illegal drugs?" So many research questions are possible in criminology that it is more of a challenge to specify what does not qualify as a social research question than to specify what does.

But that does not mean it is easy to specify a research question. In fact, formulating a good research question can be surprisingly difficult. We can break the process into three stages: identifying one or more questions for study, refining the questions, and then evaluating the questions.

Where to Start?

Formulating a research question is often an intensely personal process in addition to being a scientific or professional one. Curiosity about the social world may emerge from your "personal troubles," as Mills (1959) put it, or your personal experiences. Examples of these troubles or experiences could range from an awareness you may have that crime is not randomly distributed within a city but that there seem to be "good" or safe parts of town and "bad" or unsafe areas. Can you think of other possible research questions that flow from your own experiences in the world?

The research literature is often the best source for research questions. For example, other researchers may also pose interesting questions for you to study. Most research articles end with some suggestions for additional research that highlight unresolved issues.

For example, Stephen Wu (2021) concluded an article on the race of a city's police chief and the incidence of police officer fatal shootings by suggesting, "Further study of the channels through which the race of police leaders impacts the use of deadly force by officers would be a fruitful avenue for further research" (p. 416). A new study could focus on these mechanisms: Do black police chiefs have a different management style? Do black and white officers differ in their response to black police chiefs? Do changes in behavior reflect changes in officer attitudes or supervisory sanctions? Any research article in a journal is likely to suggest other unresolved issues about the research question studied.

Another source for research questions is theory. Many theoretical domains are used to inform research questions in our discipline, including sociological, psychological, and criminological theories. Some researchers spend much of their careers conducting research intended to refine an answer to one central question. For example, you may find rational choice theory to be a useful approach to understanding diverse forms of social behavior, such as crime, because you think that people seem to make decisions on the basis of personal cost–benefit calculations. So, you may ask whether rational choice theory can explain why some people commit crimes and others do not or why some people decide to quit committing crimes while others continue their criminal ways.

Finally, some research questions adopt a very pragmatic rationale concerning their research design. You may focus on a research question posed by someone else because doing so seems to be to your professional or financial advantage. For instance, some researchers conduct research on specific questions posed by a funding source in what is termed a request for proposals (RFP). (Sometimes the acronym RFA is used, meaning *request for applications*.) For example, Joscha Legewie and Jeffrey Fagan's (2019) study of racial profiling and the disproportionate use of force was funded by a grant from the Russell Sage Foundation. Anthony Braga and his research collaborators (Braga, Barao, Zimmerman, Douglas, & Sheppard, 2020) received funding from the City of Boston and the Rappaport Institute for Greater Boston for their study of the effects of body-worn cameras.

As you can see, coming up with interesting criminological questions for research is less problematic than focusing on a problem of manageable size. We are often interested in much more

than we can reasonably investigate with our limited time and resources (or the limited resources of a funding agency). Researchers may worry about staking a research project (and thereby a grant) on a particular problem, so they commit to addressing several research questions at once, often in a jumbled fashion. It may also seem risky to focus on a research question that may lead to results discrepant with our own cherished assumptions about the social world. In addition, the prospective commitment of time and effort for some research questions may seem overwhelming, resulting in a certain degree of paralysis (not that the authors have any experience with this!).

The best way to avoid these problems is to develop the research question one bit at a time with a step-by-step strategy. Do not keep hoping that the perfect research question will spring forth from your pen. Instead, develop a list of possible research questions as you go along. At the appropriate time, you can look through this list for the research questions that appear more than once. Narrow your list to the most interesting, most workable candidates. Revise your research questions and repeat this process as long as it helps improve your research question. Keep in mind that the research you are currently working on will likely generate additional research questions for you to answer.

Evaluating Research Questions

The final stage of selecting a research question, you evaluate the best candidate against the criteria for good social research questions: feasibility (given the time and resources available), social importance, and scientific relevance (King, Keohane, & Verba, 1994).

Feasibility

You must be able to conduct any study within the time frame and with the resources you have. If time is limited, questions that involve long-term change may not be feasible—for example, "If a state has recently changed its law so that it now permits capital punishment for those convicted of murder, does it eventually see a reduction in the homicide rate over time?" This is an interesting and important question but one that requires years of data collection and research. Another issue is what people or groups you can expect to gain access to. Although well-experienced researchers may be granted access to police or correctional department files to do their research, less seasoned and lesser-known researchers or students may not be granted such access. It is also often difficult for even the most experienced of researchers to be given full access to the deliberations of a criminal jury. For someone interested in white-collar crime, recording the interactions that take place in corporate boardrooms may also be taboo.

The study of police violence and citizen crime reporting by Matthew Desmond, Andrew V. Papachristos, and David S. Kirk (2020) shows how ambitious a social research question can be even without major external funding. The research question they investigated was whether an incident of police brutality captured on the news in a given city would decrease trust in the police, and thereby decrease the number of 911 calls after the incident. Their case study was the highly publicized beating of an unarmed black man, Frank Jude, by white police officers in Milwaukee, Wisconsin, in 2004. Their study was feasible primarily because the Milwaukee Police Department agreed to provide the researchers with data from all 911 calls placed in Milwaukee for the year, before and after the publicized beating. The study would have been impossible without these data. Funding from Harvard University (Desmond's home institution) supported the time required to analyze the data. Desmond et al. (2020) note that other researchers could attempt to repeat their study in other locales that are willing to release administrative records. Of course, students in a research methods class may not be granted access to such data from the local police department. When funding or data access limitations create barriers, you might alter your research question to make it more feasible. For example, you might ask, "How do students at my university react to images of police shootings?"

Social Importance

Criminological research is not a simple undertaking, so you must focus on a substantive area that you feel is important and that is important to the discipline and/or important for public policy. You also need to feel personally motivated to carry out the study; there is little point in trying to answer a question that does not interest you.

In addition, you should consider whether the research question is important to other people. Will an answer to the research question make a difference for society? Again, the study of police violence and citizen crime reporting is an exemplary case, but there is no lack of important research questions in this area. For example, at the time of this writing the most recent issue of *Criminology*, the American Society of Criminology's flagship journal, had articles that examined the sources of racial and ethnic disparity in federal life-without-parole sentences (B. D. Johnson, Spohn, & Kimshi, 2021), how corruption is embedded within Chicago's organized crime (Joseph & Smith, 2021), how religiosity motivates desistance from crime (DiPietro & Dickinson, 2021), and the effects of immigration status and citizenship on the risk of victimization (Xie & Baumer, 2021). Clearly, all of these are very important research questions in their own right.

Scientific Relevance

Every research question in criminology should be grounded in the existing empirical literature. By *grounded*, we mean that the research we do must be informed by what others before us have done on the topic. Whether you formulate a research question because you have been stimulated by an academic article or are motivated by questions regarding your own personal experiences, you must turn to existing criminological literature to find out what has already been learned about your question. Even if your research topic has already been investigated by someone else, it would not necessarily be a bad idea for you to do research on the same issue. It would be unreasonable to think of any criminological research question as being settled for all time. You can be sure that some prior study is relevant to almost any research question you can think of, and you can also think of better ways to do the research than have been done in the past.

The study of police violence and citizen crime reporting was grounded in legal cynicism theory, which expects lack of cooperation with police in minority communities due to the belief that police lack interest in assisting their residents (Desmond et al., 2020). In the Milwaukee study, the theoretically based prediction was that publicity about Frank Jude's beating would increase legal cynicism in the minority community, thereby decreasing trust in law enforcement, which would result in fewer 911 calls for police assistance. This is exactly what the researchers found. This research now can be used by other social scientists seeking to develop and test legal cynicism theory.

CAREERS AND RESEARCH

Alex Alvarez, Ph.D. Professor of Criminology & Criminal Justice, Northern Arizona University

Alex Alvarez's research has largely focused on collective and interpersonal violence, especially in the field of genocide studies. He first began doing work on genocide in the mid-to-late 1990s, and says his work as a genocide scholar was a somewhat accidental outcome of his education as both a criminologist and sociologist intersecting with his personal biography in some unexpected ways. He spent much of his childhood in Europe, which meant that he

Source: Alex Alvarez

was often confronted with the reality of the past, specifically World War II. After conducting research in interpersonal violence for several years, he realized that criminological theories could be used to fruitfully garner insight into how and why genocide occurs. After doing an extensive literature review, he was quite shocked that none of the theoretical insights that had been learned to explain other criminal offending had been applied toward helping to understand perpetrators of the Holocaust or of genocide more generally. Looking back now, he states, "I realize that I began writing on this topic late in 1995, in the same year as the massacre at Srebrenica in Bosnia, and under 2 years after the Rwandan genocide and I'm sure that these events played a part in my belated intellectual awakening." One article turned into a book, then another, and so on until this work became his main area of focus.

For young scholars interested in studying genocide and other forms of violence, Alex provides this advice:

> *First, never forget that what you are studying is about real human pain and suffering. Genocide concerns trauma on a scale that is sometimes hard to fathom and because the victims were real people with hopes, fears, aspirations, and families and friends that cared about them, I believe we have an obligation to always treat this subject matter with respect. We should be careful not to exploit their pain in order to make a rhetorical point or bludgeon an audience into shocked awe. Second, we shouldn't reduce violence into simplistic moral lessons. Human behavior and motivations are highly complicated, sometimes ambiguous, and even contradictory. Get comfortable, in other words, with complexity. Third and last, be creative and don't get locked into disciplinarian boxes. I believe strongly that only an interdisciplinary approach to something as varied, complicated, multicausal, and multilevel as genocide and other forms of violence can have any hope of offering meaningful insights. So read and study widely from many fields and disciplines. The world does not operate according to disciplinary boundaries, nor is human and/or organizational behavior easily explained with reference to one-dimensional approaches.*

SOCIAL RESEARCH FOUNDATIONS

How do we find prior research on questions of interest? You may already know some of the relevant material from prior coursework or your independent reading, but that won't be enough. When you are about to launch an investigation of a new research question, you must apply a very different standard than when you are studying for a test or merely seeking to learn about domestic violence or any other topic. You need to find reports of previous investigations that sought to answer the same research question that you wish to answer, not only those that were about a similar topic. If there have been no prior studies of exactly the same research question, you should find reports from investigations of very similar research questions. Once you have located reports from prior research similar to the research that you wish to conduct, you may expand your search to include investigations about related topics or studies that used similar methods. You want to be able to explain what your proposed study adds to prior research as well as how it takes into account what has already been learned about your research question.

Although it's most important when you're starting out, reviewing the literature is also important at later stages of the research process. Throughout a research project, you will uncover new issues and encounter unexpected problems; at each of these times, you should search the literature to locate prior research on these issues and to learn how others responded to similar problems. Published research that you ignored when you were seeking to find other research on domestic violence might become very relevant when you have to decide which questions to ask people about their attitudes toward police and other authorities.

Searching the Literature

Conducting a thorough search of the research literature and then reviewing critically what you have found lays an essential foundation for any research project. Fortunately, much of this information can be identified online, without leaving your desk, and an increasing number of published journal articles can be downloaded directly onto your own computer (depending on your particular access privileges). But just because there's a lot available online doesn't mean that you need to find it *all*. Keep in mind that your goal is to find reports of prior research investigations; this means that you should focus on scholarly journals that choose articles for publication after they have been peer reviewed by other social scientists—**refereed journals**. Newspaper and magazine articles won't do, although you may find some that raise important issues or that summarize social science research investigations.

Every year, the web offers more and more useful material, including indexes of the published research literature. You may find copies of particular rating scales, reports from research in progress, papers that have been presented at professional conferences, and online discussions of related topics. Web search engines will also find academic journal articles that you can access directly online (although usually for a fee). Most of the published research literature will be available to you online only if you go through the website of your college or university library. The library pays a fee to companies that provide online journals so that you can retrieve this information without paying anything extra yourself. Of course, no library can afford to pay for every journal, so if you can't find a particular issue of a particular journal that you need online, you will have to order the article that you need through interlibrary loan or, if the hard copy of the journal is available, walk over to your library to read it.

As with any part of the research process, your method for searching the literature will affect the quality of your results. Your search method should include the following steps:

Specify Your Research Question. Your research question should be neither so broad that hundreds of articles are judged relevant nor so narrow that you miss important literature. "Is informal social control effective?" is probably too broad. "Does informal social control reduce rates of burglary in my town?" is probably too narrow. "Is informal social control more effective in reducing crime rates than policing?" provides about the right level of specificity.

Identify Appropriate Bibliographic Databases to Search. Criminal Justice Abstracts is a great place to start; however, because the field is interdisciplinary in nature, Sociological Abstracts or SocINDEX may also meet many of your needs. If your focus is on psychological questions, you'll also want to include a search in the online Psychological Abstracts database, PsycINFO, or the version that also contains the full text of articles, PsycARTICLES. Of course, many journals are listed in several databases, so it is best to begin a search in Criminal Justice Abstracts, and then move on to the others. It will save you a lot of time if you ask a librarian to teach you the best techniques for retrieving the most relevant articles to answer your questions.

Another relevant place to find scholarly research across disciplines is Google Scholar. This platform provides scholarly journal articles along with technical reports, theses, books, and other types of documents. At the time of this writing, Google Scholar found 25,900 documents in a search for "racial disparities in police shootings," and since it lists articles in order of use of the search terms, frequency of citation, and other reasonable factors, the first several pages of citations provide a good way to identify potentially important omissions from your literature searches in bibliographic databases available at your library. However, in most cases you will still need to go through your library to obtain the full text of the articles that interest you (if your library subscribes to the source journals).

A Google Scholar search also produces a list of suggestions for related searches that can help you refine or expand your search. For example, the list of "related searches" at the bottom of the first page of my "racial disparities in police shootings" search includes "racial disparities making inferences." Clicking this link produced a list of 64,400 additional results. Clicking on the suggested link of "racial disparities causal inference approach" yields 12,900 results.

To find articles that refer to a previous publication, such as Braga, MacDonald, & Barao's (2021) study of the effects of body-worn cameras, the Social Science Citation Index (SSCI) will also be helpful. SSCI is an extremely useful tool for tracing the cumulative research in an area across the social sciences. SSCI has a unique "citation searching" feature that allows you to look up articles or books, see who else has cited them in their own work, and find out which articles and books have had the biggest impact in a field.

Create a Tentative List of Search Terms. List the parts and subparts of your research question and any related issues that you think are important: "informal social control," "police violence," "body-worn cameras," and perhaps "trust in the police." It might help to start with one key article that has focused on your research question, identify the concepts in it, and search those concepts. You can then expand the search with more concepts in the articles you locate.

Narrow Your Search. The sheer number of references you find can be a problem. A search for "police use of force" in SocINDEX on August 4, 2021, yielded 305 hits; by adding "effects or impact or consequences or influence or outcomes" as required search terms and limiting the search to peer-reviewed articles published since 2010, the number of hits dropped to 70. But focusing even more by substituting "police shootings" for "police use of force" resulted in just 55 articles. So, you need to spend some time trying different combinations of search terms and search limiters. Depending on the database you are working with and the purposes

of your search, you may want to limit your search to English-language publications, to journal articles rather than conference papers or dissertations (both of which are more difficult to acquire), and to materials published in recent years. If your search yields too many citations, try specifying the search terms more precisely (e.g., "police shootings" for "police use of force "). If you have not found much literature, try using more general or multiple terms (e.g., "police AND violence OR use of force"). Whatever terms you search first, don't consider your search complete until you have tried several different approaches and have seen how many articles you find.

Use Boolean Search Logic. It's often a good idea to narrow your search by requiring that abstracts contain combinations of words or phrases that include more of the specific details of your research question. Using the Boolean connector *and* allows you to do this, while using the connector *or* allows you to find abstracts containing different words that mean the same thing.

Use Appropriate Subject Descriptors. Once you have found an article that you consider appropriate, look at the "key terms" field in the citation. You can then redo your search after requiring that the articles include some or all of these key terms.

Check the Results. Read the titles and abstracts you have found and identify the articles that appear to be most relevant. If possible, click on these article titles and generate a list of their references. See if you find more articles that are relevant to your research question but that you have missed so far. You will be surprised at how many important articles your initial online search missed.

Locate the Articles. Whatever database you use, the next step after finding your references is to obtain the articles themselves. You will probably find the full text of many articles available online, but this will be determined by what journals your library subscribes to and the time period for which it pays for online access. The most recent issues of some journals may not be available online. Keep in mind that your library will not have anywhere near all the journals (and books) that you run across in your literature search, so you will have to add another step to your search: checking the "holdings" information. If an article that appears to be important for your topic isn't available from your own library or online, you may be able to request a copy online through your library site or by asking a member of the library staff. You can also check http://worldcat.org to see which other libraries have the journal.

Take Notes on Each Article You Read, Organizing Your Notes Into Standard Sections: Theory, Methods, Findings, Conclusions. In any case, write your review of the literature so that it contributes to your study in some concrete way; don't feel compelled to discuss an article merely because you have read it. Be judicious. You are conducting only one study of one issue, and it will only obscure the value of your study if you try to relate it to every tangential point in related research.

Don't think of searching the literature as a one-time-only venture—something that you leave behind as you move on to your *real* research. Going back to the literature often while conducting your own research is inevitable as you will encounter new questions or unanticipated problems, so it is more of a research dance. Searching the literature again to determine what others have found in response to these questions or what steps they have taken to resolve these problems can yield substantial improvements in your own research. There is so much literature on so many topics that it often is not possible to figure out in advance every subject for which you should search the literature or what type of search will be most beneficial.

Another reason to make searching the literature an ongoing project is that the literature is always growing. During the course of one research study, whether it takes only one semester or several years, new findings will be published and relevant questions will be debated. Staying attuned to the literature and checking it at least when you are writing up your findings may save your study from being outdated as soon as it is finished.

Critically Reviewing Research

Your literature review will suggest specific research questions for further investigation and research methods with which to study those questions. Braga et al. (2021) learned from their literature review that prior research indicated—with just a few exceptions—that body-worn cameras (BWCs) reduce citizen complaints against officers. However, results of prior research on the impact of BWCs on officer use of force during police–citizen encounters had been inconsistent: Some found a reduction in officer use of force and others found no change. One careful evaluation suggested the inconsistency might be due to differences in the extent to which officers complied with their department's BWC activation policy. In places where officers notified citizens of BWC at the start of an encounter, use of force declined; in places where they didn't make such an announcement, use of force increased.

Braga et al.'s (2021) literature review also found that prior research had not taken into account possible "spillover effects": the tendency of officers not wearing body cameras to change their behavior when working with other officers who were wearing BWCs. There was thus potential value in conducting new research that took into account both officer compliance and tested for spillover effects. In this way, reviewing the literature identifies unanswered questions and contradictory evidence.

Effective review of the prior research is an essential step in building the foundation for new research. You must assess carefully the quality of each research study, consider the implications of each article for your own plans, and expand your thinking about your research question to take into account new perspectives and alternative arguments. It is through reviewing the literature and using it to extend and sharpen your own ideas and methods that you become a part of the social science community. Instead of being only one individual studying an issue, you are building on an ever-growing body of knowledge that is being constructed by the entire community of scholars.

Sometimes you'll find that someone else has already searched the literature on your research question and discussed what he or she found in a special review article or book chapter. Most of the research articles that you find will include a short literature review on the specific focus of the research. These reviews can help a lot, but they are no substitute for searching the literature yourself, selecting the articles and other sources that are most pertinent to your research question, and then critically reviewing that literature on your own. No one but you can decide what is relevant for your research question and the research circumstances you will be facing—the setting you will study, the timing of your study, the new issues that you want to include in your study, and your specific methods. And you can't depend on any published research review for information on the most recent works. Results from new research about many questions appear continually in scholarly journals and books, in research reports from government agencies and other organizations, and on websites all over the world; you'll need to check for new research like this yourself.

This section concentrates on the procedures you should use for reviewing the articles you find in a search of the scholarly literature. These procedures can also be applied to reviews of research monographs—books that provide more information on a research project than what can be contained in a journal article.

Reviewing the literature is really a two-stage process. In the first stage, you must assess each article separately. This assessment should follow a standard format such as that represented in Appendix A, "Questions to Ask About a Research Article." However, you should keep in mind that you can't adequately understand a research study if you treat it as a series of discrete steps, involving a marriage of convenience among separate techniques. Any research project is an integrated whole, so you must be concerned with how each component of the research design influenced the others—for example, how the measurement approach might have affected the causal validity of the researcher's conclusions and how the sampling strategy might have altered the quality of measures.

RESEARCH IN THE NEWS

BREAKING DOWN A FATAL POLICE SHOOTING ON A TENNESSEE HIGHWAY

Landon Eastep was shot outside Nashville, Tennessee, after a half-hour standoff with police during which he was wielding a box cutter. After Eastep reached into his coat for what police suspected was a gun, they shot and killed him. A video that was recorded by a body camera was released to the public. This article reports on the examination of the footage by Tamara Lynn, a professor at Hays State University and president of the executive council of the National De-escalation Training Center (NDTC). The NDTC works to make de-escalation training a greater focus for police departments across the United States. Lynn noted that one officer who attempted to negotiate with Eastep had used the language and techniques that NDTC recommends. She also noted that all officers gave Eastep space, which prevented the situation from escalating much sooner and may have prevented more people from getting hurt. There were also mistakes made, including other officers simultaneously yelling commands, which would be overwhelming for anyone, and especially for those with underlying mental or physical issues.

For Further Thought

1. If you were going to assess whether de-escalation training in police departments actually decreased rates of police use of force, what kind of study would you propose?
2. What type of research could improve our understanding of the possible link between de-escalation training and police officers' use of force?

Source: Adapted from "Breaking Down a Fatal Police Shooting on a Tennessee Highway," by R. Klemko and D. Cornejo, February 1, 2022, *The Washington Post*, https://www.washingtonpost.com/national-security/2022/02/01/nashville-police-shooting-eastep/.

The second stage of the review process is to assess the implications of the entire set of articles (and other materials) for the relevant aspects of your research question and procedures and then to write an integrated review that highlights these implications. Although you can find literature reviews that consist simply of assessments of one published article after another—that never get beyond the first stage in the review process—your understanding of the literature and the quality of your own work will be much improved if you make the effort to write an integrated review.

In the next two sections, we will show how you might answer many of the questions in Appendix A as we review a research article about the effects of aggressive policing. We will then

show how the review of a single article can be used within an integrated review of the body of prior research on this research question. There is a more elaborate article review presented in Appendix B, "How to Read a Research Article." Because at this early point in the text you won't be familiar with all the terminology used in that article review, you might want to put off reading Appendix B until later in the course.

A Single-Article Review: Aggressive Policing and Educational Performance of Minority Youth

Joscha Legewie at Harvard University and Jeffrey Fagan at Columbia Law School teamed up to study the effect of aggressive policing on the educational performance of New York City minority public school students in kindergarten to eighth grade. In this section, we will examine the article that resulted from that replication, which was published in the *American Sociological Review* (Legewie & Fagan, 2019). The numbers in the square brackets in the paragraphs below refer to the article review questions presented in Appendix A.

The research question. Legewie and Fagan (2019, p. 221) state their primary research question as, "What are the consequences of the increasing presence of police in minority communities for minority youths' educational performance?" They focus specifically on the effect of aggressive, order-maintenance policing, also known as "broken-windows policing," on African American boys and girls in comparison to their Latinx counterparts. The "broken windows" term was adopted as broken windows in areas are indicators of social disorder. The researchers also propose to examine the mechanisms by which any effects occur [1]. The purpose of the study was explanatory: Its goal was to explain variation in educational performance [2]. Theoretical models of neighborhood effects and policing guide the study, pointing to different mechanisms that could shape the effects of policing on educational performance. Their theorizing does not make clear connections to such potentially relevant theories as deterrence, theory, labeling theory, or conflict theory. The research is applied and they approach it with a positivist philosophy that focuses on cause-and-effect connections. The research is not guided by their values, although their conclusions suggest that they favor policies that would aid, rather than diminish, educational performance [3].

Legewie and Fagan (2019) review a large body of prior research literature, giving particular attention to research that has tested different ways in which policing practices could affect students' educational performance [4]. The research uses only administrative records, so there is no direct contact with human subjects and no discussion of ethical guidelines [6].

The research design. The explanatory focus of the research identifies it as deductive [5]. The primary study hypothesis is that aggressive policing strategies and tactics lower educational performance and perpetuate racial inequalities in educational outcomes, although it is not labeled explicitly as a hypothesis. Based on extensive prior research, three other hypotheses are proposed as mechanisms that might explain the effect of aggressive policing on educational performance: (1) Aggressive policing reduces crime rates, which in turn may improve educational performance; (2) aggressive policing may reduce trust in institutions and school attendance, which may negatively influence educational performance; and (3) aggressive policing may trigger adverse health effects such as stress and fear, which reduce educational performance [8]. The independent variable in the first hypothesis is aggressive policing and the dependent variable is educational performance. In the second hypothesis, aggressive policing is initially the independent variable and crime rate, trust, and poor health are the dependent variables, while in the third hypothesis, these three "dependent" variables become independent variables that predict change in educational outcomes—the dependent variable. Hypotheses are also proposed involving differences in effects

in relation to student age, race, and gender. The important point to understand here is that independent and dependent variables are often not static in any one research study [9].

The major concepts in the study, aggressive policing and educational performance were defined clearly [7] and then measured with straightforward indicators—days of exposure of a school neighborhood to Operation Impact (New York City police department's aggressive policing program) as the measure of aggressive policing, and standardized test scores (English and math) as the measure of educational performance. Previously collected data are used to measure neighborhood crime levels, positive school attitudes and trust, and school attendance. However, there are no indicators of poor health such as stress levels or fear that were measured in this research, in spite of an extensive section of the literature review devoted to these issues. The data were obtained from police department and school administrative records, including results of a student survey. These data sources are described in detail, but there is no indication of efforts to establish their reliability or validity [10].

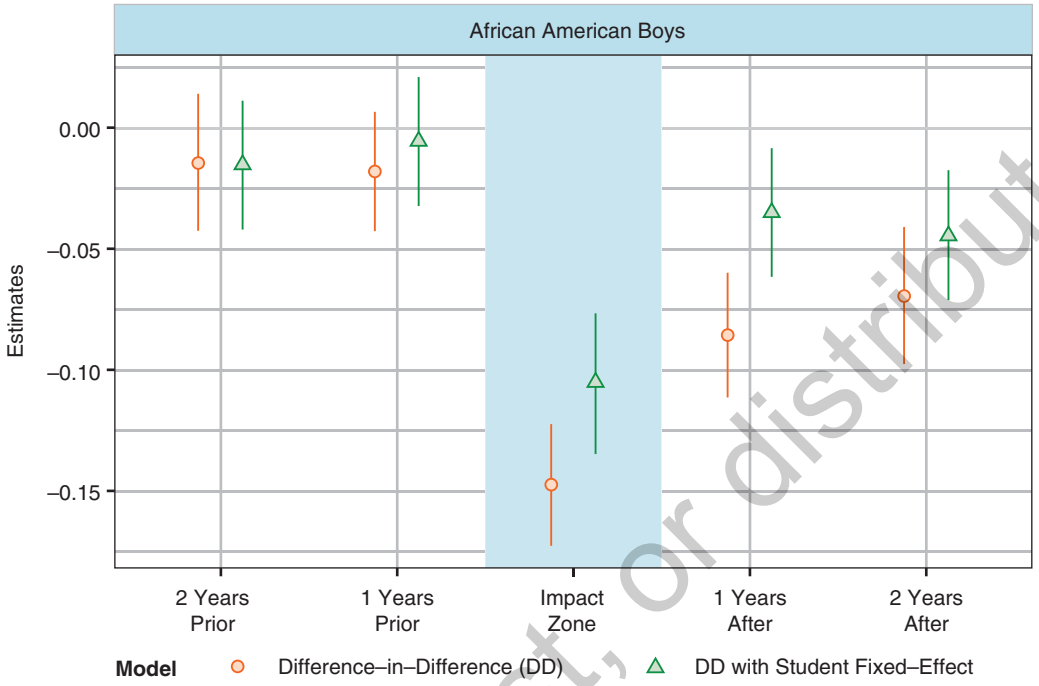
The sample consisted of all 285,439 African American and Latinx students attending schools in areas designated as Operation Impact zones at some time between 2003 and 2012. It was thus really the entire population of these students, rather than a sample from the population [14]. Too few white and Asian students lived in these areas to be able to analyze them separately, so these students are excluded from the analysis. The analysis was also limited to students between 9 and 15 years old, for the same reason. A small fraction of students who did not participate in the yearly state test or for whom data were missing on other variables were also excluded from the analysis. The authors reported that 2.6% of the cases had data missing on one or more variables [15].

Individual students were the units of analysis, although most of the predictors are based on school- or neighborhood-level data. There is some risk of a type of ecological fallacy, since there is no individual-level measure of exposure to Operation Impact—but this threat is not discussed [11]. The study used a longitudinal panel design, since students were followed over time, before and after the period when police used Operation Impact [12]. Use of a type of quasi-experimental design (before–after) strengthened the test of the authors' causal hypotheses [13]. In the article's limitations section, the authors consider whether the findings would hold up in other cities, suburban or rural areas, and across the world. They recognize that more research would be needed to determine such external generalizability [14].

The research findings and conclusion. Legewie and Fagan (2019) analyzed only quantitative data, so they did not use mixed methods [18]. The project relied on secondary data from the New York City Department of Education (NYCDOE) and the New York Police Department (NYPD). The authors do not discuss the quality of these data, apparently assuming that such administrative data collected in these large, professionally run organizations is accurate. Use of this "big data" allows sophisticated analyses of changes over time [20]. No information is provided on protecting the anonymity of individual records, but it is likely that such steps were taken. The design was not historical-comparative and did not involve a content analysis. The authors highlighted the importance of social context throughout the article and gave careful attention to subjective meanings by using survey data that indicated students' level of trust toward schools and teachers [19].

The central finding is that the primary hypothesis is supported: Launching Operation Impact (aggressive policing) in an area was followed by a decline in test scores of African American boys in public schools in that area, an apparent effect that diminished in size over the following 2 years (see Figure 2.3). This is certainly an important finding. Legewie and Fagan (2019) then present tests of their secondary hypotheses and find that the effect of aggressive policing was not due to an increase in the crime rate in these areas; however, a decline in school attendance for African American boys during the Operation Impact period seemed to be partly responsible for the decline in test scores [21].

EXHIBIT 2.3 ■ Effect of Aggressive Policing (Operation Impact) on English Test Scores Before, During, and After Operation Impact



Source: From "Aggressive Policing and the Educational Performance of Minority Youth," by J. Legewie and J. Fagan, 2019, *American Sociological Review, 84*(2), 220–247.

The statistical analyses required to distinguish effects of changes in the crime rate from the effect of Operation Impact are complicated but presented clearly [20]. The authors present the findings well in the conclusion and carefully consider alternative interpretations [21]. Overall, the study is a major advance over prior research [22] and suggests many additional questions for further research, such as the following: Would implementing a community policing strategy have the same type of effects on school performance as the use of aggressive policing? Do youth with stronger ties to family and/or community groups suffer less in their academic performance after exposure to aggressive policing [23]?

An Integrated Literature Review

The goal of the second stage of the literature review process is to integrate the results of your separate article reviews and develop an overall assessment of the implications of prior research. The integrated literature review should accomplish three goals: (1) summarize prior research, (2) critique prior research, and (3) present pertinent conclusions (Hart, 1998). We will discuss each of these goals in turn.

1. *Summarize prior research.* Your summary of prior research must focus on the particular research questions that you will address, but you may also need to provide some more general background. In their study examining the effects of police officer mindsets on use of force, Paoline, Terrill, and Somers (2021) first note that while there are theoretical and intuitive assertions that characteristics of police officers (e.g., attitudes, experience) are related to their use of force, "widespread empirical

connection to behavior [has] been lacking" (p. 548). However, their literature review discusses the larger area of inquiry. They state, "We begin by reviewing the relevant use of force literature, as well as the role (and potential extension) of officer attitudes as predictors of use of force behavior" (p. 549). Ask yourself three questions about your summary of the literature:

a. Have you been selective? If there have been more than a few prior investigations of your research question, you will need to narrow your focus to the most relevant and highest-quality studies. Don't cite a large number of prior articles, "because they are there."

b. Is the research up-to-date? Be sure to include the most recent research, not only the "classic" studies.

c. Have you used direct quotes sparingly? To focus your literature review, you need to express the key points from prior research in your own words. Use direct quotes only when they are essential for making an important point (Pyrczak, 2005).

2. *Critique prior research.* Evaluate the strengths and weaknesses of the prior research. In addition to all the points that you develop as you answer the article review questions in Appendix B, you should also select articles for review that reflect work published in peer-reviewed journals and written by credible authors who have been funded by reputable sources. Consider the following questions as you decide how much weight to give each article:

a. How was the report reviewed prior to its publication or release? Articles published in academic journals go through a rigorous review process, usually involving careful criticism and revision. Top refereed journals may accept only 10% of the submitted articles, so they can be very selective. Dissertations go through a lengthy process of criticism and revision by a few members of the dissertation writer's home institution. A report released directly by a research organization is likely to have had only a limited review, although some research organizations maintain a rigorous internal review process. Papers presented at professional meetings may have had little prior review. Needless to say, more confidence can be placed in research results that have been subject to a more rigorous review.

b. What is the author's reputation? Reports by an author or a team of authors who have published other work on the research question should be given somewhat greater credibility at the outset.

c. Who funded and sponsored the research? Major federal funding agencies and private foundations fund only research proposals that have been evaluated carefully and ranked highly by a panel of experts. They also often closely monitor the progress of the research. This does not guarantee that every such project report is good, but it goes a long way toward ensuring some worthwhile products. On the other hand, research that is funded by organizations that have a preference for a particular outcome should be given particularly close scrutiny (Locke, Silverman, & Spirduso, 1998).

3. *Present pertinent conclusions.* Don't leave the reader guessing about the implications of the prior research for your own investigation. Present the conclusions you draw from the research you have reviewed. As you do so, follow several simple guidelines:

a. Distinguish clearly your own opinion of prior research from the conclusions of the authors of the articles you have reviewed.

b. Make it clear when your own approach is based on the theoretical framework that you use and not on the results of prior research.

c. Acknowledge the potential limitations of any empirical research project. Don't emphasize problems in prior research that you can't avoid (Pyrczak, 2005).
d. Explain how the unanswered questions raised by prior research or the limitations of methods used in prior research make it important for you to conduct your own investigation (Fink, 2005). For example, Paoline et al. (2021) note that a symposium of police officers and academic researchers developed several factors related to an officer's mindset during a police/citizen encounter including an officer's fear or apprehension to use force, their perceptions of dangerousness in interactions with the public, and their attitudes toward the community, among others. Paoline et al. note the following: "Though these prominent police leaders and researchers were able to identify these factors as those they believed to be broadly related to an officer's use of force mindset, they came to little consensus as to what the actual mindset of today's officers was. . . . The current study seeks to address these specific recommendations by conducting the first empirical examination of officer mindset and its ability to explain the use of force" (p. 553).

THE ROLE OF THEORY

We have already pointed out that criminological theory can be a rich source of research questions. What deserves more attention at this point is the larger role of **theory** in research. We have also noted that research investigating criminal justice and criminology–related questions rely on many theories, including criminological, sociological, and psychological theories. These theories do many things:

- They help us explain or understand things, such as why some people commit crimes or more crimes than others; why some people quit committing crimes and others continue; and what the expected effect of good families, harsh punishment, or other factors on crime might be.
- They help us make predictions about the criminological world: "What would be the expected effect on the homicide rate if we employed capital punishment rather than life imprisonment?" "What would be the effect on the rate of property crimes if unemployment were to substantially increase?"
- They help us organize and make sense of empirical findings in a discipline.
- They help guide future research.
- They help guide public policy: "What should we do to reduce the level of domestic violence?"

Social scientists such as criminologists (who connect their work to theories in their discipline) can generate better ideas about what to look for in a study and develop conclusions with more implications for other research. Building and evaluating theory is therefore one of the most important objectives of a social science such as criminology.

Theories usually contain what are called **theoretical constructs**. These theoretical constructs describe what is important to look at to understand, explain, predict, and "do something" about crime. For example, an important theoretical construct in differential association theory is the notion of "definitions favorable and unfavorable to the violation of law." Theories usually link one or more theoretical constructs to others in what are called *relationship statements*. Differential

association theory, for example, links the theoretical construct of favorable or unfavorable definitions to the theoretical construct of involvement in crime to argue as follows: "As one is exposed to more definitions favorable to the violation of law relative to definitions unfavorable to the violation of law, one is more at risk for criminal behavior." This is a relationship statement that links two theoretical constructs; it states that as exposure to definitions favorable to the violation of law increases, the risk of crime also increases. This is essentially a hypothesis that the theory of differential association entertains; if the theory is true, then the expected relationship should be true. The purpose of much criminological research is to examine the truth value, or *empirical validity*, of such theoretical relationship statements or hypotheses. Some criminological theories reflect a substantial body of research and the thinking of many social scientists; others are formulated in the course of one investigation. A few have been widely accepted, at least for a time; others are the subject of vigorous controversy, with frequent changes and refinements in response to criticism and new research.

Most criminological research is guided by some theory, although the theory may be only partially developed in a particular study or may even be unrecognized by the researcher. When researchers are involved in conducting a research project or engrossed in writing a research report, they may easily lose sight of the larger picture. It is easy to focus on accumulating or clarifying particular findings rather than considering how the study's findings fit into a more general understanding of the social world. Furthermore, as we shall soon see, just as theory guides research, research findings also influence the development of theory.

Anthony Braga and his collaborators (2020) at Northeastern University designed their study of the effect of body-worn cameras (BWCs) on police-citizen encounters to test predictions from deterrence theory. Deterrence theory is itself based on a broader perspective that is termed rational choice theory. Rational choice theory assumes that people's behavior is shaped by practical cost–benefit calculations (Coleman, 1990, p. 14). *Deterrence theory* applies rational choice theory to crime and punishment (Lempert & Sanders, 1986, pp. 86–87), proposing that offenders are less likely to commit crimes if they believe that the costs of illegal acts will exceed their benefits (Braga et al., 2020). Crime "doesn't pay" (as much) when people are aware of the costs of punishment (see Exhibit 2.4). A different theory, public self-awareness theory also led Braga et al. (2020) to predict more compliance with social norms by police wearing a camera. The theory expects that when people are being observed (a consequence of a BWC), they are reminded of social norms and are more likely to adjust their behavior to comply with those norms.

Some sociologists attempt to understand the social world by investigating the meaning people attach to their interactions. These researchers focus on the symbolic nature of social interaction—how social interaction conveys meaning and promotes socialization. Herbert Blumer developed these ideas into **symbolic interaction theory** (J. H. Turner, Beeghley, & Powers, 1995, p. 460).

Labeling theory uses a symbolic interactionist approach to explain deviance as an "offender's" reaction to the application of rules and sanctions (Becker, 1963, p. 9; Scull, 1988, p. 678). Can you see how researchers like Braga et al. (2020) could use labeling theory to make predictions about the effects of body-worn cameras? It would involve a somewhat different rationale than self-awareness theory for explaining the effect of BWCs. Police officers might want to avoid

EXHIBIT 2.4. ■ Rational Choice Theory Prediction

being labeled as rule violators after being "caught on camera"; so too could those who might be subject to arrest. Projecting camera images of deviant behavior in the courtroom could also increase the likelihood of labeling officers and those arrested as deviant. Ironically, the act of punishment stimulates more of the very behavior that it was intended to eliminate.

Do you find yourself thinking of some interesting research foci when you read about this labeling theory of deviance? If so, consider developing your knowledge of symbolic interaction theory and use it as a guide in your research.

Conflict theory focuses on basic conflicts between different social groups in society and how groups attempt to exercise domination to their own benefit (Collins, 1994, p. 47). The theory has its origins in Karl Marx and Friedrich Engels's (1961, pp. 13–16) focus on social classes as the key groupings in society and their belief that conflict between social classes was not only the norm but also the "engine" of social change.

Although different versions of conflict theory emphasize different bases for conflict, they focus attention on the conflicting interests of groups rather than on the individuals' concerns with maximizing their self-interest. As applied to crime, conflict theory suggests that laws and the criminal justice system are tools of the upper classes to maintain their dominance over lower classes.

Tammy Rinehart Kochel (2019) turned to conflict theory to explain the impact of "Ferguson" (the fatal police shooting of Michael Brown) on residents' views of the police. Conflict theory predicts that people in a disadvantaged group within a political system will tend to be distrustful of representatives of that system—such as police (Kochel, 2019). Findings of Kochel's before-and-after survey of the residents in the county in which Ferguson is located were consistent with this prediction: Black residents' trust in police declined after the shooting, while white residents' level of trust in police did not change.

Remember that social theories do not provide the answers to research questions. Instead, social theories suggest the areas on which we should focus and the propositions that we should consider for a test. That is, theories suggest testable hypotheses about phenomena, and research verifies whether those hypotheses are true. In fact, one of the most important requirements of theory is that it be *testable*, or what philosophers of science call **falsifiable**—theoretical statements must be capable of being proven wrong. If a body of thought cannot be empirically tested, it is more likely philosophy than theory. An example of two theoretical perspectives and their predictions for the effects of BWCs is provided in Exhibit 2.5.

EXHIBIT 2.5 ■ Two Social Theories and Their Predictions About the Effect of Body-Worn Cameras (BWCs) on Police–Citizen Encounters

	Rational Choice Theory	Symbolic Interactionism
Theoretical assumption	People's behavior is shaped by calculations of the costs and benefits of their actions.	People give symbolic meanings to objects, behaviors, and other people.
Criminological component	Deterrence theory: People break the law if the benefits of doing so outweigh the costs.	Labeling theory: When people are labelled as deviant, this promotes further deviance.
Prediction (effect of BWC on Police Use of Force)	Police officer, having seen the costs of using force in a police-citizen encounter (namely being held accountable), decides not to abuse again.	Police officer, having been labeled as *an offender,* uses force more often.

SOCIAL RESEARCH STRATEGIES

With a research question formulated, a review of the pertinent literature taking shape, and a theoretical framework in mind, we are ready to consider the process of conducting our research. All research is an effort to connect theory and empirical data. As Exhibit 2.6 shows, theory and data have a two-way, mutually reinforcing relationship. Researchers may make this connection by starting with a social theory and then testing some of its implications with data. This is the process of **deductive reasoning**; it is most often the strategy used in quantitative methods. Alternatively, researchers may develop a connection between social theory and data by first collecting the data and then developing a theory that explains the patterns in the data. This is **inductive reasoning** and is more often the strategy used in qualitative methods. As you'll see, a research project can draw on both deductive and inductive strategies.

Both deductive reasoning and inductive reasoning are essential to criminologists. We cannot test an idea fairly unless we use deductive reasoning, stating our expectations in advance and then designing a way to test the validity of our claims. A theory that has not survived these kinds of tests can be regarded only as very tentative. Yet theories, no matter how cherished, cannot always make useful predictions for every social situation or research problem that we seek to investigate. We may find unexpected patterns in the data we collect, called **serendipitous findings** or **anomalous findings**. In either situation, we should reason inductively, making whatever theoretical sense we can of our unanticipated findings. Then, if the new findings seem sufficiently important, we can return to deductive reasoning and plan a new study to formally test our new ideas.

The Research Circle

This process of conducting research, moving from theory to data and back again or from data to theory and back again, can be characterized as a **research circle**, as depicted in Exhibit 2.7. Note that it mirrors the relationship between theory and data shown in Exhibit 2.6 and that it comprises three main research strategies: deductive research, inductive research, and descriptive research.

Deductive Research

As Exhibit 2.6 shows, **deductive research** proceeds from theorizing to data collection and then back to theorizing. In essence, a specific expectation is deduced from a general premise and then tested.

EXHIBIT 2.6 ■ The Links Between Theory and Data

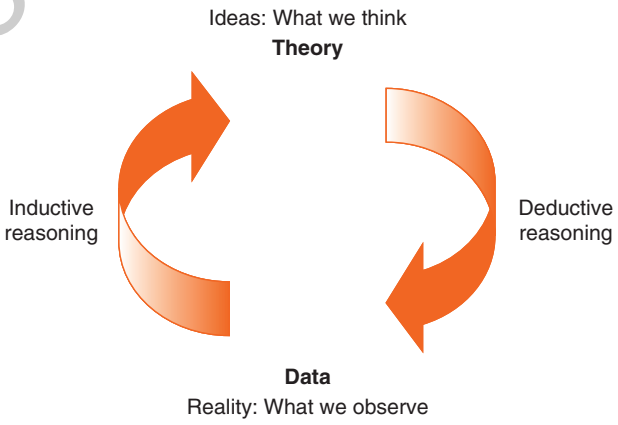
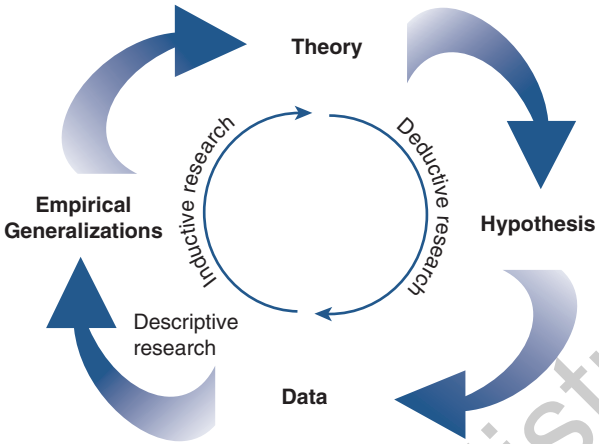


EXHIBIT 2.7 ■ The Research Circle



Notice that a theory leads first to a **hypothesis**, which is a specific implication deduced from the more general theory. Researchers actually test a hypothesis, not the complete theory itself, because theories usually contain many hypotheses. As we stated earlier, a hypothesis proposes a relationship between two or more theoretical constructs or variables. A **variable** is a characteristic or property that can vary. A **constant** is a characteristic or property that cannot vary. For example, if we were to conduct some research in a male adult state maximum-security penitentiary, the theoretical construct *type of crime committed* would be a variable, because persons will have been incarcerated for different offenses (one person is in for armed robbery, another for rape, etc.). However, the theoretical construct *type of prison* would be a constant, because all inmates are in a maximum-security prison; security level of prison does not vary—it is constant. Would *age* be a variable or a constant in this group? Would *criminal status* (offender or nonoffender) be a variable or a constant?

Variables are of critical importance in research because, in a hypothesis, variation in one variable is proposed to predict, influence, or cause variation in the other variable. The proposed influence is the **independent variable**; its effect or consequence is the **dependent variable**. Another way to think about this distinction is to say, "the dependent variable 'depends' on the independent variable." After the researchers formulate one or more hypotheses and develop research procedures, they collect data with which to test the hypothesis.

Hypotheses can be worded in several different ways, and identifying the independent and dependent variables is sometimes difficult. When in doubt, try to rephrase the hypothesis as an if–then statement: "If the independent variable increases (or decreases), then the dependent variable increases (or decreases)." Exhibit 2.8 presents several hypotheses with their independent and dependent variables and their if–then equivalents.

Exhibit 2.7 demonstrates another feature of hypotheses: **direction of association**. When researchers hypothesize that one variable increases as the other variable increases, the direction of the association is positive (Hypotheses 1 and 4 in the exhibit); when one variable decreases as the other variable decreases, the direction of association is also positive (Hypothesis 3). In a **positive relationship**, then, the independent and dependent variables move in the same direction (as one increases, the other increases or as one decreases, the other decreases). But when one variable increases as the other decreases, or vice versa, the direction of association is negative, or inverse (Hypothesis 2). In a **negative relationship**, then, the independent and dependent

EXHIBIT 2.8 ■ Examples of Hypotheses

Original Hypothesis	Independent Variable	Dependent Variable	If–Then Hypothesis
1. The greater the social disorganization in a community, the higher the rate of crime.	Social disorganization	Crime rate	If social disorganization is higher, then the crime rate is higher.
2. As one's self-control gets stronger, one commits fewer delinquent acts.	Self-control	Self-reported delinquency	If self-control is higher, then the number of delinquent acts is lower.
3. As the unemployment rate in a community decreases, the community rate of property crime decreases.	Unemployment rate	Rate of property crime	If the unemployment rate is lower, then the rate of property crime is lower.
4. As the discrepancy between one's aspirations and expectations increases, one's level of strain increases.	Discrepancy between one's aspirations and expectations	Perceived strain	If the discrepancy between one's aspirations and expectations is high, then the level of strain is high.
5. Crime is lower in those communities where the police patrol on foot.	Presence of foot patrols	Crime	If a community has police foot patrols, then the level of crime is lower.

variables move in opposite directions (as one increases, the other decreases or as one decreases, the other increases). Hypothesis 5 is a special case, in which the independent variable is categorical. The independent variable cannot be said to increase or decrease. In this case, the concept of direction of association does not apply, and the hypothesis simply states that one category of the independent variable (foot patrols are present or not) is associated with higher values of the dependent variable (crime).

The motives for deductive research include both explanation and evaluation (as described in Chapter 1). The study of the effects of body-worn cameras by Braga et al. (2020) was an evaluative study because the researchers sought to explain how a government policy requiring police to wear cameras would affect police–citizen encounters and police work activities. The researchers deduced from deterrence theory the expectation that BWCs would deter crimes by both police and citizens by increasing the likelihood of discovery and sanction. They then collected data to test this expectation.

In both explanatory and evaluative research, the statement of expectations for the findings and the design of the research to test these expectations strengthen the confidence we can place in the test. The deductive researcher shows her hand or states her expectations in advance and then designs a fair test of those expectations. Then the chips fall where they may; in other words, the researcher accepts the resulting data as a more-or-less objective picture of reality.

Inductive Research

In contrast to deductive research, **inductive research** begins at the bottom of the research circle and then works upward (see Exhibit 2.7). The inductive researcher begins with specific data, which are then used to develop (induce) a general explanation (a theory) to account for the data. The patterns in the data are then summarized in one or more **empirical generalizations**(findings) that can be compared to the hypothesis. If the empirical generalizations are those stated in

the hypothesis, then the theory from which the hypothesis was deduced is supported. If the empirical generalizations are inconsistent with the hypothesis, then the theory is not supported (Wallace, 1971).

The motive for inductive research is exploration. In Chapter 1, you read about an exploratory study of how schools averted mass shootings. In strictly inductive research, researchers already know what they have found when they start theorizing. The result can be new insights and provocative questions. However, every phenomenon can always be explained in some way. Inductive explanations are thus more trustworthy if they are tested subsequently with deductive research.

Body-Worn Cameras and the Research Circle

Concern with the misapplication of police powers, including the incidence of police shootings, has resulted in many calls for police officers to be required to use body-worn cameras (BWCs). But does the use of BWCs improve officer behavior and reduce the likelihood of police shootings and less harmful forms of aggressive policing? We will illustrate how the research circle works with some social science research conducted to answer this question. We will begin with an experimental study in Las Vegas designed by criminologist Anthony A. Braga and William H. Sousa, and collaborators James R. Coldren, Jr., and Denise Rodriguez (2018).

Braga, Sousa et al.'s (2018) study was designed to test a hypothesis. According to deterrence theory, punishment will reduce recidivism, or the propensity to commit further crimes. From this theory, Braga, Sousa et al. (p. 516) deduced the specific hypothesis that a BWC will reduce the likelihood of misconduct. In this hypothesis, wearing a body camera is the independent variable and the likelihood of misconduct is the dependent variable (it is hypothesized to depend on the use of BWCs). The researchers expected that BWCs would have this deterrent effect because they increase "perceptions of the likelihood of apprehension and celerity [swiftness] of punishment." Braga, Sousa et al. also suggest that another theory, self-awareness theory, also predicts this effect of the use of BWCs.

Of course, in another study, wearing body cameras might be the dependent variable in relation to some other independent variable. For example, in the hypothesis, "The higher the rate of crime in a community, the lower the likelihood of police wearing body cameras," the independent variable is the crime rate and the dependent variable is the likelihood of wearing BWCs. Only within the context of a hypothesis, or a relationship between variables, does it make sense to refer to one variable as dependent and the other as independent.

Braga, Sousa et al. (2018) designed a test of their hypothesis with funding from the U.S. Department of Justice and in collaboration with the Las Vegas Metropolitan Police Department (LVMPD). In their experiment, 416 police officer volunteers were randomly assigned to wear a body camera or not to wear one for 12 months. The random assignment ensured that there were no systematic differences in the characteristics of the officers who wore body cameras and those who didn't. The LVMPD also provided the researchers with detailed information on the characteristics of the officers who did not participate in the experiment. For the 12-month period after the experiment began, the researchers tracked with department records the incidents that officers responded to, citizen complaints filed against officers, and use-of-force reports filed by the officers.

When the researchers examined the full year of data (police records for the persons in their experiment), they found that among those assigned to the treatment (BWC) condition, the decline in citizen complaints was 25.0% larger than for the control (no-BWC) condition. The percentage of officers in the BWC group who filed at least one use-of-force report declined by 40.7% more than in the no-BWC group. These patterns in the data, or empirical generalizations,

were consistent with the hypothesis that the researchers deduced from deterrence theory. The theory thus received support from the experiment (see Exhibit 2.9). Braga, Sousa et al. (2018) also found that the officers who had volunteered to participate in the experiment did not differ in their characteristics from those who did not volunteer, thus making it likely that the findings could be generalized to the population of police officers in the LVMPD.

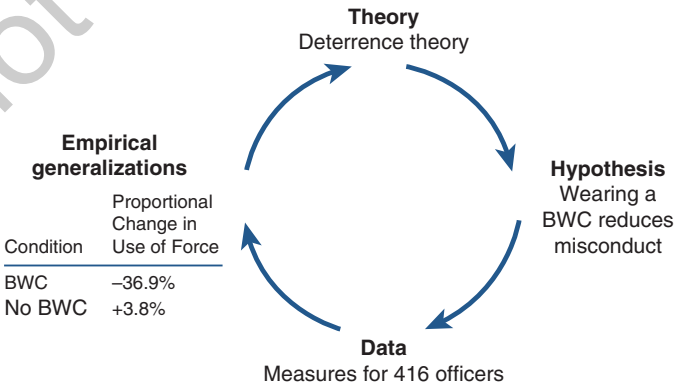
But there were many reasons for Braga, Sousa et al. (2018) to be concerned with the validity of the effects they found and the uniqueness of the conditions for their study. In another article, Sousa, Coldren, Rodriguez, & Braga (2016) identified major challenges they encountered in the NVMPD study: potential "contamination" when control group officers (non-BWC) joined treatment group officers (BWC) in the response to a call; attrition from the experiment when officers moved to other positions; unavailability of the required technological supports for BWCs in some areas; and allowing officer participation in the experiment to be voluntary. They adjusted some of their study procedures to at least partially overcome some of these challenges, but also encouraged other researchers to initiate new research that would build on their experiences.

Most of the researchers who studied the effects of BWCs after the Braga, Sousa et al. (2018) study probably did not do so in response to the Sousa et al. (2016) article, but we can think of the later BWC studies as representing additional trips around the research circle, some of them intended to be **replications** (repeated) the Braga, Sousa et al. (2018) experiment in different cities and others simply pushing forward with related research questions and/or enhanced research designs.

Jessica Huff, Charles M. Katz, and E. C. Hedberg (2020) studied the effect of BWCs in Phoenix, Arizona. Like Braga, Sousa et al. (2018), they used an experimental design, but in addition to using officers who volunteered to be in the experiment, they also added a mandate for some officers to participate in a later phase of the experiment. Unlike Braga, Sousa et al., they also measured whether officers activated their BWC during each incident and they distinguished different types of incidents (such as violent offense, property offense, and vehicle stops).

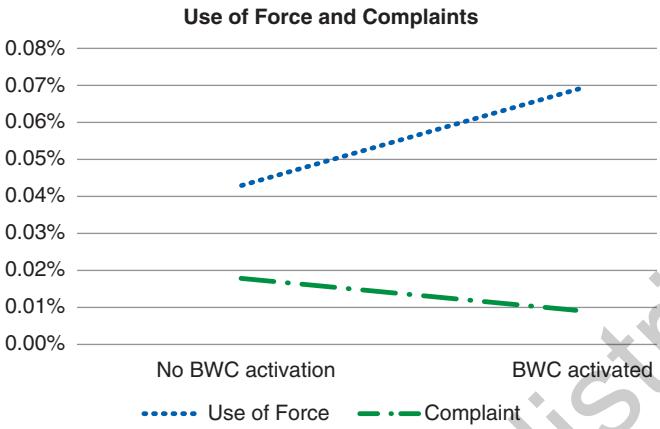
When they analyzed their data, Huff et al. (2020) found that BWC activation made a difference: When the BWC was activated, use-of-force reports increased and frequency of citizen complaints decreased (see Exhibit 2.10).

EXHIBIT 2.9 ■ The Research Circle: Body-Worn Camera Research



Source: Data from Braga, Sousa et al., 2018, p. 534.

EXHIBIT 2.10 ■ Effect of BWC Activation on Use of Force and Complaints



In a new study in collaboration with the Boston Police Department, Anthony A. Braga and a different set of collaborators (2020) found that use of BWCs in a district generated "spillover effects" on police officers in those districts who were aware that BWCs might be present in an encounter. Another experimental study of BWCs in Australia, by Joseph Clare and his collaborators (2021), found that use of BWCs did not reduce the likelihood of citizen complaints or of filing of a use-of-force report, and did not prove to have much impact on the outcomes of court cases resulting from the incidents. However, in this study use of BWCs did increase the likelihood of police filing charges.

Thus, as studies about BWCs continued, the accumulating evidence indicated that the use of BWCs often reduced the use of aggressive policing, but that its effects varied with particular outcomes, in relation to other aspects of the way the BWCs were deployed, and with some differences validly identifying the location of use.

An Inductive Approach to Understanding Black Youths' Strategies for Navigating Police Contact

Recall that qualitative research is often exploratory and, hence, inductive: The researchers begin by observing social interaction or interviewing social actors in-depth and then developing an explanation for what has been found. The researchers often ask questions such as, "What is going on here?" "How do people interpret these experiences?" or "Why do people do what they do?" Rather than testing a hypothesis, the researchers are trying to make sense of some social phenomenon. They may even put off formulating a research question until after they begin to collect data—the idea is to let the question emerge from the situation itself (Brewer & Hunter, 1989).

How do young black people attempt to shape encounters with police officers? Black youth are more likely than others to be the targets of aggressive policing, and Brittany N. Fox-Williams (2019) used exploratory research methods to begin to understand how they respond to encounters with the police, rather than how police respond to them. For this purpose, Fox-Williams recruited as her interviewees 19 young black New York City residents who were identified as "on track," meaning they were in school or working and committed to mainstream goals like a college degree and a middle-class occupation. Interviews occurred either in small groups that lasted one to one-and-a-half hours or in individual interviews for about an hour; some participated in both group and individual interviews. Her open-ended questions allowed participants to discuss

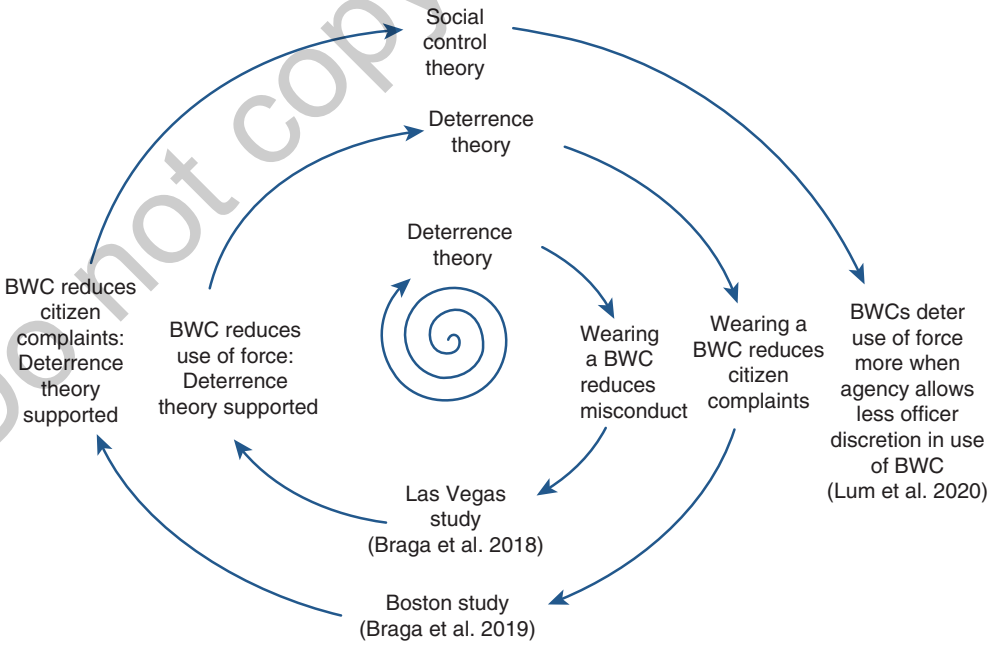
their strategies for interacting with police in their own words. Fox-Williams then reviewed the interview transcripts carefully and identified major themes that emerged in the comments.

Three of the most common strategies youth used in their encounters with police that Fox-Williams identified were avoidance, management, and symbolic resistance. The following quote describes a young man's use of an avoidance strategy (Fox-Williams, 2019, p. 124): "I'm not thinking anything, just keep walking. . . . I just feel like a robot, no emotion. . . . My mind is really clear in that moment because I don't want to look suspicious."

The Fox-Williams (2019) example illustrates how qualitative data can enrich understanding of the social world by revealing how participants make sense of and manage their social experiences. Explanations developed inductively from qualitative research can feel authentic because we have heard what people have to say in their own words, and we have tried to see the social world as they see it. Explanations derived from qualitative research will be richer and more finely textured than they often are in quantitative research, but they are likely to be based on fewer cases from a limited area. We cannot assume that the people studied in this setting are like others or that other researchers will develop explanations similar to ours to make sense of what was observed or heard. Because we do not initially set up a test of a hypothesis according to some specific rules, another researcher cannot come along and conduct the same test.

Importantly, both inductive and deductive research provide information to the research circle on a given research question. In fact, the investigations conducted to answer the general research question about the impact of police officers use of BWCs have generated a substantial body of scholarship. Researchers have now traversed the research circle multiple times in these investigations, a process perhaps better described as a *spiral* (see Exhibit 2.11), Many investigations have traversed the research circle in a deductive, hypothesis-testing way. They started with theory and then deduced and tested hypotheses. Others have been more inductive or have had an inductive component: They started with empirical generalizations from the data they had already obtained and then turned to a new theory to account for the unexpected patterns in the data.

EXHIBIT 2.11 ■ The Research Spiral: Body-Worn Camera Experiment



SOCIAL RESEARCH STANDARDS

Research can improve our understanding of *empirical reality*, the reality we encounter firsthand. But when is knowledge valid? In general, we have reached the goal of validity when our statements or conclusions about empirical reality are correct. If you look out your window and observe that it is raining, this is probably a valid observation, if your eyes and ears are to be trusted.

I pick up the newspaper and read that the rate of violence may be climbing after several years of decline. I am less certain of the validity of this statement, based as it is on an interpretation of some trends in crime indicators obtained through some process that isn't explained. As you learned in this chapter, many social scientists who have studied police interaction with citizens came to the conclusion that there are racial biases in police shootings, and also that body-worn cameras can reduce the frequency of police–citizen interactions that produce citizen complaints. However, there are many factors that affect the impact of BWCs and more research is needed to guide public policies that seek to use BWCs to reduce problems due to aggressive policing.

To some of you, the goal of validity may sound a bit far-fetched. After all, how can we really be sure our understandings of empirical phenomena are correct when we can perceive the world only through the filter of our own senses? You need not worry. Such skepticism will help you remember the tenuousness of all knowledge and will keep you properly skeptical about new discoveries.

This book is about validity more than anything else, about how to conduct research that leads to valid interpretations of the social world. We will refer to validity repeatedly, and we ask you to register it in your brain now as the central goal of all the research conducted in our field. The goal of research conducted by social scientists investigating issues related to criminology and criminal justice is not to come up with conclusions that people will like or conclusions that suit their personal preferences. The goal is to determine the most valid answers through empirical research methods.

We must be concerned with three aspects of validity: measurement validity, generalizability, and causal validity (also known as internal validity). Each of these three aspects of validity is essential: Conclusions based on invalid measures, invalid generalizations, or invalid causal inferences will themselves be invalid. We will also be concerned with the goal of authenticity, a concern with reflecting fairly the perspectives of participants in a setting that we study.

Measurement Validity

Measurement validity is our first concern in establishing the validity of research results, because without having measured what we think we measured, we really don't know what we're talking about. Measurement validity is the focus of Chapter 4. A measure is valid when it measures what we think it measures. In other words, if we seek to describe the frequency of domestic violence in families, we need to develop a valid procedure for measuring domestic violence.

The first step in achieving measurement validity is to specify clearly what it is we intend to measure. Tjaden and Thoennes (2000) identified this as one of the problems with research on domestic violence: "Definitions of the term vary widely from study to study, making comparisons difficult" (p. 5). To avoid this problem, Tjaden and Thoennes presented a clear definition of what they meant by *intimate partner violence*: "Rape, physical assault, and stalking perpetrated by current and former dates, spouses, and cohabiting partners, with cohabiting meaning living together at least some of the time as a couple" (p. 5).

Tjaden and Thoennes also provided a measure of each type of violence. For example, "'physical assault' is defined as behaviors that threaten, attempt, or actually inflict physical harm" (2000, p. 5).

With this definition in mind, Tjaden and Thoennes (2000, p. 6) then specified the set of questions they would use to measure intimate partner violence (the questions pertaining to physical assault):

> Not counting any incidents you have already mentioned, after you became an adult, did any other adult, male or female, ever
>
> —Throw something at you that could hurt?
>
> —Push, grab, or shove you?
>
> —Pull your hair?
>
> —Slap or hit you?
>
> —Kick or bite you?
>
> —Choke or attempt to drown you?
>
> —Hit you with some object?
>
> —Beat you up?
>
> —Threaten you with a gun?
>
> —Threaten you with a knife or other weapon?
>
> —Use a gun on you?
>
> —Use a knife or other weapon on you?

Do you believe that answers to these questions provide a valid measure of having been physically assaulted? Do you worry that some survey respondents might not report all the assaults they have experienced? Might some respondents make up some incidents? Issues such as these must be considered when we evaluate measurement validity. Suffice it to say that we must be very careful in designing our measures and in subsequently evaluating how well they have performed. Chapter 4 introduces several different ways to test measurement validity. We cannot *assume* that measures are valid.

Generalizability

The **generalizability** of a study is the extent to which it can be used to inform us about persons, places, or events that were not studied. You have already learned in this chapter that the Braga, Sousa et al. (2018) findings about the effect of BWCs on police behavior did not hold up in some studies in other locations: As you know, this led to additional research to figure out what accounted for the different patterns in different locations.

If every person or community we study were similar to every other one, generalizations based on observations of a small number would be valid. But that's not the case. We are on solid ground if we question the generalizability of statements about research based on the results of a restricted sample of the population or in only one community or other social context.

Generalizability has two aspects. **Sample generalizability** refers to the ability to generalize from a sample, or *subset*, of a larger population to that population itself. This is the most common meaning of generalizability. **Cross-population generalizability** refers to the ability to generalize from findings about one group, population, or setting to other groups, populations, or settings. Cross-population generalizability can also be referred to as **external validity**. (Some social scientists equate the term *external validity* to *generalizability*, but in this book, we restrict its use to the more limited notion of cross-population generalizability.)

Sample generalizability is a key concern in survey research. Political pollsters may study a sample of likely voters, for example, and then generalize their findings to the entire population of likely voters. No one would be interested in the results of political polls if they represented only the relatively tiny sample that actually was surveyed rather than the entire population.

Cross-population generalizability occurs to the extent that the results of a study hold true for multiple populations; these populations may not all have been sampled or they may be represented as subgroups within the sample studied. As noted above, Braga, Sousa et al.'s (2018) findings in Las Vegas regarding BWC were not replicated in other locations.

Generalizability is a key concern in research design. We rarely have the resources to study the entire population that is of interest to us, so we have to select cases to study that will allow our findings to be generalized to the population of interest. Nonetheless, because we can never be sure that our findings will hold under all conditions, we should be cautious in generalizing to populations or periods that we did not actually sample.

Causal Validity

Causal validity, also known as **internal validity**, refers to the truthfulness of an assertion that A causes B. It is a focus of Chapter 6.

Braga, Sousa et al. (2018) were concerned with the effect of BWCs on the likelihood of citizen complaints about police actions. To test their causal hypothesis, Braga, Sousa et al. designed their experiment so that some police responding to incident reports wore body cameras, while some responding to other incident reports did not. Of course, it may seem heavy-handed for social scientists to influence police actions for the purpose of a research project, but this step reflects just how difficult it can be to establish causally valid understandings about the social world. Only because police did not get to choose whether they would wear a body camera when responding to an incident can we be reasonably sure that the officers wearing body cameras and the incidents they were responding to were very similar to the officers who were not wearing body cameras and the incidents they were responding to.

Chapters 6 and 7 will give you much more understanding of how some features of a research design can help us evaluate causal propositions. However, you will also learn that the solutions are neither easy nor perfect: We always have to consider critically the validity of causal statements that we hear or read.

Authenticity

The goal of authenticity is stressed by researchers who focus attention on the subjective dimension of the social world. An authentic understanding of a social process or social setting is one that reflects fairly the various perspectives of participants in that setting (Gubrium & Holstein, 1997). **Authenticity** is one of several different standards proposed by some as uniquely suited to qualitative research; it reflects a belief that those who study the social world should focus first and foremost on how participants view that social world, not on developing a unique social scientists' interpretation of that world. Rather than expecting social scientists to be able to provide

a valid mirror of reality, this perspective emphasizes the need for recognizing that what is understood by participants as reality is only a social construction of reality (Kvale, 2002).

For example, instead of focusing on intimate partner violence victims who sought help from police, Moe (2007) interviewed victims who sought help from domestic violence shelters. She explained her basis for considering the responses of women she interviewed to be authentic: "Members of marginalized groups are better positioned than members of socially dominant groups to describe the ways in which the world is organized according to the oppressions they experience" (p. 682).

Moe's (2007) assumption was that "battered women serve as experts of their own lives" (p. 682). Adding to her assessment of authenticity, Moe found that the women "exhibited a great deal of comfort through their honesty and candor" as they produced "a richly detailed and descriptive set of narratives" (p. 683). You will learn more about how authenticity can be achieved in qualitative methods in Chapters 9 and 15.

CONCLUSION

Criminological researchers can find many questions to study, but not all questions are equally worthy. The ones that warrant the expense and effort of social research are feasible, socially important, and scientifically relevant.

The simplicity of the research circle presented in this chapter belies the complexity of the social research process. In the following chapters, we will focus on particular aspects of that process. Chapter 4 examines the interrelated processes of conceptualization and measurement, arguably the most important part of research. Measurement validity is the foundation for the other two aspects of validity. Chapter 5 reviews the meaning of generalizability and the sampling strategies that help us achieve this goal. Chapter 6 introduces causal validity— the third aspect of validity—and illustrates different methods for achieving it, with particular emphasis on experimental designs. The following four chapters then introduce different approaches to data collection, including surveys, qualitative research methods, secondary data analysis, and evaluation research, that help us achieve validity in different ways.

As you encounter these specifics, do not lose sight of the basic guidelines that researchers need to follow to overcome the most common impediments to social research. Owning a large social science tool kit is no guarantee of making the right decisions about which tools to use and how to use them in the investigation of particular research problems. More importantly, our answers to research questions will never be complete or entirely certain. Thus, when we complete a research project, we should point out how the research could be extended and evaluate the confidence we have in our conclusions.

Ethical issues also should be considered when evaluating research proposals and completed research studies. As Chapter 3 will show, ethical issues in social research are no less complex than the other issues that researchers confront. And it is inexcusable to jump into research on people without any attention to ethical considerations.

You are now forewarned about, and thus we hope forearmed against, the difficulties that scientists (and criminologists in particular) face in their work. We hope that you will return often to this chapter as you read the subsequent chapters, when you criticize the research literature, and when you design your own research projects. To be conscientious, thoughtful, and responsible is the mandate of every social scientist. If you formulate a feasible research problem, ask the right questions in advance, try to adhere to the research guidelines, and steer clear of the most common difficulties, you will be well along the road to fulfilling this mandate.

KEY TERMS

Anomalous findings (serendipitous findings) (p. 43)
Authenticity (p. 52)
Causal validity (internal validity) (p. 52)
Conflict theory (p. 42)
Constant (p. 44)
Cross-population generalizability (external validity) (p. 52)
Deductive reasoning (p. 43)
Deductive research (p. 43)
Dependent variable (p. 44)
Direction of association (p. 44)
Empirical generalizations (p. 45)
External validity (cross-population generalizability) (p. 52)
Falsifiable (p. 42)
Generalizability (p. 51)
Hypothesis (p. 44)
Independent variable (p. 44)
Inductive reasoning (p. 43)
Inductive research (p. 45)
Internal validity (causal validity) (p. 52)
Measurement validity (p. 50)
Negative relationship (p. 44)
Positive relationship (p. 44)
Refereed journals (p. 31)
Replication (p. 47)
Research circle (p. 43)
Research question (p. 26)
Sample generalizability (p. 52)
Serendipitous (anomalous) findings (p. 43)
Symbolic interaction theory (p. 41)
Theoretical constructs (p. 40)
Theory (p. 40)
Variable (p. 44)

HIGHLIGHTS

- Research questions should be feasible (within the time frame and with the resources available), socially important, and scientifically relevant.
- A theory is a logically interrelated set of propositions that helps us make sense of many interrelated phenomena and predict behavior or attitudes that are likely to occur when certain conditions are met.
- Building criminological theory is a major objective of criminological research. Investigate relevant theories before starting criminological projects, and draw out the theoretical implications of research findings.
- The type of reasoning in most criminological research can be described as primarily deductive or inductive. Research based on deductive reasoning proceeds from general ideas, deduces specific expectations from these ideas, and then tests the ideas with empirical data. Research based on inductive reasoning begins with specific data and then develops general ideas or theories to explain patterns in the data.
- It may be possible to explain unanticipated research findings after the fact, but such explanations have less credibility than those that have been tested with data collected for the purpose of the study.
- The scientific process can be represented as circular, with connections from theory to hypotheses to data to empirical generalizations. Research investigations may begin at different points along the research circle and traverse different portions of it. Deductive research begins at the point of theory; inductive research begins with data but ends with theory.

- Replications of a study are essential to establish its generalizability in other situations. An ongoing line of research stemming from a particular question should include a series of studies that collectively traverse the research circle multiple times.
- Valid knowledge is the central concern of scientific research. The three components of validity are measurement validity, generalizability (both from the sample to the population from which it was selected and from the sample to other populations), and causal (internal) validity. The goal of authenticity is to reflect fairly the perspectives of participants in a setting that we study.

EXERCISES

1. State a problem for research related to a criminological topic or issue of interest to you. Write down as many questions as you can about this topic.
   a. Considering your interest, your opportunities, and the work of others, which of your research questions does not seem feasible or interesting?
   b. Pick out one question that seems feasible and that your other course work suggests has been the focus of prior research or theorizing. Write this research question in one sentence. Elaborate on your question in a single paragraph. List at least three reasons why it is a good research question to investigate.
2. Search the scholarly literature on your topic of interest (you can find articles on the Student Study Site: https://edge.sagepub.com/bachmanprccj8e). Copy at least 10 citations to recent articles reporting research relevant to your research question.
   a. Look up at least three of these articles. Write a brief description of each article, and evaluate its relevance to your research question. What additions or changes to your thoughts about the research question are suggested by these sources?
   b. Would you characterize the findings of these articles as largely consistent or inconsistent? How would you explain discrepant findings?
   c. How well did the authors summarize their work in their abstracts for the articles you consulted? What important points would you have missed if you had relied only on the abstracts?
3. Using one of the research articles you consulted for Exercise 2, identify and look up one of the cited articles or websites. Compare the cited source to what was said about it in the original article or on the original site. Was the discussion in the cited source accurate?
4. Using the same research article that you focused on for Exercise 3, identify the stages of the research project corresponding to the points on the research circle. Did the research cover all four stages? Identify the theories and hypotheses underlying the study. What data were collected or utilized for the study? What were the findings (empirical generalizations)?
5. Using one of the research articles that you used in Exercise 2, identify one of the independent variables utilized in the study and describe its measurement validity. Do you think it measured what it intended to measure? If yes, how? If not, why?
6. Using a different research article from Exercise 2, identify an unanticipated result that the authors discovered and explain why it was not anticipated. For example, did this result go against the theory or empirical evidence used in their hypotheses?

SPSS OR EXCEL EXERCISES

Data for Exercises	
Data set	**Description**
Youth.sav	This data set is from a random sample of students from schools in a southern state. While not representative of students throughout the United States, it covers a variety of important delinquent behaviors and peer influences.
Variables for Exercises	
Variable Name	**Description**
D1	A binary variable based on the number of delinquent acts a respondent reported. A 0 indicates that the respondent reported 1 or fewer acts, while a 1 indicates 2 or more acts.
Supervision	This is a binary variable based on a scale of parental supervision. High scores (6 or greater) are coded 1; low scores (5 or lower) are coded 0.
Heavytvwatcher	A binary variable based on the number of hours a respondent reported watching TV per week. A value of 1 indicates 15 or more hours of TV per week, a value of 0 indicates 14 or fewer hours.
Studyhard	A binary variable based on the number of hours a respondent reported studying per week. A value of 1 indicates 9 or more hours per week, a value of 0 indicates 8 or fewer hours.
Gender	A binary variable for gender of respondent, coded 0 for females and 1 for males
drinkingnotbad	A binary variable based on a question about whether a respondent's friends view drinking as wrong with 1 indicating "drinking is not bad"

1. Consider the following pairs of variables:
   - **a.** Delinquent behavior and parental supervision
   - **b.** Hours watching TV per week and hours studying per week
   - **c.** Gender and how wrong one's friends think it is to drink

   Do the following for each pair of variables:
   - **d.** Articulate a research question involving the two variables.
   - **e.** Hypothesize a relationship between the two variables or a lack thereof. Explain why you think the variables will be related in this fashion.
   - **f.** Identify the independent variable and the dependent variable.
   - **g.** State the direction of the association that is expected.
2. With these hypotheses in hand, let's see how they hold up using real data! For these tests, you'll be constructing basic cross-tabulations, which allow you to compare two binary variables easily. Start by clicking analyze->descriptives->cross-tabs. Then, type the name of your independent variable in the "columns" box and your dependent variable in the "rows" box. Last, select the "cells" option and make sure that "column" is selected under the percentages window. The output that you get will allow you to see, for instance, if people with a high score on the independent variable also are more likely to have a high score on the dependent variable.

a. Start by cross-tabulating variables *D1* and *supervision*.
   i. How do these results line up with your hypothesis?
   ii. What is the direction of the association, if any?

b. Then, compare the variables *heavytvwatcher* and *studyhard*.
   i. Do these results support your hypothesis?
   ii. What is the direction of the association, if any?

c. Compare the variables *gender* and *drinkingnotbad*.
   i. How do these results compare with your hypothesis?
   ii. What is the direction of the association, if any?

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