Why Do Research?

Alternatives to Social Science Research
What Research Involves—A Scientific Approach
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Conclusion

The sociologist, then, is someone concerned with understanding society in a disciplined way. The nature of this discipline is scientific. This means that what the sociologist finds and says about the social phenomena he studies occurs within a certain rather strictly defined frame of reference.

—Peter Berger, *An Invitation to Sociology,* p. 16

I wrote this text to help you learn about how social scientists do research and so you can conduct your own studies. I consider two main issues in this chapter: why you should learn about doing social research and the basics of what social science research is all about.

Social science research is pervasive, and it affects your daily life as well as that of your family, friends, neighbors, and co-workers. Findings from social science studies appear on broadcast news programs, in magazines and newspapers, and on many Web sites and blogs. They cover dozens of topics and fields: law and public safety, schooling, health care, personal and family relations, political issues, and business activities as well as international and social trends. We use the knowledge and principles of social science research, directly or indirectly, as we engage in relationships with family, friends, and co-workers, participate in community life or public policy, and make daily decisions in business, professional life, and health care. Social research is not just for college classrooms and professors; high school teachers, parents, business owners, advertisers, managers, administrators, officials, service providers, health care professionals, and others use its findings and principles. They use them to raise children, reduce crime, manage health concerns, sell products or services, digest news events, and so forth. There is little doubt about the importance and centrality of social science research. Despite scattered criticism to the contrary, research is highly relevant for understanding social life generally and to the decisions you make each day.

To see the practical relevance of social research, let us consider a couple raising a three-year-old child. One study (Wrigley and Derby, 2005) found that paid child care is quite safe but also discovered striking differences in fatality rates across various types of care. Center-based care is far safer than care provided in private homes. Another study (Bridges et al., 2007) showed that center-based care significantly raises a child's reading and math scores, but it has a negative effect on socio-behavioral measures (e.g., the child exhibits less cooperation, more aggression). Children who start at ages two to three get the largest benefit rather

than younger or older children. Active parental involvement with a child lessens any negative behavioral consequences from child care. Another study (Love et al., 2003) showed that child care centers vary widely in quality. Quality of care makes a bigger difference than amount of time in care or whether parents or a care center is providing the care. Another study (Sosinsky, Lord, and Zigler, 2007) learned that care center quality was generally higher in nonprofit, nonreligiously affiliated centers than other types. Based on these findings, a couple may decide to look for a specific type of child care center, devote time to checking into the quality of care it offers, and make special efforts to encourage their child's social skill development. The studies are not only relevant for specific parents but also have implications for public policy and how a community addresses child care issues.

Social science research yields valuable information and expands our understanding, but it is not 100 percent foolproof. It does not guarantee perfect results every time or offer "absolute truth." This may be why some people distrust research-based knowledge or why some people, including a few media commentators, even ridicule professional researchers and study results. Despite some derision, in a head-to-head comparison with the alternative ways we can learn about the world and make decisions, research readily wins hands-down. This is why professionals, educated people, and responsible leaders consistently turn to the methods, principles, and findings of social research when they want to learn more or make important decisions.

This text considers both the methodology and methods of social science research. The terms may seem to be synonyms, but methodology is broader and envelops methods. *Methodology* means understanding the entire research process—including its social-organizational context, philosophical assumptions, ethical principles, and the political impact of new knowledge from the research enterprise. *Methods* refer to the collection of specific techniques we use in a study to select cases, measure and observe social life, gather and refine data, analyze data, and report on results. The two are closely linked and interdependent.

Reading and doing social research can be exciting: It is a process of discovery in which we learn many new things. Doing social science research requires persistence, personal integrity, tolerance for ambiguity, interaction with others, and pride in doing top-quality work. It also requires logical thinking, carefully following rules, and repeating steps over and again. In the research process, we join theories or ideas with facts in a systematic way. We also use our creativity. To conduct a study, we must organize and plan. We need to select research methods appropriate to a specific question. We must always treat the study participants in an ethical or moral way. In addition, we need to communicate to others how we conducted a study and what we learned from it.

In this chapter, we consider some alternatives to social science research and why research is preferred. We next examine how the enterprise of scientific research works, including the steps in doing a research study and types of social science studies.

ALTERNATIVES TO SOCIAL SCIENCE RESEARCH

In this section, we look at four commonly used alternatives to social science research that many people rely on to acquire knowledge and make decisions:

- Personal experience and common sense
- Experts and authorities
- Popular and media messages
- Ideological beliefs and values

Knowledge from Personal Experience and Common Sense

If something happens to us, if we personally see it or experience it, we probably accept it as true. Personal experience or "seeing is believing" is a powerful type of knowledge. Unfortunately, it can also lead us astray. Something similar to an optical illusion or mirage can occur. What appears to be true actually is due to an illusion, yet the power of immediacy and direct personal contact is so strong that we easily fall for illusions without even realizing it.

This is why many people insist on believing what they personally experience rather than what they learn by reading a carefully conducted research study that was designed to avoid the errors of personal experience. This is especially true when research studies contradict what personal experience or common sense tell us. Moreover, errors of personal experience reinforce each other. A few people even purposely use the distortions of personal experience to mislead others through propaganda, cons or fraud, magic tricks, political manipulation, and advertising gimmicks.

Entire subfields of research are devoted to uncovering the ways we misjudge, over- or underestimate, and make mistakes. Here is an example: Women tend to stick with skin creams that do not work. Moreover, the less effective a beauty product or treatment, the more likely they will keep using it. These are the findings of a study of 300 women, ages 27 to 65, who were trying to achieve a more youthful appearance by using creams, vitamins, and other beauty treatments. The findings were not what we might expect: The women were most loyal to products and treatments when they didn't work! Among women who felt that the treatments were not working, 27 percent stopped using them. Among women who felt the treatments were successful, 55 percent stopped using them. The researchers think the women keep doing something that did not work because when people don't feel good about themselves, fear is a more powerful motivator than success. Fear about looking older spurred the women to keep trying even when products don't work.[1]

While studies that uncover our tendency to misjudge are fun to read, they point to a general principle: Everyday reasoning and perceptions are imperfect and subject to error. More significantly, we rarely notice or catch such errors right away if at all.

Knowledge from personal experience, common sense "facts," and reasoning might be correct, but they can lead us astray (see Expansion Box 1, What We Think We Will Do and What We Actually Do). For example, common sense says that distributing free condoms in high schools will encourage teens to engage in sexual activity or that imposing harsh punishment, such as the death penalty, decreases violent crimes—yet numerous studies suggest that both of these beliefs are false. Most people think an eyewitness account of a crime is ideal, but studies show they are highly inaccurate. Many of us worry about tragic accidents and horrific events, such as a plane crash or a school shooting. However, we tend to worry about the "wrong" things because our estimates of something happening are far from actual probabilities based on careful studies. Likewise, we can be misled by surface appearances. Many people purchased a large, powerful-looking SUV for its safety at a time when crash tests and accident records showed SUVs to be less safe than many meeker looking cars.[2]

Erroneous "common sense" misperceptions have real consequences. Moreover, the media often repeat and spread the misperceptions, schools or businesses make decisions based on them, and lawmakers and politicians advance new laws or policies founded on them. We often make the following

EXPANSION BOX 1

What We Think We Will Do and What We Actually Do

Social scientists note a paradox: Most people strongly condemn overt racism, yet acts of blatant racism still occur. To examine this, Kawakami and associates (2009) conducted an experiment. They thought perhaps people inaccurately estimate what they would feel and do if they were to witness racism. To examine this, they asked non-Black students how they would feel and what they thought they would do if a racist act occurred. Most predicted that they would be very upset. However, when the researchers staged a racist act in front of them, most of the students showed little distress. Most said they would avoid a person who made a crude racist comment, but again what people said did not match their actual behavior. Study results suggest that one reason racism continues is that many people who believe they would feel upset or take action actually respond with indifference when an act of racism actually occurs. Apparently, we are not good at predicting how we will act in real situations when they happen.

five errors in our everyday decisions, but the research process tries to reduce such errors.

- Overgeneralization
- Selective observation
- Premature closure
- Halo effect
- False consensus

1. Overgeneralization occurs when we have some believable evidence and then assume that it applies to many other situations as well. Note the word "over." Generalization can be appropriate but it is limited. We can generalize a small amount of evidence to a broader situation but only if we do so with great care. Unfortunately, many of us tend to generalize far beyond what is acceptable with limited evidence. We often generalize from what we know to unknown areas. For example, over the years, I have personally known five people who are blind. All of them were very outgoing and friendly. Can I conclude that all people who are blind are friendly? Do the five people with whom I had personal experience fully represent all people on the planet who are blind?

2. Selective observation is slightly different than overgeneralization. It occurs when we take special notice of certain people or events and then generalize from them. Most often we focus on particular cases or situations, especially when they fit preconceived ideas. We also tend to seek out evidence that confirms what we already believe. At the same time, most of us tend to overlook the entire range of cases. We often dismiss contradictory information as being an exception we can ignore. For example, I believe people who are overweight are more outgoing and friendly than thin people. My belief comes from stereotypes learned from my parents and media sources. I observe people who are overweight and, without being aware, pay more attention to their smiling, laughing, and so on. I notice thin people more when they are looking serious, distracted, or angry. Without realizing it, I notice people and situations that reinforce my preconceived way of thinking. Studies also document our tendency to "seek out" and distort memories to make them more consistent with what we already think.

3. Premature closure operates with and inforces the first two errors. It occurs when we feel we have the answer and no longer need to listen, seek information, or raise questions. For practical purposes, at some point, we need to stop gathering information and come to a decision. Unfortunately, most of us are a little lazy or get a little sloppy. We gather a small amount of evidence or look at events for a short time and then think we have it figured out. We look for evidence to confirm or reject an idea and stop after getting a small amount of evidence and jump to conclusions.

4. The **halo effect** occurs when we overgeneralize from what we believe to be highly positive or prestigious. We give a halo to, or a positive reputation to, things or people we respect. This halo "rubs off" on other things or people about which we know little. Thus, I pick up a report by a person from a prestigious university, say, Harvard or Cambridge University. I assume that the author is smart and talented, and I expect the report to be excellent. I do not make the same assumption about a report written by someone from Unknown University. I form an opinion in advance, and I do not approach each report on its own merits alone. Perhaps a celebrity or person I trust endorses a product or political candidate about which I know little. I use my positive feelings as a substitute for doing the work of finding out for myself or as a shortcut when making decisions.

Overgeneralization Statement that goes far beyond what can be justified based on the data or empirical observations that one has.

Selective observation Process of examination in a way that reinforces preexisting thinking rather than in a neutral and balanced manner.

Premature closure Act of making a judgment or reaching a decision and ending an investigation before gathering the amount or depth of evidence required by scientific standards.

Halo effect Occurrence that allows the prior reputation of persons, places, or things to color one's evaluations rather than evaluating all in a neutral, equal manner.

5. False consensus is a psychological effect documented by dozens of studies (Marks and Miller, 1987). It suggests that we are not good at distinguishing between what we personally think and what we think most other people believe. In short, we tend to see the views of most other people as being similar to our own views. This is not a matter of purposely conforming to and copying a crowd perspective. Rather, most of us feel that our own views are "normal" or "ordinary" in comparison with others. While this might be true, we greatly overestimate how much our views match those of other people. In terms of social events and issues, studies suggest that most of us are not very good at judging the thoughts of people around us.

Social research helps address the errors of personal experience. Research standards, rules, and principles are designed to reduce the misjudgment, bias, and distorted thinking that frequently occurs with personal experience.

False consensus A tendency to project one's way of thinking onto other people. In other words, the person assumes that everyone else thinks like he or she does.

Knowledge from Experts and Authorities

Most of what we know probably comes from our parents, teachers, and experts as well as from books, film, television, the Internet, and other media. Often we accept something as being true because someone with expertise or in a position of authority says it is so or because it appears in an authoritative, trusted source. This is using authority as a basis of knowledge. In many ways, relying on the wisdom of experts and authorities is a quick, simple, and inexpensive way to learn something. An expert may spend a great amount of time to learn something, and we can benefit from that person's experience and efforts.

Relying on experts has limitations, and it is easy to overestimate someone's expertise. Authorities may speak on fields they know little about; they can be plain wrong. Someone with expertise in one area may extend his or her real authority to an unrelated area. Using the halo effect, an expert on one area may illegitimately act as an authority in a different area. Have you ever seen commercials in which a movie star or football hero tries to convince you to buy a product?

Who decides who is or is not a genuine expert or authority? A person might become a "senior fellow" or "adjunct scholar" in a private "think tank" with an impressive name, such as the Center for the Scientific Study of X. Some think tanks are legitimate research centers, but many are fronts for wealthy special-interest groups who want to engage in advocacy politics. No regulations control the titles of think tanks, and anyone can become a "scholar" in the group. Think tanks enable an "expert" to make authoritative statements to the mass media, giving the impression of being neutral and knowledgeable. Such people may lack real expertise and make statements based on opinion or ideology, not on research.[3] Later in this chapter, you will read about how the scientific community operates and how it determines who is a genuine expert.

Even if we locate legitimate experts in a specific field, they may disagree. Perhaps you have heard the dozens of contradictory and confusing research-based recommendations about health and diet. You might ask what is so great about research if there is so much disagreement. This situation happens because much of what fills the mass media using the words "research" or "scientific" does not involve scientific research. Unfortunately, the media often use "research" when technically no real research backs a statement. Nonetheless, scientists or experts do not agree 100 percent of the time. In many areas—the best diet, health practice, public policy, or climate change—there is some disagreement. Later in this chapter, you will read about the principles of science and the operation of the scientific community and see how disagreement arises and is resolved as part of the process of scientific research.

More than finding an expert, it is important for us to learn how to think independently and evaluate research on our own. Always relying on experts and authorities is not consistent with the principles of a free, democratic society. Experts might promote ideas that strengthen their power and position. We lose the ability to decide for ourselves if we follow only the authorities. This is a reason to learn about research and acquire the skills so we can evaluate strong from weak studies.

Knowledge Based on Popular and Media Messages

Beyond relying on common sense, personal experience, and experts, we may try to extend our knowledge by talking to others and picking up what we can from the media. This is a good idea, but it has serious limitations. Talking to others may be helpful, but studies have found that most people are weak with regard to scientific literacy, geographic knowledge, and clear, logical thinking. This is true even in a rich, advanced, and educated country like the United States in the twenty-first century. (See Expansion 2, Scientific Literacy Discussion later in this chapter.) Our ability to use advanced technology (an iPhone, geographic positioning system, or car with advanced equipment) does not mean we generally think in a rational, scientific way. A 2006 survey of young men and women ages 18–24 found about half could not locate the states of New York or Ohio on a U.S. map (50% and 43%, respectively) and a majority (63%) could not find Iraq on a map of the Middle East despite nearly constant news coverage since the U.S. invasion in March 2003. Large proportions of the U.S. population believe in phenomena that science rejects, such as UFOs (34%), horoscopes and astrology (31%), ghosts and goblins (51%), witches (34%), or a devil (61%).[4]

Average levels of formal schooling have risen, but many people lack factual knowledge, rely on inaccurate information, or cling to nonlogical thinking. Some people go through schooling but learned little or do not continue to apply the knowledge, skills, or thinking they acquired in their school years later in their daily life or in job decisions. Also, many people "follow the herd," or rely on mass opinion. The mass media often echoes mass opinion without serious evaluation. As you know well, just because most people believe something is true does not make it true. However, many of us just follow "what most other people think" even thought it might be wrong.

Many of us rely on the mass media (i.e., film, television, newspapers, magazines, and Internet sources) for information. Unfortunately, the media tend to jumble together different types of statements—ones that are based on sound research and ones without real backing. In addition, the media can distort social issues. The media tend to perpetuate the cultural myths or create "hype" that a serious social problem exists when it may not. We may hear of a terrible problem in the mass media, but with closer inspection and a little research, we may learn that it was seriously overstated.

Road Rage Example

Americans hear a lot about road rage. *Newsweek* magazine, *Time* magazine, and newspapers in most major cities have carried headlines about it. Leading national political officials have held public hearings on it, and the federal government gives millions of dollars in grants to law enforcement and transportation departments to reduce it. A California psychologist now specializes in this disorder and has appeared on several major television programs to discuss it.

The term "road rage" first appeared in 1988, and by 1997, the print media were carrying more than 4,000 articles per year on it. Despite media attention about "aggressive driving" and "anger behind the wheel," there is no scientific evidence concerning road rage. The term is not precisely defined and can refer to anything from gunshots from cars, use of hand gestures, running bicyclists off the road, tailgating, and even anger over auto repair bills! All of the data on crashes and accidents show declines during the period when road rage reached an epidemic.

What instead happened was that media reports fueled perceptions of road rage. After hearing or reading about road rage and having a label for the behavior, people started to notice rude driving behavior and engaged in selective observation. We will not know for sure until it is properly studied, but the amount of such behavior appears not to have changed. It may turn out that the national epidemic of road rage is a widely held myth stimulated by reports in the mass media.

Holiday Havoc Example

Newspapers and television reports are filled with dire warnings about the many traffic accidents that occur on holidays. Thus, the Fourth of July weekend

holiday in the United States is presented as very deadly with an average of 161 people killed each year, yet the holiday period may be no more dangerous than other times and may even be a bit safer! How can this be? After a careful comparison with other weekends and accounting for the extra amount of driving, the holiday's accident rate is not very different. Safety advocates publicize and distort statistical information in the media to encourage people to drive more safely.

Lesson

Road rage and holiday havoc are hardly unique situations; misrepresentation happens with many social issues. "Problem promoters," especially in the broadcast media, highlight dramatic cases or selectively use statistical information to generate attention and agitate the public about a social problem. The media reports are not so much wrong as they are misleading. They are more effective for public persuasion than is giving a carefully documented presentation of the entire picture. If we rely on mass media reports to learn about the social world, major trends, or serious problems, we can easily be misled (Best, 2001; Fumento, 1998; and Wald, 2004).

Studies have documented poverty, crime, and many other concerns shown in film, on television, and in magazines do not accurately represent social reality. The writers who create or "adapt" real life for television shows and movie scripts often distort reality. This is rarely done intentionally; rather, they repeat misinformation they have picked up, and their primary goal is to entertain. For example, about only 5 of 400 films that portray psychiatric treatment do so accurately. Likewise, media reports on the size of the Muslim population in the United States are two to three times more than scientifically based estimates suggest. African Americans were 62 percent of all poor people shown in newsmagazine photos and 65 percent on television news, yet in the true racial mix of poor people, only 29 percent are African Americans. What we see on television or visually in photos strongly shapes our views on social issues. Media distortions mean that if we rely on the media for knowledge of the social world, we will often have inaccurate knowledge.[5]

In addition to informing and entertaining us, the media provide a forum in which competing interests try to win over public support. Those for or against a cause will mount public relations campaigns and use the media to shape public thinking. As mentioned earlier, advocacy think tanks sometimes have false "experts" to discuss topics in the media. Also, in recent years, the number of video news releases (VNR), also called "fake TV news," has grown dramatically. A VNR is the result of a major company or advocacy group that pays to create sophisticated video that looks just like an independently produced news report. In a VNR, an actor or actress plays an independent reporter. The "reporter" presents what appears to be neutral information or news. In reality, it is a public relations or a promotional statement. Most TV stations show the VNRs without informing viewers about the source. A news report on television might be a type of sophisticated propaganda designed to influence our views on a topic or product. We need to be careful before accepting the mass media as an authority.[6]

Many earnest science writers and serious journalists try to deliver accurate research-based information. However, they can be overshadowed by the volume and prominence of other media messages. As you will see later in this chapter, the mass media are not the best sources to learn about research studies. Instead, rely on the scientific community's communication system that is available at no cost to anyone with some knowledge of research and who devotes the time to explore it.

Knowledge Subordinated to Ideological Beliefs and Values

Despite the strength and availability of social science research, some managers and decision makers consciously reject it and instead promote and defend actions based on their political, religious, or ideological beliefs. For example, in 2001, the U.S. federal government began to fund "faith-based" social programs. Studies questioned the effectiveness of such programs, yet they replaced programs that were supported by research. At the same time, knowledgeable scientists serving in government

TABLE 1 Alternative Explanations to Social Research

EXAMPLE ISSUE: WOMEN ARE MORE LIKELY THAN MEN TO DO LAUNDRY.
Personal experience and common sense: In my experience, men just are not as concerned about clothing or appearance as much as women are, so it makes sense that women do the laundry. When my friends and I were growing up, my mother and their mothers did the laundry, and female friends did it for their boyfriends but never did the men do it.
Experts and authority: Experts say that as children, females are taught to make, select, mend, and clean clothing as part of a female focus on physical appearance and on caring for children or others in a family. Women do the laundry based on their childhood preparation.
Popular and media messages: Movies and television commercials show women often doing laundry and enjoying it, but men hate it and mess it up. So, women must be doing laundry because they enjoy it and are skilled at it. It is what we see everywhere and what everyone says.
Ideological beliefs: The proper, natural place division of labor is for women to take charge of the home, caring for children and overseeing household duties, including cooking, cleaning, and doing the laundry.

agencies were replaced by political appointees, persons committed to certain ideologies. Respected research findings that contradicted ideological views were removed from official health or environmental public information.[7]

At one time, leading U.S. government officials promoted antiscience beliefs. One top aide to President George W. Bush claimed to reject "the reality-based community," defined as people who "believe that solutions emerge from your judicious study of discernible reality" (Suskind, 2004).

For an example of how the alternatives would explain an aspect of social life, see Table 1.

WHAT RESEARCH INVOLVES: A SCIENTIFIC APPROACH

Social science research is central in a "reality-based community." It relies on people carefully studying experiences, events, and facts in social reality. While social research helps us answer questions about the social world, it also raises new questions and may change how we look at the world as well. It relies on the process and evidence of science as such, and it can differ from casual observation, common sense reasoning, and other ways to evaluate evidence, including pure logical-rational reasoning (mathematical or philosophical proof) or legal-judicial procedure. We next examine *science* in the context of doing social science research.

Science

When most people hear the word "science," the first image that comes to mind is likely to be a lab with test tubes, electronic equipment and microscopes, exotic space ships, and people in white lab coats. These outward trappings are a part of science. The physical and biological sciences—biology, chemistry, physics, and zoology—deal with the physical and material world (e.g., rocks, plants, chemical compounds, stars, muscles, blood, electricity). These natural sciences are at the forefront of new technology and receive a great deal of publicity. Most people first think of them when they hear the word "science."

The social-cultural sciences (such as anthropology, economics, human geography, psychology, political science, and sociology) involve the study of human social-cultural life: beliefs, behaviors, relationships, interactions, institutions, and so forth. Just as we apply knowledge from the physical and biological sciences in related, more pragmatic fields (such as agriculture, aviation, engineering, medicine, and pharmacology), we apply social science knowledge to practical concerns in related

applied areas (such as counseling, criminal justice, education, management, marketing, public administration, public health, social work, and urban planning).

Some people call social sciences "soft sciences." This is not because the fields lack rigor but because their subject matter—human social life—is highly fluid, formidable to observe, and difficult to measure precisely. The subject matter of a science (e.g., human attitudes, protoplasm, or galaxies) shapes the techniques and instruments (e.g., surveys, microscopes, or telescopes) it uses.

Science is a human invention. Today's science emerged out of a major shift in thinking nearly 400 years ago. It began with the Age of Reason or Enlightenment period in western European history (1600s–1700s). The Enlightenment Era ushered in new thinking that included logical reasoning, careful observations of the material world, a belief in human progress, and a questioning of traditional religious and political doctrines. It built on past knowledge and started by studying the natural world. Later it spread to the study of the social world. A dramatic societal transformation, the Industrial Revolution, spread scientific thinking. The advancement of science and related applied fields did not just happen on its own—it was punctuated by the triumphs and struggles of individual researchers. It was also influenced by significant social events, such as war, economic depression, government policies, and shifts in public support.

Before scientific reasoning grew and became widespread, people relied on nonscientific methods. These included the alternatives discussed previously as well as other methods less accepted today (e.g., oracles, mysticism, magic, astrology, and spirits). Such systems continue to exist, but science is now generally accepted. We still use nonscientific methods to study topics defined as outside the scope of science (e.g., religion, art, literary forms, and philosophy).

Science refers to both a system for producing knowledge and the knowledge that results from that system. Science evolved over centuries and continues to slowly evolve. It combines assumptions about the world; accumulated understandings; an orientation toward knowledge; and many specific procedures, techniques, and instruments. The system of science is most tangible and visible as a social institution, the scientific community (see discussion of it later in this section).

The knowledge that science yields is organized into theories and grounded in empirical data. Let us examine three key terms: *theory*, *data*, and *empirical*. Many people confuse theory with opinion, unfounded belief, or wild guess. "Whereas a scientist understands theory to be a well-grounded opinion . . . the general public understands it as 'just a theory,' no more valid than any other opinion on the matter" (Yankelovich, 2003:8). For now, we can define **social theory** as a coherent system of logically consistent and interconnected ideas used to condense and organize knowledge. You can think of theory as a map that helps us better visualize the complexity in the world, see connections, and explain why things happen. We use data to determine whether a theory is true and we should retain it or is false and needs adjustments or can be discarded. **Data** are the forms of empirical evidence or information carefully collected according to the rules or procedures of science. **Empirical** refers to evidence or observations grounded in human sensory experience: touch, sight, hearing, smell, and taste. Scientific researchers cannot use their senses to observe directly some aspects of the world (e.g., intelligence, attitudes, opinions, emotions, power, authority, quarks, black holes of space, force fields, gravity). However, they have

Social theory A system of interconnected ideas that condenses and organizes the knowledge about the social world and explains how it works.

Data Numerical (quantitative) and non-numerical (qualitative) information and evidence that have been carefully gathered according to rules or established procedures.

Empirical Description of what we can observe and experience directly through human senses (e.g., touch, sight, hearing, smell, taste) or indirectly using techniques that extend the senses.

created specialized instruments and techniques to observe and measure such aspects indirectly.

Data or empirical observations can be *quantitative* (i.e., expressed precisely as numbers) or *qualitative* (i.e., expressed as words, images, or objects). Later, you will see how we can measure aspects of the social world to produce quantitative or qualitative data.

Pseudoscience, Junk Science, and "Real" Science

Across the centuries, science achieved broad respect and acceptance around the globe; however, many people still lack scientific literacy (See Expansion Box 2, Scientific Literacy) or confuse real science with **pseudoscience**. The prefix *pseudo* is Greek for false or counterfeit. We face a barrage of pseudoscience through television, magazines, film, newspapers, highly advertised special seminars or workshops, and the like. Some individuals weave the outward trappings of science (e.g., technical jargon, fancy-looking machines, complex formulas and statistics, and white lab coats) with a few scientific facts and myths, fantasy, or hopes to claim a "miracle cure," "new wonder treatment," "revolutionary learning program," "evidence of alien visitors," or "new age spiritual energy." Experts in pseudoscience might hold an advanced academic degree, but often it is in unrelated academic fields or from a very weak, marginal school.

In addition to experts, magazines or books offer popularized or "pop" social science. Some of these are accurate popularizations written by legitimate social researchers to communicate to a wide public audience. Others look like legitimate social science to a nonspecialist but actually present a distorted picture or a misuse of social science. These authors write the books to promote a particular political or social position in the guise of social science, but they do not meet the standards of scientific community. For example, the famous Hite Report on female sexuality was a seriously flawed study conducted by a nonscientist who seriously distorted actual social relations. Despite its weaknesses, the book became a best seller that was widely discussed on television talk shows and in newspapers. The same is true of the book *The Bell Curve* that made claims of African American intellectual inferiority.[8] Unfortunately, books advertised on television or radio, cited in newspaper articles, or sold at a local bookstore can be filled with opinion, personal beliefs, or seriously flawed research. It is easy for an unwary consumer to be misled and confuse such inaccurate or highly opinionated books with legitimate social science.

Perhaps you have heard the term **junk science**. Public relations firms created this term in the 1980s as a strategy to denigrate actual scientific evidence. They used the term to attack research findings that were presented in courts to document injury or abuses caused by powerful, large corporations. In press releases and public statements, such firms manipulated language to contrast *junk* with *sound* science (i.e., studies that supported their own position). *Sound* and *junk* are rhetorical and imprecise terms. More important, the quality, methodology, or precision of the research for each may not differ in quality. Publicists applied the term "junk science" to any research study, no matter how accurate or rigorous, that they opposed and "sound science" to any research study, no matter how flawed, that they used to challenge opponents. For example, the tobacco industry used junk science as a tactic to criticize research on secondhand smoke and spent millions of dollars to deny the harmful health effects of smoking.[9] The goal was to confuse juries and the public and to create an impression that the scientists lacked consistent research evidence. In contrast to pseudo- or junk science, authentic science comes from the outlook, operations, and products of the scientific community (see the next section).

Pseudoscience A body of ideas or information clothed in the jargon and outward appearance of science that seeks to win acceptance but that was not created with the systematic rigor or standards required of the scientific method.

Junk science A public relations term used to criticize scientific research even if it is conducted properly that produces findings that an advocacy group opposes.

EXPANSION BOX 2

Scientific Literacy

For more than 50 years, leading educators, business leaders, and policy makers stressed the need for quantitative and scientific literacy to perform professional work and make good everyday decisions in a complex world. *Quantitative literacy,* or *numeracy,* is the ability to reason with numbers and other mathematical concepts. A person with quantitative literacy can think in quantitative-spatial terms and apply such thinking to solve problems. They understand how data are gathered by counting and measuring and presented in graphs, diagrams, charts, and tables. A lack of quantitative literacy is called **innumeracy** (Paulson, 1990). **Scientific literacy** is the capacity to understand scientific knowledge; apply scientific concepts, principles, and theories; use scientific processes to solve problems and make decisions; and interact in a way that reflects core scientific values (Laugksch, 2000:76). The Programme for International Student Assessment (PISA) of the Organisation for Economic Co-operation and Development (OECD) carries out international studies of how much students know about science and defines scientific literacy as the following (PISA, 2006:23):

- Scientific knowledge and use of that knowledge to identify questions, acquire new knowledge, explain scientific phenomena, and draw evidence-based conclusions about science-related issues
- Understanding of the characteristic features of science as a form of human knowledge and enquiry
- Awareness of how science and technology shape our material, intellectual, and cultural environments
- Willingness as a reflective citizen to engage in science-related issues and with the ideas of science

People who lack quantitative and scientific literacy easily accept pseudoscience and make judgment errors. Innumeracy also leads journalists to report inaccurate news and to readers/viewers lacking sufficient skepticism to evaluate the reports. Innumerate people make poor financial investment decisions and often lose money on gambling and related activities because they do not understand basic math concepts. People who lack these types of literacy are poor at assessing risk. Their prospects for a career as a technical-managerial professional, the fast growing, high-income part of the labor market, are poor.

You may think that those people are not like you, in a technologically advanced, ultra-modern society. However, people can use modern technology (computers, cell phones, iPods, airplanes, and the like) and retain prescientific thinking or rely on magic or supernatural beliefs to explain events make decisions. An ability to use advanced technology does not mean a person thinks in a rational, scientific way.

Only 25–28 percent of American adults qualify as scientifically literate. Overall, adults in other advanced countries are at about the same general scientific literacy. However, international math and science tests for high school students regularly show that United States ranks about twentieth among other nations. A cross-national study of the United States and nine European nations in 2002–2003 confirmed that American adults are near the bottom in endorsing the theory of evolution compared to other all other advanced nations: only 32 percent in 2009. A June 2007 *USA Today*/Gallup Poll found that 37 percent of Americans rejected the scientific theory of evolution and 56 percent favored a religious explanation instead. A March 2007 poll found that 39 percent said something completely opposite from the opinion of the world scientific community: that scientific evidence does not support evolution. A Pew Research Center for the People poll in 2006 found more than one-half of Americans said schools should teach religious views on scientific issues in public schools and that it should be nationally mandated. A Gallup Poll in 2006 found that over one-half believed that humans did not evolve (Polling Report, 2007). Scientists generally agree on global warming, and 84 percent say the earth is getting warmer because of human activity such as burning fossil fuels, but only 49 percent of the public agrees. Well over 90 percent of scientists favor the use of animals in research and stem cell research compared with slightly

Innumeracy The lack of quantitative literacy; not having an ability to reason with numbers and other mathematical concepts.

Scientific literacy The capacity to understand and apply scientific knowledge, concepts, principles, and theories to solve problems and make decisions based on scientific reasoning and to interact in a way that reflects the core values of the scientific community.

(continued)

EXPANSION BOX 2

(continued)

over half of the public (Pew Research Center for the People and the Press, 2009).

While evolution has been extremely politicized in the United States with some elected officials attempting to impose religious beliefs as science in public schools, Americans also do poorly in terms of general scientific-quantitative thinking and other scientific concepts. Despite getting X-rays, only about 10 percent of the U.S. public knows what radiation is and about 20 percent think the sun revolves around the earth—an idea science abandoned in the seventeenth century ("Scientific Savvy? In U.S., Not Much," Dean, *New York Times,* August 30, 2005). You may think college students know better. Studies found that many college students used illogical "magic" rather than science-based thinking. Large numbers of college students accepted voodoo magical power as a cause of someone becoming ill, and college sports fans believed their thoughts could influence the outcome of a basketball game as they watched it on television (Pronin, Wegner, McCarthy, and Rodriguez, 2006).

The Scientific Community

The scientific community brings science to life; it sustains the assumptions, attitudes, and techniques of science. The **scientific community** is a social institution of people, organizations, and roles as well as a set of norms, behaviors, and attitudes that all operate together. It is not a geographic community existing in one physical location nor does everyone know everyone else within it, although its members communicate and interact with one another frequently. Rather, it is a loose collection of professionals who share training, ethical principles, values, techniques, and career paths.[10]

The community is organized like a series of concentric circles. Its rings or layers are based on the productivity and engagement of researchers. At the core are a small number of highly productive, very creative, and intense scientific leaders. They slowly move into and out of the core over time based on career stage and contributions to knowledge. At the fringe or outer ring are millions of practitioners, clinicians, and technicians. They regularly use and apply the knowledge, principles, and techniques first developed and refined by those within the core. Professionals who toil on the outer rings develop a level of expertise in and regularly use various scientific research principles and techniques; however, their knowledge of science may not be as deep as those in the middle or core of the scientific community. Also, those on the outer rings are usually less engaged in advancing the overall enterprise of science (i.e., to generate significant new knowledge). Nonetheless, everyone who uses scientific methods and results of science, whether at the core, middle layer, or outer fringe, can benefit from an understanding of how the scientific community operates and its key principles.

Scientific community A collection of people who share a system of attitudes, beliefs, and rules that sustains the production and advance of scientific knowledge.

The boundaries and membership of the scientific community are fuzzy and defined loosely. There is no membership card or master roster. In some respects, a doctorate of philosophy (Ph.D.) degree in a scientific field is an informal "membership ticket." The Ph.D. is an advanced graduate degree beyond the master's degree that prepares people to conduct independent research. A few members of the scientific community lack a Ph.D. and many people who earn Ph.D.s enter occupations in which they do not conduct research studies. They focus exclusively on teaching, administration, consulting, clinical practice, advising, or sharing knowledge with the wider public. In fact, about one-half of the people who receive scientific Ph.D.s do not follow careers as active researchers.

The core of the scientific community is made up of researchers who conduct studies on a full-time or regular basis, usually with the help of assistants, many of whom are graduate students. Working as a research assistant, more or less as an apprentice, is the best way to learn the details of scientific research. Most core members work at colleges, universities,

or research institutes. Some work for the government, nonprofit organizations, or private industry in organizations such as the Bureau of Labor Statistics, the National Opinion Research Center, and the Rand Corporation. The majority are at approximately 200 major research universities or institutes in about a dozen advanced industrialized countries. The scientific community is scattered geographically, but its members usually work together in small clusters and communicate with one another regularly. The community is widely accepting, and anyone in it can contribute to it. A key principle is to share one's research findings and techniques (i.e., new knowledge) with others in the community. Over time, the community develops a consensus about the significance or worth of the new knowledge based on an unbiased evaluation of it. The process of producing and evaluating new knowledge is highly dynamic with new knowledge being generated on nearly a daily basis.

We do not really know the exact size of the scientific community. As of 2006, roughly 3 percent of the total U.S. workforce was employed in a science or engineering field (U.S. Census, 2008: Table 790). The basic unit in the larger scientific community is an academic field or discipline (e.g., sociology, biology, psychology). Academic fields overlap somewhat, but this gives us a better idea of size. The United States has about 11,000 anthropologists, 16,000 sociologists, and 15,000 political scientists, most with doctoral degrees. These are small numbers compared to practitioners in related technical-professional areas: about 180,000 architects, 950,000 lawyers, and 820,000 medical doctors. Each year, about 600 people receive a Ph.D. in sociology, 15,000 receive medical degrees, and 38,000 receive law degrees.

Recall that only about one-half of people who earn an advanced degree in a scientific field become lifelong, active researchers. During a career, an active researcher may complete only two to ten studies. A small handful of researchers is highly productive and conducts numerous studies, particularly highly influential and widely read ones. At any one time, perhaps one hundred researchers are actively conducting studies on a specific topic within a discipline (e.g., study of divorce or of the death penalty) around the world.[11] New knowledge from their studies could influence the lives of millions of people around the globe for generations to come. This knowledge creation process makes being an active participant in the scientific community or the consumer of new research findings both personally rewarding and exciting.

The Scientific Community's Norms and Values

Social norms regulate behavior in all human communities. During their many years of schooling and regular interactions with one another, researchers learn and internalize professional norms and values. The norms and values are mutually reinforcing and contribute to the unique role of a social scientist. Professional norms express ideals of proper conduct, yet ideals do not always work perfectly in practice. Researchers are real human beings with prejudices, egos, ambitions, and personal lives. Such factors may influence a few researchers to violate the community's norms.[12]

The scientific community does not operate in a vacuum isolated from the "real world." It is affected by social, political, and economic forces. Nonetheless, the norms and values teach us how the scientific community and the larger research enterprise operate. They also provide a guide for the proper way to conduct a research study and provide the principles of good research practice.

The five basic **norms of the scientific community** (see Summary Review Box 1, Norms of the Scientific Community) differ from those in other social institutions (e.g., business, government, law) and tend to set professional researchers apart. For example, consistent with the norm of *universalism,* scientists tend to admire a brilliant, creative researcher even if the person has strange personal habits or a disheveled appearance. Scientists may argue intensely with one another and "tear apart" a carefully prepared research report as part of the norm of *organized skepticism.* Scientists are usually very open and willing to listen

Norms of the scientific community Informal rules, principles, and values that govern the way scientists conduct their research.

SUMMARY REVIEW BOX 1

Norms of the Scientific Community

1. **Universalism.** Regardless of who conducts research (e.g., old or young, male or female) and of where it was conducted (e.g., United States, France, Harvard, or Unknown University), the research is to be judged only on the basis of scientific merit.
2. **Organized skepticism.** Scientists should not accept new ideas or evidence in a carefree, uncritical manner. They should challenge and question all evidence and subject each study to intense scrutiny. The purpose of their criticism is not to attack the individual but to ensure that the methods used in research can stand up to close, careful examination.
3. **Disinterestedness.** Scientists must be neutral, impartial, receptive, and open to unexpected observations and new ideas. They should not be rigidly wedded to a particular idea or point of view. They should accept, even look for, evidence that runs against their positions and should honestly accept all findings based on high-quality research.
4. **Communalism.** Scientific knowledge must be shared with others; it belongs to everyone. Creating scientific knowledge is a public act, and the findings are public property, available for all to use. The way in which the research is conducted must be described in detail. New knowledge is not formally accepted until other researchers have reviewed it and it has been made publicly available in a special form and style.
5. **Honesty**. This is a general cultural norm, but it is especially strong in scientific research. Scientists demand honesty in all research; dishonesty or cheating in scientific research is a major taboo.

to new ideas, no matter how odd they might appear at first. Following *disinterestedness*, scientists tend to be somewhat detached. They see study results, including those from their own research, as being tentative and subject to external evaluation and criticism. They want other social scientists to read and react to their research. A deep belief in openness has led many social scientists to oppose all forms of censorship. This is consistent with the norm of *communalism* or sharing new knowledge without personal ownership, which is like adding an ingredient into a shared soup that we all eat together. However, this does not always work, especially when communalism conflicts with the profit motive. For example, the publication of research findings by scientists in the tobacco, pharmaceutical, and computer chip industries often were suppressed or seriously delayed by corporate officials for whom the profit motive overrode the scientific norm of communalism.[13] Scientists expect strict *honesty* in the conduct and reporting of research. They become morally outraged if anyone cheats in research.

Scientific Method, Attitude, or Orientation

You have probably heard of the scientific method, and you may be wondering how it fits into this discussion. The scientific method is not one thing; it is a collection of ideas, rules, techniques, and approaches used by the scientific community. It grows out of a consensus formed within the community. It is important to grasp the orientation or attitude of science instead of a "scientific method." The scientific community values craftsmanship, pride in creativity, high-quality standards, and plain hard work. As Grinnell (1987:125) stated:

> *Most people learn about the "scientific method" rather than about the scientific attitude. While the "scientific method" is an ideal construct, the scientific attitude is the way people have of looking at the world. Doing science includes many methods; what makes them scientific is their acceptance by the scientific collective.*

The scientific orientation tends simultaneously to be precise and logical, adopt a long-term view, be flexible and open ended, and be willing to share information widely (see Yankelovich, 2003). By contrast, nonscientific thinking is impatient with pursuing great accuracy or rigor, wants definite immediate answers to particular issues that are current now, and tends to be rather possessive and apprehensive about freely sharing everything.

Journal Articles in Science

Perhaps you have seen an article from an academic or scholarly journal. When the scientific community creates new knowledge, the new information

appears in scholarly journals or academic books (called *research monographs*). Most new research findings often first appear as **scholarly journal articles.** These articles are the way that scientists formally communicate with one another and disseminate the research results. The articles are also part of the much discussed "explosion of knowledge." An academic discipline or field may have 50–300 such journals. Each may publish an issue every one or two months, with five to twenty-five articles in each issue. For example, a leader among the sociology journals, the *American Sociological Review,* publishes about 65 articles each year. The scholarly journal article is critical to the research process and the scientific community, but it is not always well understood.[14]

Let us consider what happens once a social scientist completes a research study. First, the scientist writes a description of the study and the results as a research report in a special format. Often he or she gives a 20-minute oral presentation of the report at the meeting of a professional association, such as the American Sociological Association or Society for the Study of Social Problems. He or she gives an oral summary of the research to dozens of social scientists and students and answers questions from the audience. He or she may send a copy of the report to a few other researchers for comments and suggestions. Finally, the researcher sends copies to the editor of a scholarly journal, such as the *Social Forces* or the *Social Science Quarterly.* Each editor, a respected researcher who has been chosen by other scientists to oversee the journal, removes the title page, which is the only place the author's name appears and then sends the report to several referees for a **blind review.** The referees are social scientists who have conducted research in the same topic area. The review is called "blind" because the referees do not know who conducted the research and the author does not know who the referees are. This reinforces the norm of universalism because referees judge the study on its merits alone. They evaluate the research based on its clarity, adherence to high standards of research methodology, and original contribution to knowledge. The referees return their evaluations to the editor, who decides to reject the report, ask the author for revisions, or accept it for publication.

Scholarly journal article An article in a specialized publication that has members of the scientific community as its primary audience; a means to disseminate new ideas and findings within the scientific community.

Blind review A process of judging the merits of a research report in which the peer researchers do not know the identity of the researcher, and the researcher does not know the identity of the evaluators in advance.

Almost all academic fields use peer referees for publication, but not all use a blind review process. Fields such as sociology, psychology, and political science use blind reviews for almost all scholarly journals, often having three or more referees. By contrast, fields such as biology, history, and economics use a mix of review processes; sometimes referees know the author's identity and only one or two review the study. Blind reviews with many referees slow the process and lower acceptance rates.[15] The blind review is a very cautious way to ensure quality control. Its purpose is to advance the norm of organized skepticism and universalism in the scientific community.

Some scholarly journals are widely read and highly respected and receive many more reports than they can publish. For example, major social science journals, such as *American Economic Review, American Sociological Review, American Political Science Review,* and *Social Problems,* accept only 10 to 15 percent of submitted manuscripts. Even less esteemed journals regularly reject half of their submissions. Publication represents tentative acceptance by the scientific community. Publishing a book involves a somewhat different review process that also includes cost and sales considerations, but the acceptance rate is often lower than for journals.[16]

Unlike popular magazines that you see at newsstands that pay authors for their writing, scholarly journals do not pay authors for publishing. In fact, to have their manuscript considered, an author often is required to pay a small fee to help defray administrative costs. Social scientists want to make their research available to informed peers (i.e., other

scientists and researchers) through scholarly journals. Likewise, referees are not paid for reviewing papers. They accept the work as a responsibility of membership in the scientific community. Members of the scientific community impart great respect to researchers who are able to publish many articles in the foremost scholarly journals. The articles confirm that they are highly skilled and leaders in advancing the primary goal of the scientific community: to contribute to the accumulation of scientific knowledge.

Publication of research is the primary way a social scientist gains respect from peers, achieves honor within the scientific community, and builds a reputation as an accomplished researcher. More respect from peers (i.e., knowledgeable social scientists) enables a scientist to move toward the center of the scientific community. Publications and the resulting respect from peers also help a social scientist obtain grant money for further research, fellowships, a following of top students, improved working conditions, lucrative jobs offers, and salary increases.[17]

Even if you never publish a scholarly journal article, you will likely read some of them. They are a vital part of the system of scientific research. Most new scientific knowledge first appears in scholarly journals. Active social scientists and college teachers regularly read the journals to learn about new knowledge being produced and the research methods used.

Science as a Transformative Process

In the research process, social scientists apply various scientific methods to transform ideas, hunches, and questions, sometimes called *hypotheses,* into new knowledge. Thus, the social scientific research process essentially transforms our ideas, theories, guesses, or questions into a "finished product" with real value: new knowledge. The new knowledge can improve our understanding of the social world and its operation. It might be used to help solve problems or to expand future knowledge and understanding.

Many newcomers to social research feel overwhelmed and that doing a study is beyond them. Doing so requires analytic reasoning, complex technical skills, intensive concentration, and a significant time commitment. Yet with time, practice, and education, most college students find they can master the fundamentals of doing a research study. Learning to do social research is no different from learning many other activities. You want to begin small and simple, practice over and again, and learn from your experiences and missteps. Gradually, you will see improvements and be able advance to bigger and more complex endeavors. In addition to assimilating a scientific attitude, you will need to learn how and when to apply specific research techniques. After studying this text, you should grasp both the method and methodology of social science research and be able to conduct research studies.

VARIETIES OF SOCIAL RESEARCH

You may think social scientific research means conducting a survey or an experiment and perhaps using advanced statistics with charts, tables, and graphs. Or you may think it involves carefully observing people as they carry out their everyday affairs in some natural setting such as a café, family reunion, or classroom. Both are partially true. Some social scientific research involves quantitative data, (i.e., data in the form of numbers), but other research uses qualitative data (i.e., non-numerical) without statistics.

You will see that we examine both quantitative and qualitative data and associated approaches to conducting social science research. Both approaches use multiple research techniques (e.g., survey, interview, ethnography) to gather and analyze empirical data. Despite some real differences between quantitative and qualitative research, they overlap a great deal. Unfortunately, advocates of one approach do not always understand or appreciate the other approach. Some social scientists treat the differences in the approaches as being at war with one another. Levine (1993:xii) called the quantitative approach "real social science" and claimed it "won the battle" against qualitative studies. On the other hand, Denzin and Lincoln (2005:ix)

TABLE 2 Quantitative versus Qualitative Approaches

QUANTITATIVE APPROACH	QUALITATIVE APPROACH
Measure objective facts	Construct social reality, cultural meaning
Focus on variables	Focus on interactive processes, events
Reliability the key factor	Authenticity the key factor
Value free	Values present and explicit
Separate theory and data	Theory and data fused
Independent of context	Situationally constrained
Many cases, subjects	Few cases, subjects
Statistical analysis	Thematic analysis
Researcher detached	Researcher involved

Sources: Crewsell (1994), Denzin and Lincoln (2003a), Guba and Lincoln (1994), Marvasti (2004), Mostyn (1985), and Tashakkori and Teddlie (1998).

argued that "the extent to which a qualitative revolution is taking over the social sciences and related professional fields is nothing short of amazing."

Both approaches share core scientific principles, but they also differ in significant ways (see Table 2). Each approach has its strengths and limitations. There are topics or issues where it excel, and classic studies that provide remarkable insights into social life. Social scientists who do quantitative or qualitative research try to avoid both the misjudgments and errors discussed earlier. All social scientists gather data systematically, make careful comparisons, and use critical thinking. By understanding both approaches, you can best understand the full range of social scientific research and use them in complementary ways.

Ragin (1994a:92) explained how the approaches complement each other as data condensers or enhancers:

> *The key features common to all qualitative methods can be seen when they are contrasted with quantitative methods. Most quantitative data techniques are data condensers. They condense data in order to see the big picture. . . . Qualitative methods, by contrast, are best understood as data enhancers. When data are enhanced, it is possible to see key aspects of cases more clearly.*

The ideal is to conduct a multimethod study that draws on the strengths of both the quantitative and qualitative approaches, but this rarely happens for several reasons. Mixing approaches is more time consuming. Few researchers have expertise in more than one approach. Also, each approach uses a distinct logic for guiding the research process, and blending the distinct logics in one study adds significant complexity.

STEPS IN THE RESEARCH PROCESS

The Steps

To conduct a study, we follow a sequence of steps; however, the exact sequence and specific steps vary according to whether we follow a quantitative or qualitative approach and the type of social research study we are conducting. Later you will see that the steps outlined here may be somewhat simplified and idealized from the actual process, but they are still a useful starting point.

Quantitative Approach to Social Research

1. *Select a topic*. This may be a general area of study or an issue of professional or personal interest. Topics are broad, such as the effects of divorce, reasons for delinquency, impact of homelessness, or how elites use the media.

2. *Focus the question*. A topic is too broad for actually conducting a study. This makes the next step crucial: We must narrow the topic to focus on a specific research question that a study can address. Often this requires reviewing the research literature and developing hypotheses that often come from social theory. For example, a broad topic—reasons for delinquency—becomes the focused research question: Are teenage East Asian immigrant males with strong ties to their home culture and who have not assimilated into the new society more likely to engage in delinquent acts than those with weaker home culture ties and who have assimilated? Notice how the initial broad topic, reasons for delinquency, becomes focused. We focus on a specific reason for delinquency (i.e., degree of assimilation) and look at a specific group of people (i.e., teenaged immigrant males from East Asia).
3. *Design the study*. Once we settle on a research question, we need to design the study. Designing a study requires making many decisions about the type of case or sample to select, how to measure relevant factors, and what research technique (e.g., questionnaire, experiment) to employ. At this stage as well, decision making is informed by theory.
4. *Collect data*. After we design a study in detail, we must carefully record and verify information typically in the form of numbers. Next we must transfer numerical data into a computer-readable format if it is not already in that format.
5. *Analyze the data*. This step usually requires the use of computer software to manipulate the numerical data to create many charts, tables, graphs, and statistical measures. These computer-generated documents provide a condensed picture of the data.
6. *Interpret the data*. After we produce charts, tables, and statistics, we must determine what they mean. We examine the analyzed data, use knowledge of the research topic, and draw on theory to answer our research question. We consider alternative interpretations of the data, compare our results with those of past studies, and draw out wider implications of what we have learned.
7. *Inform others.* At this stage, we write a report about the study in a specific format and present a description of both the study and its results (see Figure 1).

We next consider three examples of the quantitative approach to social research. Each is a type of quantitative research that will be the focus of a chapter later in this book: the experiment, sample survey, and existing statistics.

Authors and title of the study: Lowery and colleagues (2007) "Long-Term Effects of Subliminal Priming on Academic Performance"

1. *Select a topic*. Priming and academic performance
2. *Focus the question.* Do undergraduate college students who are "primed" subliminally with intelligence-related words improve their performance on a test? *Subliminally* means to present something in a way so that the receiver is not consciously aware of it. *Priming* occurs when a word, image, or information alerts, prepares or "sets up" a person for a subsquent behavior.

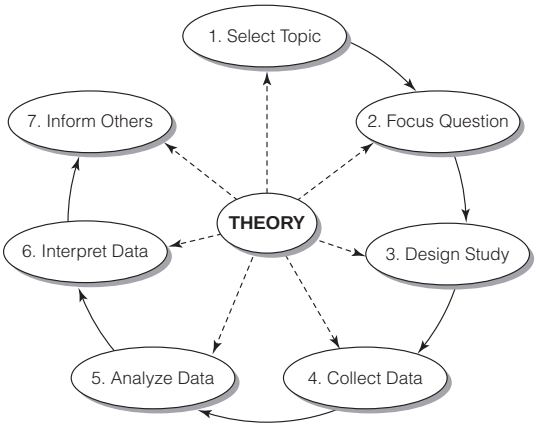

FIGURE 1 Steps in the Quantitative Research Process

3. *Design the study.* The authors conducted two similar experiments. The first was with seventy students in a beginning undergraduate statistics class. The second was with seventy-eight students in an introduction to social psychology class. In both experiments, the authors showed students words on different sides of a computer screen. They told students that the study was about their ability to locate the words (this was not true). One random half of students saw words related to intelligence (e.g., sharp, bright, genius, educated). The other random half saw unrelated words. Students in both experiments took a practice exam. A few days later, they took the exam in their course.
4. *Collect the data.* Data for this study were test results for both the practice and actual exam in both the statistics and introduction to social psychology classes.
5. *Analyze the data.* The authors looked at various tables and conducted statistical tests.
6. *Interpret the data.* The results showed that the students in both classes who had been exposed or "primed" with intelligence-related words scored much higher on both tests.
7. *Inform others.* A description of the study with its results appeared in the scholarly journal *Basic and Applied Social Psychology*.

How does theory fit in? The authors retested a theory of subliminal priming. They looked at whether effects can continue for several days after a priming event.

Authors and title of the study: Penny Edgell and Eric Tranby (2007) "Religious Influences on Understandings of Racial Inequality in the United States"

1. *Select a topic.* Religion and racial attitudes
2. *Focus the question.* Does a white evangelical Christian subculture and belief system encourage or discourage an individualist, nonsupportive stance toward inequality and toward African Americans?
3. *Design the study.* The authors prepared a large-scale national survey in 2003 involving 2,081 randomly selected adults in the United States.
4. *Collect the data.* The randomly selected adults answered many questions on social backgrounds, religious practice and belief, explanations of racial inequality, and beliefs about African Americans in a 30-minute telephone interview.
5. *Analyze the data.* The authors looked at numerous tables with percentages and statistical tests.
6. *Interpret the data.* The authors found that survey respondents with strong conservative Protestant Christian beliefs and who were most involved in religious activities favored individualistic explanations of Black inequality (i.e., personal failings, lack of motivation) over structural explanations (i.e., racial discrimination). In addition, among conservative Christians, the views of women differed from men, and the educated from the less educated.
7. *Inform others.* The authors prepared a description of the study with its results that they submitted to the scholarly journal *Social Problems.*

How does theory fit in? The authors examined a theory suggesting that a white evanglical subculture fosters particular attitudes about social and political issues; it deemphasizes structural explanations (discrimination, government help) and emphasizes individualist, self-help explanations.

Authors and title of the study: Rory McVeigh and Julian Sobolewski (2007) "Red Counties, Blue Counties, and Occupational Segregation by Sex and Race"

1. *Select a topic.* Social inequality and voting
2. *Focus the question.* Did occupational segregation by gender and race—a major source of social inequality—influence how people voted in the 2004 U.S. presidential election? *Occupational segregation* occurs when one group (e.g., one gender, one race) almost exclusively holds a type of job.
3. *Design the study.* The authors identified specific factors for which the government collects data at the county level: choice of presidential

candidate and occupational segregation by race and gender. They also considered features of the labor market in a county (e.g., racial mix of the county, educational credentials of women and non-Whites, degree of mobility into a county) that might threaten or weaken the degree of occupational segregation.

4. *Collect the data.* Data came from the U.S. census on occupations, demographics, and voting.
5. *Analyze the data*. The authors examined numerous correlations, charts, and statistical tests.
6. *Interpret the data.* The authors found that both occupational and sex segregation in county-level labor markets to be related to election outcomes. In counties that had equal or integrated labor markets, the Democratic party candidate received more votes. In counties with highly segegrated labor markets, especially with other conditions that threatened to undermine the segegration, the Republican party candidate received more votes.
7. *Inform others.* The authors submitted a description of the study with its results to the scholarly journal *American Journal of Sociology*.

How does theory fit in? The authors used ethnic competition theory and split labor market theory to explain how county-level inequality influence the local political climate and voting behavior.

Qualitative Approach to Social Research. Many social scientists who adopt a qualitative approach follow a slightly different set of steps than they use in quantitative studies. These steps also vary according to the specific qualitative research methods used. In addition, this approach is more fluid and less linear, or step by step.

1. *Acknowledge self and context*. Social scientists also start with a topic as with quantitative research, but the start is simultaneous with performing a self-assessment and situating the topic in a socio-historical context. Many qualitative researchers rely on personal beliefs, biography, or specific current issues to identify a topic of interest or importance.
2. *Adopt a perspective*. Qualitative researchers may ponder the theoretical-philosophical *paradigm* or place their inquiry in the context of ongoing discussions with other researchers. Rather than narrowing down a topic, this means choosing a direction that may contain many potential questions.

3–6. *Design a study and collect, analyze, and interpret data*. As with quantitative research, a qualitative researcher will *design a study*, *collect data*, *analyze data*, and *interpret data*. More so than the quantitative researcher, a qualitative researcher is likely to collect, analyze, and interpret data simultaneously. This is a fluid process with much going back and forth among the steps multiple times. Often the researcher not only uses or tests a past theory, but also builds new theory. At the *interpret data* stage, the qualitative researcher creates new concepts and theoretical interpretations.

7. *Inform others*. This is similar for both approaches, but here again, the style of a report varies according to the approach used. (See Figure 2.)

Next we consider examples of two qualitative studies. Each illustrates a type of study that is the focus of a chapter, field research-ethnography, and historical-comparative research.

Author and title of the study: Sudhir Venkatesh (2008) "Gang Leader for a Day"

1. *Acknowledge self and context*. This author describes his personal interest and background and explains how an interest in inner-city poverty shifted to gangs in an urban housing project.
2. *Socio-cultural context.* The physical-social setting was an urban housing project in South Chicago located near the University of Chicago where the author was a graduate student. Drug-dealing gangs operated in the projects that had

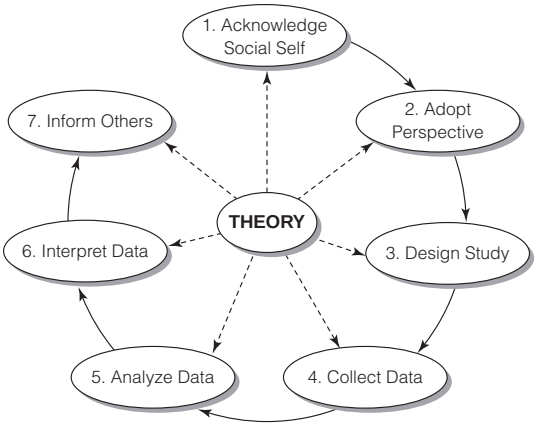

FIGURE 2 Steps in the Qualitative Research Process

very high rates of poverty and that were overwhelming occupied by African Americans.

3–6. *Design, collect, analyze, and interpret.* The author initially tried to conduct a quantitative survey but dropped this technique. Instead, he observed and talked with gang members and people in the housing project several days a week over eight years between 1990 and 1998 and took very detailed notes every day on what he saw, heard, participated in, and thought.

7. *Inform others.* Results appeared in a semiacademic book *Gang Leader for a Day* about 10 years after the original research study ended, although the author had written several studies and books related to the same general research in the meantime.

How does theory fit in: As with many ethnographies, the study is largely descriptive with little theory. The author provides a little theory on how a gang provides social organization and services to a local community, the economics of drug dealing, and how local poor people must negotiate with a range of others for their day-to-day survival.

Authors and title of the study: Holly McCammon and six colleagues (2008) "Becoming Full Citizens: The U.S. Women's Jury Rights Campaign, The Pace of Reform, and Strategic Adaptation"

1. *Select a topic.* Women gaining full citizenship rights

2. *Socio-cultural context.* U.S. women did not get the right to serve on juries after they won the national right to vote in 1920. The right was not upheld by the Supreme Court until 1975. Women gained the right at dramatically different times in different states (also sometimes losing and regaining the right). Advocated by women's groups, the issue was hotly contested for many decades.

3. *Design, collect, analyze, and interpret.* The seven authors devoted the most part of two years to gathering data on jury-rights movements in fifteen states between the 1910s and the late 1960s. They visited twenty-two archives (specialized libraries with historical records) in the various states. They examined the records of movement organizations, consulted local newspapers and relevant magazines, and read all relevant legal and political documents (i.e., court decisions, legislative hearings, and statutes) in each of the fifteen states. In addition to analyzing details of each state and movement organization, they looked at the length of time required to enact jury rights for women in each state and classified specific features of each organization and its activities. The major finding was that in states where jury rights were won most quickly, organizations had engaged in strategic actions. They had continuously adjusted their demands, sought a range of political allies, and changed the way they phrased their arguments. In states where progress was very slow, movement groups were sporadic, inconsistent, or inflexible and failed to take advantage of changing conditions.

4. *Inform others.* A description of the study and the results were published in a scholarly journal, *American Journal of Sociology*

How does theory fit in: The authors wanted to explain why some social-political movements

achieve their political goals rapidly while others do so slowly. They built on past social movement theory and advanced the new idea of "strategic adapation" by a movement.

The seven-step process shown in Figures 1 and 2 are oversimplified. In practice, we rarely complete step 1, then leave it entirely to move to step 2, and so on. Research is more of an interactive process, and the steps blend into each other. A later step may stimulate the reconsideration of an earlier one. The process is not strictly linear; it may flow in several directions before reaching an end. Research does not abruptly end at step 7. This is an ongoing process, and the end of one study often stimulates new thinking and fresh research questions.

The seven-step cycle is for a single research study. Each study builds on prior research and contributes to a larger body of knowledge. The broader process of conducting scientific research and accumulating new knowledge requires many researchers conducting numerous studies. A single researcher may work on multiple studies at once, or several researchers may collaborate on one study. Likewise, one study may result in one or several scholarly articles, and sometimes one article will report on several smaller studies.

WHY LEARN HOW TO CONDUCT SOCIAL RESEARCH?

Professional social scientists working in universities, research centers, and government agencies, often with assistants and technicians, conduct research. Results of their studies typically appear in specialized scholarly journals or college textbooks. Their studies expand our understanding of the social world and have an indirect impact on broad public knowledge. One reason you may want to learn how to conduct social science research is to advance knowledge of the social world in ways that avoid the many failings of alternative, nonscientific ways that people create knowledge.

People who work for newspapers, television networks, market research firms, schools, hospitals, social service agencies, political parties, consulting firms, government agencies, personnel departments, public interest organizations, insurance companies, and law firms also conduct social research. They do so as part of their jobs and use the same social science research techniques. They use the results of their studies internally and do not widely share or publish them, yet research-based findings yield better informed, less biased decisions than the guessing, hunches, intuition, and personal experience that were previously used (see Summary Review Box 2, The Practitioner and Social Science). Beyond expanding knowledge, a second reason you may want to learn how to conduct social research is for a practical reason: to improve decision making.

Unfortunately, a few people and organizations misuse or abuse social research: use sloppy research techniques, misinterpret findings, manipulate stud-

SUMMARY REVIEW BOX 2
The Practitioner and Social Science

Science does not and cannot provide people with fixed, absolute "Truth." This is so because science is a slow, incomplete process of reducing untruth. It is a quest for the best possible answers carried out by a collection of devoted people who labor strenuously in a careful, systematic, and open-minded manner. Many people are uneasy with the painstaking pace, hesitating progress, and incertitude of science. They demand immediate, absolute answers. Many turn to religious fanatics or political demagogues who offer final, conclusive truths in abundance. What does this mean for diligent practitioners (e.g., human service workers, health care professionals, criminal justice officers, journalists, or policy analysts) who have to make prompt decisions in their daily work? Must they abandon scientific thinking and rely only on common sense, personal conviction, or political doctrine? No, they, too, can use social scientific thinking. Their task is difficult but possible. They must conscientiously try to locate the best knowledge currently available; use careful, independent reasoning; avoid known errors or fallacies; and be wary of any doctrine offering complete, final answers. Practitioners must always be open to new ideas, use multiple information sources, and constantly question the evidence offered to support a course of action.

ies to find previously decided results, and so on. In addition, some people believe that they are being overly studied or overloaded by research studies. For example, people have refused exit poll studies during elections, and rates of answering surveys have declined. Negative reactions against the misuse of social research can produce negative views toward research in general. A third reason you may want to learn how to conduct research studies is to distinguish legitimate, valuable research from bogus or poorly conducted studies, pseudoscience, and misused research.

CONCLUSION

This chapter presented what social science research is, how the research process operates, and who conducts research. It also described alternatives to social research: ways to get fast, easy, and practical knowledge that often contains error, misinformation, and false reasoning. It showed you how the scientific community works, how social research fits into the scientific enterprise, and how the norms of science and journal articles are crucial to the scientific community. The chapter also outlined the steps of research.

Social science research is for, about, and conducted by *people.* Despite the attention to the principles, rules, or procedures, social research is a human activity. Social researchers are people not unlike you. They developed a desire to create and discover knowledge and now find doing social research to be fun and exciting. They conduct research to discover new knowledge and to understand the social world. Whether you become a professional social researcher, someone who applies a research technique as part of a job, or just someone who uses the results of research, you will benefit from learning about the research process. You will be enriched if you can begin to create a personal link between yourself and the research process.

Mills (1959:196) offered the valuable advice in his *Sociological Imagination*:

> *You must learn to use your life experiences in your intellectual work: continually to examine and interpret it. In this sense craftsmanship is the center of yourself and you are personally involved in every intellectual product upon which you may work.*

KEY TERMS

blind review
data
empirical
false consensus
halo effect
innumeracy
junk science
norms of the scientific community
overgeneralization
premature closure
pseudoscience
scholarly journal article
scientific community
scientific literacy
selective observation
social theory

REVIEW QUESTIONS

1. What sources of knowledge are alternatives to social research?
2. Why is social research usually better than the alternatives?
3. Is social research always right? Can it answer any question? Explain.
4. How did science and oracles serve similar purposes in different eras?
5. What is the scientific community? What is its role?
6. What are the norms of the scientific community? What are their effects?

7. What is the process to have a study published in a scholarly social science journal?
8. What steps are involved in conducting a research project?
9. What does it mean to say that research steps are not rigidly fixed?
10. What types of people do social research? For what reasons?

NOTES

1. See Parker-Pope (2007) on the face cream study and related research.
2. On the limits to self-knowledge, see Wilson and Dunn (2004); on inaccurate eyewitness accounts, Wells and Olson (2003); on inaccurate risk evaluation, Gowda and Fox (2002) and Paulos (2001); on condoms in schools (Kirby et al., 1999); on SUVs, Bradsher (2002).
3. From Rampton and Stauber (2001:274–277, 305–306).
4. Results on geographic information are from *National Geographic* (2006). Results on UFOs, devils, and so forth is from Harris Poll (2003, 2005).
5. On media inaccuracy on psychiatric treatment, see Goode (2002), on the Muslim population, see Smith (2002), and on African Americans in poverty, see Gilens (1996).
6. Video News Reports are described by the Center for Media and Democracy http://www.prwatch.org/fakenews3/summary and Consumer Product Safety Commission http://www.cpsc.gov/businfo/vnrprod.html. Also see Barstow and Stein (2005, March 13), "Under Bush, a New Age of Prepackaged TV News," *New York Times*; Aiello and Profitt (2008).
7. On "faith-based" programs, see Goodstein, "Church-Based Projects Lack Data on Results," *New York Times* (April 24, 2001); Crary, "Faith Based Prisons Multiply," *USA Today* (October 14, 2007); Ferguson et al. (2007); and Reingold et al. (2007). On restrictions of science in government, see Mooney (2005) and Union of Concerned Scientists (2004).
8. See Herrnstein and Murray (1994) and a critique in Fischer et al. (1996).
9. "Junk science" is discussed in Rampton and Stauber (2001:223).
10. For more on the scientific community, see Cole (1983), Cole, Cole, and Simon (1981), Collins (1983), Collins and Restivo (1983), Hagstrom (1965), Merton (1973), Stoner (1966), and Ziman (1968).
11. See Cappell and Guterbock (1992) and Ennis (1992) for studies of sociological specialties.
12. For more on the social role of the scientist, see Ben-David (1971), Camic (1980), and Tuma and Grimes (1981). Hagstrom (1965), Merton (1973), and Stoner (1966) discuss norms of science, and Blume (1974) and Mitroff (1974) talk about norm violation.
13. See Altman, "Drug Firm, Relenting, Allows Unflattering Study to Appear," *New York Times* (April 16, 1997); Markoff, "Dispute over Unauthorized Reviews Leaves Intel Embarrassed," *New York Times* (March 12, 1997); and Barry Meier, "Philip Morris Censored Data about Addiction," *New York Times* (May 7, 1998).
14. Science's communication and publication system is described in Bakanic and colleagues (1987), Blau (1978), Cole (1983), Crane (1967), Gusfield (1976), Hargens (1988), Mullins (1973), Singer (1989), and Ziman (1968).
15. See Clemens and Powell (1995:446).
16. See Clemens and Powell (1995:444).
17. For more on the system of reward and stratification in science, see Cole and Cole (1973), Cole (1978), Fuchs and Turner (1986), Gaston (1978), Gustin (1973), Long (1978), Meadows (1974), and Reskin (1977).