INVESTIGATING COMMUNICATION

AN INTRODUCTION TO RESEARCH METHODS

SECOND EDITION

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INTRODUCTION TO THE RESEARCH CULTURE

We live in an "information society" with a wealth of information at our fingertips. All we have to do is flick on the television with the remote control to see the latest events transpire, even as they happen, or turn on the computer, click the mouse, and cruise the "information highway" in search of the many Internet and World Wide Web sites, databases, and information services offered. A good portion of our life is now spent initiating, processing, arranging, transmitting, disseminating, retrieving, receiving, and/or reprocessing information.

Information is no longer a luxury; it is a necessity on which we depend for survival. The economy of the United States, once driven by agriculture and later by service, is now based on information. And at the global level, "[h]alf of all workers in the industrial world are employed by the rapidly growing information industries" (Dordick & Wang, 1993, p. 2). This means that more people are employed in the information sector than in any other sector of the world's industrial economies. In the United States, 45% of the gross national product is attributable to the value of information products and services, and across the world, the information industry will top $500 billion before the turn of the century (Dordick & Wang).

While there certainly is more information available than ever before, there is a downside: It's getting more and more difficult to distinguish "good" information, that which is valid (or accurate), from "bad" information, that which is not. Not all information is created equally; some information is better than other information because it has been tested and shown to be valid. The key word here is "tested," which means that some *research* has been conducted about it.

If we are to distinguish good from bad information, we need to become competent consumers of how information is produced. In this chapter, we first explore the importance of knowing research methods, for it is absolutely crucial that you be convinced of the need to have a basic understanding of research methods. We then examine some common, everyday ways of knowing and distinguish these from the research process. After exploring some characteristics of the research culture, we return to a discussion of the importance of being a knowledgeable consumer of research, this time in terms of distinguishing good research from pseudoresearch and bad research.

THE IMPORTANCE OF KNOWING RESEARCH METHODS

Can there be any doubt that we value information obtained on the basis of research? Just pick up a newspaper or turn on the television and you will see how much we have become a "research-based" culture. We are bombarded every day with information derived from experiments, surveys or polls, or other research methods about what is good and bad for us (which seems to change daily!), what we value as a society, and even what we are being exposed to by the media (such as reports about the amount of violence on television). And advertising messages designed to get us to purchase products and services are quick to tell us what the "latest research shows." Research has become perhaps *the* most important stamp of approval in our society.

The value of information acquired from research is readily apparent in the world of business.

Virtually all major corporations use research to decide whether and how to launch new products or services, assess their effectiveness, and make changes in what they offer. Research has become part of the ongoing business of doing business.

Even the film industry has jumped on the bandwagon. Movies are now tested at every stage of development, from conception to final product. Roger Birnbaum, president of production at 20th Century-Fox, admitted that every movie produced by his studio is tested with preview audiences (see N. Koch, 1992). The company holds what it calls *research screenings,* where people selected on the basis of important demographics assist the final edit (called *content test screening*) or help the marketing campaign by offering their opinions and suggestions (N. Koch). The original ending to the movie *Patriot Games,* for instance, was found to be confusing to members of a test audience. They preferred an alternative ending mentioned in the questionnaire they were asked to complete, so the director reshot additional footage in line with the preferred ending (N. Koch). While we will never know whether and how much this new ending helped, the movie was a box-office success.

Knowledge of research methods is, thus, of critical importance for success in today's business world. In fact, a 1991 publication by the United States Department of Labor, entitled *What Work Requires of Schools: SCANS* [Secretary's Commission on Achieving Necessary Skills] *Report for America 2000,* identifies ability in "information-acquiring and evaluating data" as one of the five competencies necessary for performing most jobs. (The other four competencies are ability to allocate resources, good interpersonal skills, understanding of systems, and knowledge of technology.) Understanding research-based information, therefore, is an essential business survival skill.

But don't just take our word or the government's word for it; consider what people working in the business world said when we asked them whether the communication research methods course they took in college helps them in their daily work (see Figure 1.1). As their statements show, it was one of the most important—if not *the*

most important—courses they took in terms of being successful in their professions. Ask other people you know in the business world and see what response you get.

The use of research, however, is far more pervasive than simply in the business world; it pervades all aspects of our society. Policy decisions made by community organizations, educational institutions, and federal, state, and local governments, to name but a few, are now made, in part, on the basis of original research conducted and/or extensive reviews of what the available research shows.

And for those of you who might be thinking about going on to graduate school, consider the following testimonies from two former students. The first one is by Joy Cypher, a communication graduate student at the time this was written:

> On entering graduate school, I quickly learned how valuable a good understanding of research methods was for success, not only in my own research, but even in studying the research of others in the communication field. Taking a rigorous methods course during my undergraduate program prepared me to jump into the complex academic conversations of the graduate classroom, the journals, and even the conventions, as a participant and not simply a befuddled observer. Few other things facilitated my success as a graduate student more than a basic knowledge of communication research methods and the theoretical assumptions therein. Such knowledge enabled me to comprehend course material more readily and bolstered my confidence in my own scholarly research—two fundamental building blocks for a successful graduate career.

The second statement is from Dawn Kahn, who was a law student at the time this was written:

> In the first few weeks of law school, we were bombarded with reams of material on numerous perplexing topics and given little—if any—instruction as to what we should do with it. It soon became apparent that the Socratic method was code for "teach yourself." Fortunately, the skills I acquired from my undergraduate communication research methods course helped me to do just that. Those

Maeve Connell-Lucas, Director of a Mediation Center: As the director of two mediation centers, and as a mediator, my goal is to facilitate communication between disputing parties in reaching a mutually acceptable agreement. It is imperative for communication professionals like me to be well-versed in proper research methods. A colleague, for example, recently tried to convince me that one of our programs was not serving clients appropriately. He pointed to a phone survey he had completed as proof that our clients were less than satisfied with our service. I asked to see the survey questions he had used, and saw that they all were slanted to give the answer he wanted (i.e., "What about the mediation service made you feel uncomfortable?"). I suggested to my colleague that we interview a group of previous clients in a focus group. Together, using a list of open-ended, neutral questions, we interviewed the group. Much to his surprise, the clients stated that they actually were very satisfied with our service. My position, thus, calls for accurate information, and research is the key to obtaining it. Even if a communication professional does not do original research, he or she better be able to spot faulty methods used by someone else.

Gary M. Ruesch, Attorney at Law (a nationally known speaker and author on legal issues involving children with disabilities): Lawyers are in the business of persuasion. In the present-day age of information, persuasion more often takes the form of statistics, analysis of studies, and quantifiable research results. As an attorney, I must present information, evidence, and statistics in the most persuasive format possible. In this regard, the communication research methods course I took as an undergraduate provided me with some important tools that I use every day to effectively represent my clients.

Gregg D. Smith, Gangs and Weapons Counselor, Juvenile Center: As a juvenile probation officer working with high-risk youth and their families, case research and planning is an integral part of both my planning and day-to-day operations. The intensity of this job causes great emphasis to be placed on acquiring background data, interpreting documents, and formulating treatment plans. Many of the skills learned in my communication research

methods course have [...] field. In addition, while [...] nator for a gangs and we [...] used many tools learned in [...] course to monitor the contro[...] components of this program. I wo[...] ommend this course to students, for [...] solid foundation in research.

Nancy Tuma, Director, 1010 WallStreet.com: member sitting in my college communication search class and thinking that I would never app[...] any of the material to my everyday life, but I was wrong. As director of a financial news company, research is the lifeblood of much of the work I do. Every morning, I page through research report after report on various stocks, so I know what stocks will be important to watch that day. These research reports help us to develop news stories and to create the groundwork for what our broadcasters will cover every day. Research also gives us an idea of what may happen in the market on various days, as many times the past tells us about the future. There is no way that I could produce my best work without knowing how to effectively use research reports.

John Zorbini, Vice President of Human Resources, Community Memorial Hospital: I consider my coursework in research methods to be of utmost value as I perform my responsibilities as vice president of human resources. Frankly, I would be greatly disadvantaged without it. As a human resource executive, I am entrusted with the most valuable resource of my organization—its people! To make my hospital a desirable place to work, I continuously propose new programs/processes to senior administration and the board of directors. At this level, expectations for flawless, quality work are high, and research is the key. Every proposal I prepare begins with asking the key questions worth answering and then providing the answers. Literature reviews, questionnaire/survey construction, and data analysis are all vital elements of the process. They are expectations of my job. I'm one of those who wondered why I needed coursework in research methods. It only took me as long as my first job to find the answer—success!

skills gave me an almost unfair advantage in Legal Research and Writing, one of the most dreaded courses in the first-year curriculum. While others struggled to understand research methods and were doing rewrite after rewrite of their papers, I was getting "As" on my first drafts. Being able to understand the scientific concept of reliability was invaluable in the course on Evidence. After we learned that the court's primary concern in determining the admissibility of a piece of evidence is whether it is reliable, I was coming up with innovative objections that used principles from the methods course to attack the reliability of evidence, while others limited the bases of their objections to the strict wording in the rulebook. I can honestly say that the communication research methods course was one of the most important courses that helped prepare me for the particular demands of law school and put me far ahead of those who had not taken such a course.

Finally, understanding research methods might help one's personal life. While it may not save a troubled romantic relationship from ending, knowing research methods can and does make a difference in some cases. For example, being able to read and understand research reports that compare products, such as those published in the magazine *Consumer Reports,* can help people make better choices about the products they buy.

And, as a dramatic example of the personal importance of knowing research methods, consider the following story written by Nancy Tuma:

On a personal level, knowing how to comprehend research reports "saved my life." When I was 24, I was diagnosed with cancer and told by my doctors that I would not live to see 33. After reading the research reports that my doctors used to make their diagnosis and prognosis, I was not convinced that what they were telling me was accurate. Since I now knew how to read the reports, I was able to see that the scientific basis used in the reports did not relate to me. I went to medical libraries and researched the situation myself and determined, much to my relief, that the doctors were basing their decisions on research that dealt with women twice my age and who had pathology reports with abnormal cell counts much higher than mine. In fact, I did not even have cancer! For that reason

alone, I will always be grateful that I spent the time and energy to learn what research really is and how to use the reports to my advantage.

We hope that you or those you care about will never be in such a position, but if you are, you too should be able to understand the research-based information you are given.

But being a knowledgeable consumer is difficult because, as Nancy Tuma's experience shows, we don't always get accurate information and conclusions, even from people we trust. Let's take a closer look at the process by which people make claims and offer evidence.

MAKING CLAIMS AND OFFERING EVIDENCE

If there is one thing that researchers, common folk, politicians, educators, top-level corporate executives, journalists, television tabloid reporters, priests, mystics, fortune-tellers, and snakeoil salespeople have in common, it is that they all make **claims,** that is, assertions or conclusions. Opinions, as they say, are a "dime a dozen"; if only we had a dime for every dozen claims, we would be rich beyond our dreams.

Most claims are supported with some form of **evidence,** or reason, although notice how we just got away with asserting a claim without offering any evidence. That is, some reason(s) typically is offered for why a person believes that a claim is true or false.

The validity of a claim obviously is related, to a large degree, to the validity of the evidence in its favor. Of course, the validity of the evidence offered also depends to some extent on the situation. "Because I said so" is not a very good reason for arguing that the Sun travels around the Earth, or vice versa, but it may be a very good reason for engaging in some behavior that your parent, boss, or relational partner wants you to do.

The validity of a claim and the evidence offered for it also depends on the validity of the often unarticulated **warrant,** a statement (another claim) that logically connects the claim and evidence. And some evidence or backing must be given for the warrant as well. The warrant is particularly impor-

tant, for if it is not valid, then the argument advanced by the claim and evidence usually falls apart.

Let's take the example of your university deciding to raise its tuition, an example with which you might be all too painfully familiar (see Figure 1.2). Your university might claim that it must raise tuition because it is operating at a deficit, as documented, let's say, by an independent audit. Underlying this claim and the reasons offered for it is some warrant that connects the claim and the reason. For instance, the warrant could claim that raising tuition is the primary means by which the university improves itself, and some backing (evidence) would then be offered for that warrant, such as profit/loss balance sheets that show that tuition is a primary source of income for the university. If that warrant (or others offered) is not valid, the original claim might be able to be rejected. Thus, for example, if one wanted to attack this argument, it could be done both by challenging the evidence on which the claim is made, but more likely by challenging the warrant that connects the claim and evidence. For instance, the university could look for alternative sources of income, such as financial gifts, to offset the deficit.

In this text, we are primarily concerned with understanding and evaluating the claims, evidence, and warrants tha[...] about what people do, wh[...] ences them to do it, and what[...] and others. That is, we teach cri[...] for evaluating research-based argu[...] cific focus is on research about pe[...] munication behavior, but for now, let's[...] discussion at a general level.

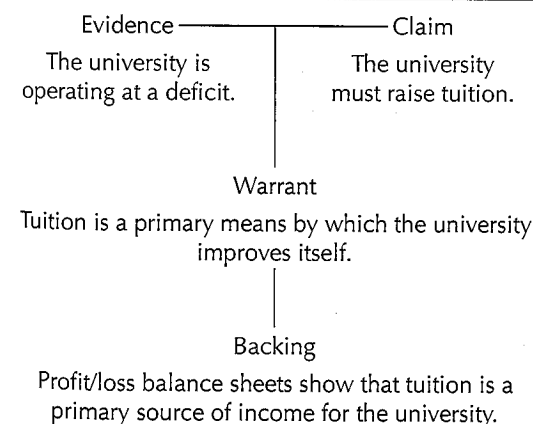Let's start by taking a short true-false test:

1. True or False: Breakfast is the most important meal of the day.
2. True or False: Reading in the dark will ruin your eyes.
3. True or False: Crackling knuckles causes arthritis.
4. True or False: Carrots are good for the eyes.
5. True or False: Chocolate causes acne.
6. True or False: An apple a day keeps the doctor away.

If you are like most people, you probably judged at least some of these statements to be true. But none of these common beliefs is actually supported by science (Kohn, 1990).

These are relatively harmless beliefs, but there are far more scary ones that are potentially harmful. Consider Eve and Dunn's (cited in McCarthy, 1989) survey of 190 high school biology and life science teachers, people we trust to educate young adults. They found that 19% believed that dinosaurs and humans lived at the same time, 20% believed in black magic, and, in the scariest belief of them all, 26% believed that some races were more intelligent than others. Schick and Vaughn (1995) also report a 1990 Gallup poll that shows, among other things, that 49% of U.S. citizens believe in extrasensory perception (ESP), 46% believe in psychic or spiritual healing, 27% believe that extraterrestial beings have visited the Earth, 21% believe in reincarnation, 17% feel they've been in touch with someone who has died, and 14% have consulted a fortune-teller or psychic.

Although we don't have the time to debate these beliefs with those who adamantly hold them, let's think about some typical ways in which people might come to believe these claims and the

FIGURE 1.2   A model of argument

Evidence —————————— Claim

The university is operating at a deficit. | The university must raise tuition.

Warrant

Tuition is a primary means by which the university improves itself.

Backing

Profit/loss balance sheets show that tuition is a primary source of income for the university.

supposed evidence on which they are based. Let's look, therefore, at some everyday ways of knowing.

EVERYDAY WAYS OF KNOWING

Let's call the acceptance of information at face value **everyday ways of knowing.** When we rely on knowledge that we have not questioned or tested, we are using everyday ways of knowing. Five common, everyday ways of knowing are: personal experience; intuition; a uthority; appeals to tradition, custom, and faith; and magic, superstition, and mysticism.

Personal Experience

One way we come to know things is through **personal experience,** experiencing something first-hand. Personal experience certainly serves us well in many instances; many of us probably learned as children not to touch a hot stove after getting burned—a valuable lesson, indeed. Personal experience can also be an excellent starting point for the testing of knowledge. For example, Archimedes, a Greek mathematician, physicist, and inventor, regarded by some historians as the founder of experimental science, was asked by King Hiero of Syracuse, Sicily, to determine whether his crown was made of pure gold or, as he suspected, a mixture of gold and silver. Just when Archimedes was about to give up, he stepped into the bathtub and noticed that the water ran over the edge. He reasoned that the spilled water equaled the volume of his body. At that moment, he realized that he could submerge both the crown and a piece of pure gold that weighed the same and observe whether both objects displaced the same amount of water. Legend has it that he was so excited about his discovery that he ran down the street naked shouting, "Eureka [I have found it]!" The crown did, indeed, displace more water than the same weight of pure gold, which meant that the crown was not made of pure gold, a finding later confirmed by the goldsmith's confession.

Personal experience, however, does not always serve us well. We often believe that what's in our minds and social encounters is generally true. Hence, if someone fears public speaking, that person assumes that most people are judging his or her performance critically. Many police officers who deal frequently with criminals believe that most people are dishonest, while many psychologists who deal primarily with mentally ill patients believe that most people are neurotic. Their opinions are influenced by their personal experience.

Some research indicates that we form inaccurate opinions about everyday events because we are limited in our ability to think about the information available to us. We need to simplify the complexities of life to cope with all the information to which we're exposed. One way we do this is by jumping to conclusions on the basis of very limited knowledge. Nisbett and Ross (1980) found that when making judgments, most people ignore sound generalizations (e.g., what's reported in research from studies of large numbers of people) and give preference to vivid personal experiences. For instance, when presented with two pieces of information—(a) that a valid national poll of 10,000 Volvo owners certified that the car was perfectly reliable, and (b) yesterday you saw your neighbor's Volvo stranded on the road because of engine failure—Nisbett and Ross found that people ignored the first piece of information in favor of the second piece. People, thus, tend to trust firsthand, concrete, and vivid experiences (anecdotal evidence) more than abstract generalizations made on the basis of research, which Nisbett and Ross called the "Volvo fallacy." Although information derived from the study of many people's lives is more trustworthy, it is also remote and pallid and, therefore, easily ignored. Consequently, although research on a large cross section of people indicates that those with a university bachelor's degree are likely to earn 65% more than high-school graduates of the same age (Lauden, 1997), someone invariably argues something like, "I know someone who dropped out of school in the tenth grade, and is a millionaire." While there certainly are exceptions to a general rule, the exception doesn't negate the rule.

Some of the beliefs reported in the Gallup poll given earlier undoubtedly were formed from per-

sonal experience. People who believe in the paranormal, for example, according to Schick and Vaughn (1995), cite personal experience as the most important reason for their belief. Even many of the skeptics in the survey put a high premium on personal experience; they said they didn't believe in ESP because they hadn't yet experienced it!

Intuition

Closely related to personal experience is **intuition,** believing something is true or false simply because it "makes sense." We generally accept love and friendship as valuable goals of communication because people simply sense their value intuitively. Intuition also refers to leaps of insight that we can't explain rationally. When you suspect someone is lying, but can't explain why, you're using intuition.

Intuitive hunches sometimes pay off in useful ideas. J. P. Campbell, Daft, and Hulin (1982) asked well-known scholars of organizational behavior to trace the origins of their most successful projects. Several attributed their ideas to thinking intuitively about promising ideas. The investigators summed up one scholar's comments this way: "I threw out an idea in [a] doctoral seminar to which a student responded. Sense of great excitement—continuous interaction to test ideas against one another—couldn't let go" (p. 98). From this and subsequent exchanges, a pioneering research project was born.

Intuitive reasoning, however, is often just plain wrong. One area where it typically leads people astray is with regard to calculating statistics (see Kahneman & Tversky, 1972, 1973, 1982), especially the probability of the occurrence of events. People are notoriously bad at calculating such odds, typically underestimating the probability of what appear to be highly unlikely coincidences. For example, what are the chances that 2 out of 23 people attending a dinner party have the same birthday: (a) 1/365, (b) 1/183, (c) 1/46, (d) 1/23, or (e) 1/2? The correct answer is (e): there is a 50% chance that two of the people will share a birthday. Because we now suspect that you are starting to become a competent consumer who isn't willing to

take our word for it but wants valid evidence for such a claim, here is Paulos's (1988) explanation:

> *By the multiplication principle, the number of ways in which five dates can be chosen (allowing for repetitions) is ($365 \times 365 \times 365 \times 365 \times 365$). Of all these 365^5 ways, however, only ($365 \times 364 \times 363 \times 362 \times 361$) are such that no two of the dates are the same; any of the 365 days can be chosen first, any of the remaining 364 days can be chosen second, and so on. Thus, by dividing this latter product ($365 \times 364 \times 363 \times 362 \times 361$) by 365^5, we get the probability that five people chosen at random will have no birthday in common. Now, if we subtract this probability from 1 (or from 100 percent if we're dealing in percentages), we get the complementary probability that at least two of the five people do have a birthday in common. A similar calculation using 23 rather than 5 yields ½, or 50 percent, as the probability that at least two of the twenty-three people will have a common birthday. (p. 36)*

Common, everyday intuitive thinking, then, often results in mistaken perceptions and judgments. One reason is that people often perceive what they expect to perceive. We even perceive meaning in the face of meaningless objects or stimuli, such as discernible images in clouds, a type of misperception or illusion called *pareidolia.* People in the United States, for example, tend to see the figure of a man in the moon, but Samoans see a woman weaving, and Chinese see a monkey pounding rice (Schick & Vaughn, 1995). Piatelli-Palmarini (1994) uses the term *tunnel effect* to describe this and other perceptual tricks of the mind that accompany intuitive reasoning. As he explains:

> *Against our will, our mind enters a tunnel in its reasoning. A pound of feathers weighs as much as a pound of lead. Well, which would you rather have fall on your head from a second floor? There's the bias. (p. 23)*

Seeing images in clouds or not equating a pound of feathers and lead are relatively harmless examples, but as Schick and Vaughn point out, such reasoning led German Nazi scientists to believe that they could see nonexistent physical differences between the blood particles of Aryan men and those of Jews.

Perhaps most problematic of all, once people form an intuitive perception or judgment, they often cling to it and pay selective attention only to evidence that confirms it. Schenkler (1985) identifies a proclivity called *cognitive conservatism,* whereby we hold onto conclusions we reach even when presented with contradictory information. One reason is that we identify with our ideas; to accept that our ideas have been inadequate is to admit, in a sense, that we ourselves have been inadequate. We want to feel good about ourselves, so we resist and tend to deny indications that we might be wrong. It's threatening to our self-esteem to acknowledge that we've been misguided, even when evidence suggests that is the case. Social interaction also reinforces cognitive conservatism. People prefer us to be consistent in thought and deed, so they can predict how we will respond to them. Frequently changing our mind or actions makes others uncomfortable; people flexible in thought are often accused of being unstable, wishy-washy, or fickle. We also use our ideas to guide our actions. Since action choices about communication often must be made instantaneously, we prefer to keep our ideas about communication simple and consistent. We don't have much time to think in everyday interactions, so we tend to avert or deny information that contradicts what we already believe to avoid confusion and uncertainty. To preserve consistency, we sometimes perpetuate fallacious beliefs. Albert Einstein may have said it best when he noted, "Common sense is the collection of prejudices acquired by age 18."

Authority

A third everyday way of knowing is relying on **authority,** believing something because of our trust in the person who said it. Numerous studies of the persuasive effects of source credibility, the characteristics that make a person believable, show that who says something may be even more important than what is said. You may, for example, have learned that carrots are good for the eyes because authority figures, such as your parents, told you this was true.

There are certainly many cases in which we must rely on authorities. We assume that doctors know how to diagnose diseases, that mechanics know how to fix cars, and that pilots know how to fly airplanes. But as Nancy Tuma's experience, shared previously, demonstrates, even doctors, and other respected authorities, make mistakes. Indeed, a study by Kronlund and Philips (cited in Paulos, 1988) showed that "most doctors' assessments of the risks of various operations, procedures, and medications (even in their own specialties) were way off the mark, often by several orders of magnitude" (p. 10).

Some people also claim and/or are assumed to be experts simply because they hold positions of power, like the boss of a company, although we all probably know instances in which the boss simply is wrong. In other cases, determining who is and isn't an authority can be quite problematic. Not all certified secondary educators are equally informed or trustworthy. And this is even more difficult to judge when talking about "communication experts." For example, what criteria should be used to judge who is an interpersonal communication expert: a person who has a problem-free, long-term romantic relationship or someone who has gone through a divorce?!

Appeals to Tradition, Custom, and Faith

A fourth everyday way of knowing is based on *appeals to tradition, custom,* and *faith.* **Appeals to tradition** and **custom** involve believing something simply because most people in a society assume it is true or because it has always been done that way. Some customary beliefs we now know from research make very good sense, such as cuddling babies and playing word games with them.

But custom can also lead to cognitive conservatism that ultimately cuts off the inquiry process and subsequent growth of knowledge, and leads us to cling tenaciously to the beliefs we hold. Consider how tradition and custom affected the reaction to Galileo's work on astronomy. Aristotle argued that one should be a "passive observer" in learning about the world because he believed that

people's preconceptions distort what is learned (Wolf, 1986). Two thousand years later, when Galileo invited his inquisitors (professors at the nearby university, no less) to look through his telescope at the moon, they "refused to do so, arguing that whatever might be visible through the telescope would be a product not of nature but of the instrument" (Lincoln & Guba, 1985, p. 45).

Custom may also lead people to cling to racist or sexist stereotypes, such as "Women are less capable than men of being top managers." When pressed about why they hold this belief, prejudiced people might respond, "Because it's always been that way." Even if that claim were true, which we don't think it is, the world changes and so should our beliefs. We should remember that some of the ancient practices allegedly tested and found useful by generations of healers include such things as bloodletting and purging; George Washington actually died as a result of bloodletting. Other habits continued because of custom are less problematic but still reflect unquestioned beliefs. Should people touch glasses when making a toast? Most people in the United States seem to think so, but they can't necessarily say why. In Italy, the opposite is true; people tend to avoid touching glasses when making a toast, but they too can't necessarily say why they do this.

Somewhat related to tradition and custom are **appeals to faith,** which involve a belief that does not rest on logical proof or material evidence. Asking someone to accept something because of the person who says it or because it has always been done that way in the past are two types of appeals to faith. There are other types as well. Religions often ask for people's faith, such as faith in a supernatural being. While the authors of this text would be the first to defend people's right to their religious faith, religious appeals to faith have, at times, stood in the way of the progress of knowledge. Going back to Galileo again, for centuries, the Catholic Church argued that the Earth was the center of the universe and the Sun rotated around the Earth. Galileo's theory that the Earth revolved around the Sun was condemned by some Catholic religious leaders (including the Pope), and his case

was remanded to the Inquisition, which put Galileo on trial and found him guilty of heresy for believing something that was false and contrary to the Holy Scriptures (see Biagioli, 1993), although he never was sent to prison, contrary to many accounts (see Lessl, 1999). Being told essentially to accept the status quo position on the basis of faith, Galileo replied, "I do not feel obligated to believe that the same God that has endowed me with sense, reason, and intellect has intended us to forgo their use."

Recognizing that mistakes have been made in the past, many contemporary religious leaders understand the importance of aligning their faith with empirical knowledge. Gejong Tezin Gyatsho, the 14th Dalai Lama, "supreme teacher" of Tibetan Buddhism, and winner of the 1988 Nobel peace prize, remarked, "If there's good, strong evidence from science that such and such is the case, and this is contrary to Buddhism, then we will change" (Weintraub, 1990, p. 88).

Magic, Superstition, and Mysticism

A final everyday way of knowing is **magic, superstition,** and **mysticism,** as when we use the word *mystery* to explain an otherwise unexplainable event. Perhaps you remember the television show *That's Incredible!,* where people were shown doing "incredible" things, such as firewalking, walking across beds of burning coals that register more than 1,300 degrees Fahrenheit (Grosvernor & Grosvernor, 1966) without getting burnt.

Many of these so-called mysteries, such as firewalking, are actually easily explained. Although many have claimed that a mystical reason accounts for why people don't burn their feet (such as entering another dimension where the laws of physics don't apply), in fact, it's possible because charcoal, especially when coated with ash, does not transfer heat rapidly to other objects. It's similar to sticking your hand in a hot stove. As long as you don't touch the metal, you can stick your hand in for a short time. If you touch the metal, however, or if you keep your hand in there too long, you will get burned. (We don't, of course,

recommend playing with hot stoves; we suggest you remember that early childhood personal experience of getting burned.) The same is true for firewalking. As long as one walks quickly across the coals, a person won't get burnt, as each foot is only in contact with the heat for about a second before being lifted. But if a firewalker stops to "smell the coals," he or she will get badly burnt.

The mystical/superstitious belief that appears to have caught hold the most in the general public is *astrology,* the "study" (and we use that term loosely) of the positions and aspects of heavenly bodies in the belief that they have an influence on the course of human affairs. Have you ever looked at your horoscope in the newspaper? If so, you're certainly not alone; a 1990 Gallup poll showed that 52% of adult Americans believe in astrology (Gallup & Newport, 1991). Even Nancy Reagan consulted her astrologer before making important decisions about former President Ronald Reagan's speaking schedule!

The problem is that there is absolutely no scientific basis or evidence for astrology. Zusne and Jones's (1982) review of the many statistical attempts to verify the predictions of astrology revealed that not one succeeded. And after a review of 700 books and 300 scientific works on astrology, Dean (1977) was forced to conclude that there was no scientific basis for it. But scientific findings haven't stopped a great many people from believing in astrology. Such widespread belief led a group of 186 scientists in 1975 to write a letter that implored the public to reject astrology:

We the undersigned—astronomers, astrophysicists, and scientists in other fields—wish to caution the public against the unquestioning acceptance of the predictions and advice given privately and publicly by astrologers. Those who wish to believe in astrology should realize that there is no scientific foundation for its tenets.... It is simply a mistake to imagine that the forces exerted by stars and planets at the moment of birth can in any way shape our futures. Neither is it true that the position[s] of distant heavenly bodies make certain days or periods more favorable to particular kinds of action, or that the sign under

which one was born determines one's compatibility or incompatibility with other people. ("Objections to Astrology," 1975, pp. 4–6)

So the next time you are tempted to consult your horoscope, think twice about it. The Cosmic Muffin summed it up best: "A wise [person] rules the stars; only a fool is ruled by them" (cited in Schick & Vaughn, 1995, p. 122).

THE RESEARCH PROCESS

Everyday ways of knowing can certainly lead to valid knowledge, and it surely is impossible to question and test *every* piece of knowledge we hear or possess. The problem with everyday ways of knowing, however, occurs when we should question what is assumed to be true but do not because we accept things simply at face value. In effect, this cuts off the inquiry process, making people passive receivers of apparent truths instead of active pursuers of knowledge. That's unacceptable; after all, don't "inquiring minds want to know"?

So while personal experience, intuition, authority, appeals to tradition, custom, and faith, and magic, superstition, and mysticism may be good starting points for the systematic pursuit of knowledge, they don't necessarily lead to valid knowledge about the world. When we go beyond these particular ways of knowing to question and test what we know and don't know, we engage in *research.* Archimedes, for example, went beyond his personal bathtub experience to systematically test whether the king's crown was made of pure gold. And his tests could be reproduced by anyone else who wanted to see whether his conclusions were valid. **Research** is what we call the form of disciplined inquiry that involves studying something in a planned manner and reporting it so that other inquirers can potentially replicate the process if they choose.

Characteristics of Research

Research has a number of important characteristics, but before explaining them, we should differ-

entiate two types of research: proprietary and scholarly research. **Proprietary research** is conducted for a specific audience and is not necessarily shared beyond that audience. For example, a radio station might conduct research about its listeners' music preferences and use that research to shape its play list. **Scholarly research,** in contrast, is conducted to promote public access to knowledge, as when researchers conduct and publish studies about the effectiveness of various means of persuasion or new vaccines for treating diseases. Although the methods examined in this text generally apply to (good) proprietary research, we are interested primarily in scholarly research. For the sake of convenience, however, we use the term *research* as the primary referent.

Research has the following characteristics:

1. *Research is based on curiosity and asking questions.* Research starts with a person's sense of curiosity, a desire to find an answer to a puzzling question posed. These questions are posed at various levels of abstraction, such as asking people what they do, why they do it, or what effect behavior has on them. These questions might spring from observed theoretical inconsistencies or gaps in what is reported in scholarly literature or from a practical concern, such as the effects of television on children or how people communicate as leaders. At the heart of all research is a question worth asking and answering.

Too often, researchers are portrayed as dispassionate scientists in white coats handling test tubes in a laboratory. This image omits the curiosity, creativity, and sense of excitement that characterize researchers. A more apt metaphor might be a detective searching for clues to a crime. As Poole and McPhee (1985) explain:

Like a good detective, the researcher is confronted by a confusing pattern of clues that is meaningful in both an immediate and a deeper, sometimes hidden sense. To get at this deeper meaning and unravel the mystery, the detective (researcher) must probe and order this "reality," often relying on improvisation, inspiration and luck. Once things fall into place there is the possibility of true understanding and in-

sight, but there is also the danger of misinterpreting the multitude of available signs.... [Research] requires the capacity to ask the right questions as well as a sense of what form the answer should take. Detective novels are replete with devices and strategies for attaching a mystery, and this is no less true of social scientific writing. (p. 100)

Research methods, therefore, may be viewed as the strategies researchers use to solve puzzling mysteries about the world; they are the means used to collect evidence necessary for building or testing explanations about that which is being studied. Like good detectives, researchers want to make sense of the unknown, and their methods are the means by which they do this. This text, then, explains the methods researcher-detectives use to satisfy their curiosity and answer the questions they have about communication phenomena.

2. *Research is a systematic process.* Research depends on a planned, systematic process of investigation. Research proceeds in a careful step-by-step manner, employing an ordered system of inquiry. Research is not conducted for the purpose of proving the preconceptions of researchers. Rather, systematic procedures are used to ensure that researchers find and report what is accurate.

Figure 1.3 provides a working model and explanation of the systematic nature of communication research. This model, which we use to organize the sections of this text, views communication research as an ongoing cycle of five interrelated phases of research activities: (a) conceptualization, (b) planning and designing research, (c) methodologies for conducting research, (d) analyzing and interpreting data, and (e) reconceptualization.

3. *Research is potentially replicable.* Because research follows a systematic plan, other scholars can potentially replicate, or reproduce, the entire inquiry process. Research leads to reliable conclusions precisely because it can potentially be replicated. Replication ensures that the idiosyncrasies in the context of any one study, which can produce distorted results, don't lead to inappropriate generalizations. For example, only after

FIGURE 1.3   A working model of communication research

The communication research process can be viewed as an ongoing cycle of five interrelated phases of research activities: (a) conceptualization, (b) planning and designing research, (c) methodologies for conducting research, (d) analyzing and interpreting data, and (e) reconceptualization.


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│   Phase 1: Conceptualization         │◄─
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│ Phase 2: Planning and designing research │
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│   Phase 3: Methodologies             │
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│ Phase 4: Analyzing and interpreting data │
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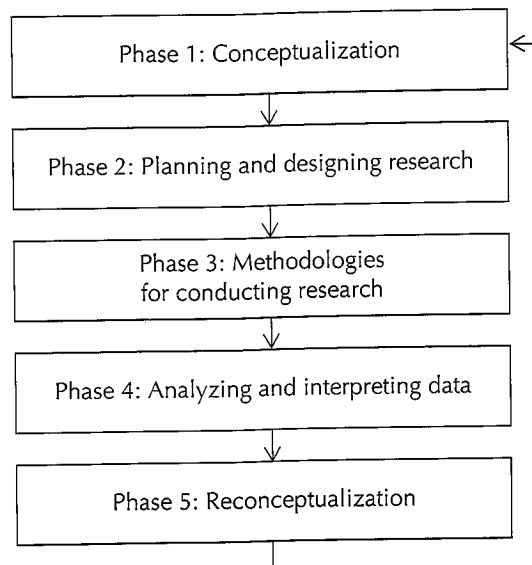
Phase 1: Conceptualizing Communication Research

Conceptualization, the first phase of research, involves forming an idea about what needs to be studied. Researchers begin communication inquiry by engaging in such conceptualizing activities as identifying a topic worth studying, reviewing the relevant literature to learn what is already known about the topic, and phrasing the topic as a formal research question or hypothesis (prediction).

Researchers establish a field of inquiry by narrowing their focus to a particular topic worth studying and a specific question worth asking. That topic may result from a theoretical proposition that needs testing, a practical problem that needs solving, or an experience that needs explaining. To select such a topic, the appropriate boundaries for communication research must be established. These principles of communication then can be used to pose a formal research question or hypothesis. Chapter 2 ex-

plains some fundamental principles that help define the concept of communication and parameters for communication research, as well as how researchers pose formal research questions and hypotheses.

A research study does not exist in isolation. To understand fully and accurately any particular research topic, research question, or hypothesis, it is necessary to know what scholars in the discipline have found by reviewing previous research. Reviewing the literature demands a working knowledge of what are the best sources to consult, where to find those sources with a minimum of effort, and how to read and use them. Finding, reading, and using research is the focus of Chapter 3.

Phase 2: Planning and Designing Communication Research

Good research projects are thought out carefully in advance. Once a topic has been selected, the available information on it has been found, and a formal research question or hypothesis has been posed, researchers need a systematic plan for conducting their study.

Moving from the conceptualization phase to planning and designing research demands that researchers transform abstract concepts into operational, or measurable, terms. **Operationalization** is the process of determining the observable characteristics associated with a concept or variable. Chapter 4 examines this process by showing how researchers develop strategies for observing and measuring the variables they study.

Measurement techniques, of course, need to be valid, or accurate. Validity, however, is not just important for the purposes of measurement; it affects the entire research plan and design. The internal validity of a study has to do with whether the procedures researchers use are accurate. As we shall see, researchers must try to rule out a number of important threats to designing internally valid research. The external validity of a study is concerned with the extent to which researchers can generalize findings to people/texts, situations, and time periods not studied directly in the research. Chapter 5 examines the process of designing internally and externally valid research.

Planning and designing communication research involves a number of ethical decisions. Ethics affects each stage of the research process: how researchers choose research topics and frame research questions/hypotheses, how the literature is reviewed, how research is designed and conducted, how data are analyzed, and how the findings are interpreted and used. It is also impossible to separate ethics from politics. Chapter 6 explores some important political issues and ethical decisions that confront communication researchers.

Phase 3: Methodologies for Conducting Communication Research

Once the topic has been chosen, the research question or hypothesis posed, the review of the literature conducted, and the research designed, researchers are ready to conduct their studies. Conducting careful research demands understanding and adhering to the specific assumptions and requirements of the methodology chosen. These methods tell researchers what evidence to look for and how to look for it. Chapters 7 through 10 examine four major methodologies available to communication researchers.

Chapter 7 explains experimental research. Experimental research applies principles about causation developed from the physical sciences to the study of human beings. Because of its emphasis on prediction and control, the experimental method is a powerful technique for examining how one variable produces changes in another variable.

Chapter 8 examines survey research. Survey research is used to discover the self-reported characteristics of a relatively small number of people, a sample, for the purpose of generalizing those characteristics to the population from which the sample was drawn. It is a popular method used by scholars and practitioners alike.

Chapter 9 focuses on textual analysis, which is used to analyze spoken, written, electronic, and visual texts, or documents. Four forms of textual analysis are considered. The first is rhetorical criticism, which scholars use to understand and evaluate texts. The second, content analysis, focuses on identifying patterns in the communication content of mass-

mediated and public texts. The third is interaction analysis, which analyzes the nature of messages exchanged during dyadic and group interaction. The fourth, performance studies, involves the analysis and oral performance of texts.

Chapter 10 explores naturalistic research, the study of people in their natural settings. Researchers use this method to probe for people's interpretations of the world and how they see themselves making choices, particularly with regard to their communication behavior.

Try to keep in mind throughout our discussions of these four methodologies that no one methodology is inherently better than another. The use of a particular methodology must always be guided by the nature of the topic chosen and the research question/hypothesis posed. Fitting the method to the topic and the research question/hypothesis, rather than the other way around, avoids the "law of the hammer," the tendency to hit everything in sight with a favorite tool, in this case, a research method. Researchers must, thus, ask themselves whether the topic and research question/hypothesis are best addressed by experiments, surveys, some form of textual analysis, or naturalistic research. Answering complex questions about communication also sometimes necessitates using multiple methodologies in a complementary manner within a single study.

Phase 4: Analyzing and Interpreting Data

Once data, or evidence, have been gathered through the use of the methodologies discussed in phase 3, they need to be analyzed and interpreted. For a number of methods, particularly experimental, survey, content analysis, and interaction analysis, this means processing quantitative (numerical) data through the use of appropriate statistical procedures. For that reason, Chapters 11 through 14 examine how quantitative data are analyzed and interpreted.

Quantitative analytic procedures can be used to describe data, called descriptive statistics, as well as infer meanings from them, called inferential statistics. Chapter 11 explains how researchers describe quantitative data, while Chapter 12 focuses on the theory underlying two types of inferential statistics:

(continued)

FIGURE 1.3 Continued

estimation, generalizing the findings from a sample to the population from which it is drawn, and significance testing, assessing whether there are significant statistical differences between groups (such as differences between men and women with regard to listening behavior) or relationships between variables (such as whether age and listening behavior are related). Chapters 13 and 14 then examine specific statistical techniques used in difference and relationship analysis, respectively.

Stage 5: Reconceptualizing Communication Research

Every individual study conducted is part of a larger body of related research. Relevant studies conducted prior to the present study being conducted provide theoretical, conceptual, and methodological foundations from which a researcher can build the current study. What is more, new research waiting to be conducted in the future is very likely to build on the research foundation created by the current inquiry. The research enterprise is a collective, collaborative, building process whereby the studies researchers conduct today are intimately connected to research conducted in the past and research to be conducted in the future. Research is not a disconnected individualistic process. No one study by itself, no matter how compelling it may be, is likely to make major advances in knowledge alone. Collectively, however,

a group of related studies that build on one another help to reach major conclusions, test and refine theories, and extend the expanding body of current knowledge about communication phenomena.

The reconceptualization phase of research is the part of the research process in which researchers formally connect their studies with preceding studies on a specific topic and set the stage for future related research. **Reconceptualization** occurs when researchers rethink the topic of inquiry as a result of the systematic processes associated with conceptualization, planning and designing research, using methodologies to gather data, analyzing the data, and, finally, interpreting research findings.

Reconceptualization involves explaining the meaning and significance of the research findings. Researchers try to explain how the results of a study answer the research questions posed, confirm or disconfirm the predictions made, and support or refute previous theory and research. Researchers also identify any difficulties encountered in conducting the research and how these problems may limit the validity and application of the findings. Finally, researchers address the implications of their findings for future research. Identifying implications from a research study for future communication theory, research, and practice completes the full cycle of the research process. Chapter 15 examines this important concluding phase of the research process.

repeated testing is a new drug allowed to be released on the market.

Note, however, that we use the words "potentially replicable," because scholars who wish to reproduce another's research study need to have the appropriate resources to do so. In some cases, such as experimental research, survey methods, or some forms of textual analysis, this may not pose a problem. The exact same procedures can be followed, with the exception that different research participants would be studied in experimental and survey research. In other cases, such as naturalistic research, scholars may find it difficult to replicate a study because of lack of available resources. For example, if one wanted to replicate the naturalistic

research that Dollar and Zimmers (1998) have done on social identity and communication boundaries with homeless street youth, one would need access to homeless street youth. Assuming that one had such access and developed sufficient relationships with those individuals, Dollar and Zimmers's findings are potentially replicable.

4. *Research is reflexive and self-critical.* Research is reflexive in that researchers explicitly examine their methods to discover and report flaws or threats to the validity of any findings from a study. Pick up any scholarly journal article and you will typically find a discussion in the concluding section about the potential problems that may have af-

fected the study and limit the findings. Scholarly researchers openly evaluate the strengths and weaknesses of their own research studies. They don't wait to be criticized; they beat people to the punch by being their own best critics.

5. *Research is cumulative and self-correcting.* By being open to one and all, research creates a shared history. The accumulation of information from research allows for knowledge to evolve and grow. Old beliefs are discarded when they no longer hold true, and new beliefs emerge from the process, only to be challenged once again. Research, thus, leads to more research. Not only is research part of the broader community but it also creates a community of inquirers. Scholars meet regularly at conferences to share, discuss, and critique one another's work.

6. *Research is cyclical.* Research proceeds in stages and ends up back where it started. A researcher begins with a sense of curiosity and a topic worth studying, asks questions and/or makes predictions, plans research carefully, carries out the planned research, analyzes the data to provide tentative answers, and starts all over again by posing new topics and questions worth asking. Scholars, thus, provide feedback to themselves; new questions emerge from answers to previous questions.

Research as Culture

These characteristics make information acquired from research potentially fundamentally different from that obtained from the everyday ways of knowing examined previously. In fact, it is helpful to think about the research community as a distinct type of *culture.* And like any culture, research has its own language, rules, and social customs.

Learning about any new culture takes time and patience. When we first enter a new culture, we feel awkward because we do not know what the cultural members are saying or how to engage in appropriate behavior. We must start by becoming familiar with the language used and the conversations that take place there. Barnlund (1988) notes that "every culture attempts to create a 'uni-

verse of discourse' for its members, a way in which people can interpret their experience and convey it to one another" (p. 11). Once we know the "code" and the "ropes," we feel more comfortable and competent within that culture. Our goal in this text is to give you a feel for the culture of research, which we hope will help you to understand its value and, most important, learn to live comfortably and profitably within it.

Research Cultures. Even though researchers generally agree on the six characteristics of research identified above, they do not necessarily all share the same worldview or the same assumptions about how people and communication should be studied. Just as there are different subcultures in any society, there are different research cultures.

At the most general level, we might distinguish three such cultures: (a) the **physical sciences,** in which scholars study the physical and natural world, as represented by such academic disciplines as physics, chemistry, and biology; (b) the **humanities,** in which scholars produce creative products and study the achievements of creative people, such as in the academic disciplines of music, art, and literature; and (c) the **social (or human) sciences,** in which scholars apply scientific methods to the study of human behavior, such as the disciplines of anthropology, psychology, and sociology.

Communication overlaps, in part, each of these three research cultures. Biologists, for example, sometimes talk about cells "communicating" with one another. The speech sciences, such as audiology (the study of hearing), are also tied to biology, chemistry, and physics. Communication is also associated with the humanities, since art, music, and literature are fundamentally forms of communication, and some communication scholars, such as those in performance studies, perform their work. And perhaps most important for the issues discussed in this text, communication is a social science, since communication researchers, like their colleagues in psychology, sociology, and anthropology, use scientific methods to study human behavior, in this case, communication behavior.

Positivist versus Naturalistic Paradigms in the Social Sciences. If we examine the social sciences for a moment (although what we say certainly applies to the physical sciences and humanities as well), there are two major **paradigms,** or worldviews, that characterize social-scientific research. They go by many different names, but here we identify them as the *positivist* and *naturalistic paradigms.* The **positivist paradigm** (or **positivism**) can be defined as the "family of philosophies characterized by an extremely positive evaluation of science and scientific method" (W. L. Reese, 1980, p. 450). The positivist paradigm, as applied to the social sciences, is essentially concerned with how to apply some of the methods used in the physical sciences to the study of human behavior. The **naturalistic paradigm** can be defined as the family of philosophies that focus on the socially constructed nature of reality. The naturalistic paradigm, again as applied to the social sciences, is essentially concerned with the development of methods that capture the socially constructed and situated nature of human behavior. Perhaps the best way to think about the difference between these paradigms is that while the positivist paradigm stresses the word *science* in the term "social science," the naturalistic paradigm stresses the word *social.*

These are paradigms in the sense that they are sets of basic assumptions or beliefs to which their proponents subscribe (see Guba & Lincoln, 1994). As Figure 1.4 shows, there are key differences between these paradigms in terms of five basic assumptions that have important implications for the research process, including communication research.

FIGURE 1.4 Positivist paradigm versus naturalistic paradigm

ASSUMPTION	QUESTION	POSITIVIST PARADIGM	NATURALISTIC PARADIGM
Ontological Assumption	What is the nature of reality?	Singular Objective	Multiple Intersubjective
Epistemological Assumption	What is the relationship of the researcher to that being researched?	Independent	Interdependent
Axiological Assumption	What is the role of values in the research process?	Value-free Unbiased	Value-laden Biased
Methodological Assumption	What is the process of research?	Deduction	Induction
		Search for cause and effect relationships between variables	Wholistic understanding of patterns of behavior
		Static design	Emergent design
		Researcher-controlled setting	Natural setting
		Quantitative methods	Qualitative methods
		Context-free generalizations	Context-bound findings
		Goals of explanation, prediction, and control	Goals of understanding and social change
Rhetorical Assumption	What is the language of research reports?	Formal Impersonal voice	Informal Personal voice

Source: Adapted from John W. Cresswell, *Research Design: Qualitative & Quantitative Approaches,* p. 5, copyright © 1994 by Sage Publications, Inc. Adapted by Permission of Sage Publications, Inc.

The first difference between these paradigms is with regard to the *ontological assumption* about the nature of reality. Proponents of the positivist paradigm see reality as *singular* and *objective;* that is, there is one reality out there that exists apart from any particular individual(s). In contrast, proponents of the naturalistic paradigm contend that there are *multiple realities* that are constructed between and among people (intersubjective).

Closely related to the ontological assumption is the *epistemological assumption* concerning the relationship of the researcher to that which is being researched. Proponents of the positivist paradigm see this relationship as *independent,* in the sense that what is to be known is independent of any researcher per se. In contrast, proponents of the naturalistic paradigm believe that the researcher is *interdependent* with that which is being studied; that what can be known depends on who's doing the knowing.

The differences just explained between these paradigms relate to that age-old philosophical question, "If a tree falls in the forest and no one is around, does it make a sound?" For proponents of the positivist paradigm, it sure does, because that's what happens when trees fall, they make sounds. For proponents of the naturalistic paradigm, sound is dependent on having a hearer, so the tree makes a sound only when someone is there to listen to it.

The third difference is the *axiological assumption* of the role of values in the research process. Proponents of the positivist paradigm believe that research can be *value-free* and *unbiased.* Indeed, the goal is to keep the researchers' values out of the research process. In contrast, proponents of the naturalistic paradigm argue that research is inherently *value-laden* and *biased.* As Lincoln and Guba (1985) explain, research is influenced, by, among other things, the inquirer's values (e.g., what the researcher thinks is important to study), the paradigm that guides the research (e.g., positivist or naturalistic), and the values that inhere in the context being studied.

The fourth difference is the *methodological assumption* concerning the process of research. We will focus the remainder of this text on methodological practices, so we won't spend a long time talking about these issues here. But knowing some of the basic issues involved is helpful at this stage, and we'll identify some chapters where you will find more discussion of these issues.

Research conducted from the positivist paradigm generally tends to use *deduction,* moving from the general to the specific. Researchers often start with a tentative explanation, such as a theory, and proceed to test it by collecting evidence (Chapter 2). One central purpose of such research is the search for *cause and effect* relationships (Chapter 7), or at least statistical relationships, between variables (Chapters 13–14). To discover such relationships, researchers typically use a *static design* in which the specific research procedures are all worked out ahead of time and the researcher sticks to that plan carefully and conscientiously. This type of research is most often conducted within a *researcher-controlled setting,* a setting created and controlled by a researcher (e.g., a laboratory), because it is easier to control for all the potential elements in a study in such a setting (Chapters 5 and 7). Positivist research typically uses *quantitative methods,* research methods that focus on the collection of data in the form of meaningful numbers (Chapter 4), such as the type of data often acquired from experiments (Chapter 7), surveys (Chapter 8), content analysis (Chapter 9), and interaction analysis (Chapter 9). Indeed, some scholars (e.g., Cresswell, 1994), use the term "quantitative paradigm" to refer to the positivist paradigm. By following these procedures, this research yields *context-free generalizations*—conclusions that can be generalized to people, situations, and time periods other than the ones studied (Chapter 5). For instance, researchers seek to discover drugs that cure a large number of people, not just those who were studied. Such generalizations allow researchers to *explain, predict,* and *control* phenomena, for once something is explained, it can be predicted and often controlled (in the positive sense, such as controlling the spread of disease).

Research conducted from the naturalistic paradigm tends to use *induction,* moving from the specific (the evidence) to the general (tentative

explanations; Chapter 2). The goal is to gain a *wholistic understanding* of the patterns and behaviors that characterize human beings. To accomplish this goal, researchers use an *emergent design,* planning out their research, but then taking advantage of opportunities that present themselves during the research process. They conduct their research in the *natural setting,* where people normally behave, rather than a setting created and controlled by a researcher; that's why this type of research is called "naturalistic inquiry." And researchers tend to rely primarily on *qualitative methods,* research methods that focus on the acquisition of data that take the form of symbols other than meaningful numbers (although these are sometimes used as well; Chapter 4), such as data acquired from participant observation and in-depth interviewing (Chapter 10), performance studies (Chapter 9), and some forms of rhetorical criticism (Chapter 9). In fact, some scholars (e.g., Cresswell, 1994) use the term "qualitative paradigm" to refer to the naturalistic paradigm. By following these procedures, research studies yield *context-bound findings,* findings that apply to the particular people, situation, or time period studied; provide a rich *understanding* of that social context; and, in some cases, serve the purpose of promoting *social change* (Chapter 10).

Finally, positivist and naturalistic paradigms differ with regard to the *rhetorical assumption* of how research reports are to be written. Positivist research reports tend to have a *formal structure* and are written in an *impersonal (third-person) voice* in line with the view of research as an objective endeavor (Chapter 3). In contrast, naturalistic research reports tend to have an *informal structure* and include the *personal (first-person) voice* of the researcher (Chapter 10).

As you see, there are many important differences between these two paradigms that relate to research. Of course, we've been talking about the research. Of course, we've been talking about the extreme positions here, and there are many scholars who work more in the middle ground. We would like to position this book toward the middle of the spectrum. However, we would be remiss if we didn't say that this text focuses mainly on the

practices related to positivist research in the sense of studying relationship between variables. But we do try to give you a flavor of some of the issues and methods associated with the naturalistic paradigm. Two of the authors have conducted a number of naturalistic research studies, one has an edited text, which currently is being revised, about qualitative methods in the study of organizational communication (Herndon & Kreps, 1993), and another is planning to write a textbook about such methods. So even though this text leans toward positivist research methods, it is certainly informed by our experiences with using naturalistic methods.

Research as Conversation

We just talked about two very different paradigms for research, and you can imagine the conversations, or lack thereof, that go on between proponents of these two paradigms whenever they get together and discuss research methods. In fact, research itself, Pearce (1996) argues, can be thought of as a complex communication act, that is, as a form of conversation.

First, there are the conversations that take place between researchers and the people (or texts) they study. Most research, at least that which deals with human beings, involves researchers conversing with those they study, if only for a short period of time. The nature of that conversation, as we've just explained, is shaped, in part, by the paradigm that researchers adopt and the specific method(s) they employ. So, for example, a naturalistic researcher who wants to acquire a deep, wholistic understanding of a particular group of people and their communication behavior might use the method of in-depth interviewing and spend a significant amount of time conversing with a relatively small number of people, probing them for insights about their communication behavior. This type of conversation is very different from the one that occurs when a researcher wants to find out what a lot of people think and, therefore, uses a survey questionnaire that asks a large number of people to check off one of several possible choices for each question asked. And these conversations

are very different from ones held by a researcher who wants to find out whether exposure to some stimulus leads people to behave in a certain way and, therefore, uses the experimental method to manipulate some variable and observe research participants' behavior. Each of these methods is a type of conversation between researchers and research participants. So part of what we are trying to teach you in this text is how the various methods structure the conversations that take place between researchers and research participants.

Second, there are the conversations that take place between researchers and a variety of other audiences. One important audience is other colleagues in the field. In fact, what makes something scholarly research is that it is intended for other scholars in the field. So researchers try to publish their studies in scholarly journals and texts and present their work at professional conferences. These conversations, of course, are very different in purpose and form from the conversations that take place between researchers and research participants. Researchers have their own language and ways of talking about research practices, including ways of talking about the conversations between researchers and research participants. So another part of what we are trying to teach you in this text is the conversations that take place among communication researchers.

There are also a number of other conversations that researchers can and do have. For instance, many researchers apply for grants to fund their research and these conversations have their own set of rules and procedures. There are the conversations that researchers have with gatekeepers of publication outlets, such as journal editors and reviewers. And sometimes researchers converse with the general public by giving open lectures to community groups and at bookstores or through the mass media, such as when they are interviewed by a newspaper or television reporter about their research. Much of what we have to say is relevant to understanding those conversations.

And let's not forget about research participants as part of the research conversation. They, too, have their own needs and goals in interacting

with researchers, and in the case of community, business, and governmental organizations, they often set rules and procedures that must be followed by researchers who wish to do business with them. Research participants also sometimes converse with other research participants as part of a study, such as when they are asked to interact with another participant or group of participants and their behavior is observed, or when researchers put people together in a group, such as a focus group, and probe for information.

Finally, there are the conversations about research that take place at the public level, ranging from research reported by the mass media to discussion of the latest research findings among friends at the dinner table. We started this chapter by calling attention to the importance of understanding "research conversations," and we are now going to conclude by returning to the theme of becoming a competent consumer of these conversations, this time directed toward the importance of distinguishing research from pseudoresearch conversations.

THE IMPORTANCE OF DISTINGUISHING RESEARCH FROM PSEUDORESEARCH

We just explained many of the features of the research culture and how it differs from everyday ways of knowing. We are, then, almost ready to delve into the details of the communication research process. But before doing so, we need to examine one final issue: the importance of learning how to differentiate (good) research from pseudoresearch and just plain bad research. If we are to become competent consumers of research, we must be able to do this, because, as we stressed in the beginning of this chapter, we are being exposed every day to more and more research findings, and it's getting hard to separate the valid information from that which is not. One reason is that many people, recognizing the persuasive value of the term research, are cloaking their non–research-based claims and evidence using the label of research. So let's explore this issue for a moment. We start with a story.

For some years, Iben Browning had been predicting a 50–50 chance of an earthquake registering 6.5 or greater on the Richter scale somewhere along the New Madrid Fault, which runs from Marked Tree, Arkansas, to Cairo, Illinois, on or about December 3, 1990. A 72-year-old climatologist with no formal training in seismology (the geophysical science of earthquakes and related phenomena) or geology, Browning based this prediction on his belief that tidal waves, which would be at a 179-year peak on that day, can cause earthquakes.

Scientists agree, however, that there is absolutely no relationship between tides and earthquakes (the warrant is, thus, false), and they condemned Browning's prediction. Prominent researchers specializing in earth and atmospheric sciences at St. Louis University and the Center for Earthquake Research and Information at The University of Memphis issued a news release on July 29, 1990, rebuking Browning's methods and predictions, while another group of seismologists and geologists reviewed his methods and concluded that Browning's projection "appears theoretically implausible" (Tackett, 1990, p. 20)

Not surprisingly, the media focused on Browning's claims while giving almost no coverage to the scientists' critique. After all, earthquake predictions make "good copy." The result, as might be expected, was widespread panic in the areas that supposedly were affected. Many people left the areas, sporting events and conferences in the St. Louis area were canceled or postponed, and school officials throughout southeastern Missouri and parts of Arkansas, Illinois, Kentucky, Tennessee, and Indiana canceled classes for two days, affecting 150,000 students. The earthquake, of course, never did occur. Tidal waves don't cause earthquakes.

This example, and others like it, illustrates how quickly false information can spread, like a forest fire out of control, and how powerfully it can affect people. The media are partly to blame by lending credence to outrageous predictions and findings. Douglas Wiens, an expert on earthquakes at the University of Washington, in talking about the Browning case, said, "Initially, the media presented this prediction as though it was a valid scientific theory and something that was being put forward by an expert" (Tackett, 1990, p. 20). Jim Mauk, business manager for the New Madrid County Schools, said, "I think they [the media] got snowed. Browning made the projection, but he's not the one who hyped it" ("Who's Fault?" 1990, p. 22).

The media have definitely affected how scientists conduct the business of science. Everyone wants his or her 15 minutes of fame, and scientists are no different. A. Marcus (1991) contends that "competition for public attention encourages scientists to dramatize and popularize their views. The more catastrophic a prediction or conclusion, the more likely it will score newspaper and television coverage" (p. 23). Some scientists now rush to the media to report conclusions from preliminary research, instead of engaging in conscientious efforts to recheck their findings.

The controversial case of fusion (or what might better be called "confusion") in the laboratory a few years back is a classic example of a "rush to print." On March 23, 1989, two respected chemists, B. Stanley Pons, Chairperson of the Chemistry Department at the University of Utah, and Martin Fleischmann, of England's University of Southampton, called a press conference to announce several "table-top" experiments they claimed had generated nuclear fusion—the force that powers the sun, stars, and hydrogen bombs—in a test tube of water at room temperature. The story was picked up by newspapers and television around the world, and rightly so, for their discovery held the promise of solving the world's energy problems for all time.

Unfortunately, efforts to replicate their discovery proved futile, and it became clear after a while that Pons and Fleischmann had employed faulty research methods. They inferred that fusion had taken place because they measured its "symptoms"—additional neutrons and heat produced when an electric current was sent through a palladium rod immersed in heavy water. Their critics questioned this conclusion. They maintained that the two indicators of fusion were more likely outcomes of other processes, and that the two re-

searchers could have determined this if they had conducted controlled experiments, such as using other chemicals under the same conditions to learn whether the same results would occur.

But Pons and Fleischmann did not conduct such controlled experiments. Concerned that their work would leak out and be usurped by others, they rushed to report their findings and, thereby, created excitement about the promise of their "discovery" and enormous disappointment when its significance was deflated. Frank Close, a top physicist at Oak Ridge National Laboratory and Britain's Rutherford Laboratory, and author of the book, *Too Hot to Handle: The Race for Cold Fusion,* believes that Pons and Fleischmann's data "had been obtained more by enthusiasm than by careful science" (D. Burns, 1991, p. 4).

Sloppy research methods might be forgiven, but what cannot be are attempts to mislead people purposely about research findings. Pons and Fleischmann, for example, altered some crucial evidence in their original publication, leading Frank Close to conclude that "how they represented it was a clear violation of how science should be done" ("Top Physicist," 1991, p. 16).

The sad part is that this case is not unique. Newspapers are filled these days with instances of scientific fraud. Dr. Robert C. Gallo, the United States government's top AIDS researcher at the National Institutes of Health, for example, was found guilty of scientific misconduct for falsifying an article to cover up his use of a French virus in establishing the cause of AIDS (Crewdson, 1992). For more than a decade, a doctor falsified and fabricated data in cancer research, including a landmark study that supposedly had established the safety of the common operation of lumpectomy (Crewdson, 1994a, 1994b). What makes these cases so intolerable, as Warren (1993) explains, is that "few groups are as closely associated in the public mind with the pursuit of objective truth as scientists. The notion that they might be venal, money-obsessed careerists is hard to fathom" (p. 2).

In the worst case scenario, falsifying data and research findings amounts to "disinformation." For example, research conducted in the early

1960s at Brown & Williamson Tobacco Corporation, which makes Kool, Viceroy, and other brands of cigarettes, revealed that nicotine was addictive and that cigarettes caused lung cancer, contributed to heart disease, and might cause emphysema ("Tobacco Firm," 1994). Executives at this company, however, chose not to reveal these findings when the United States Surgeon General was preparing the first report in 1963 about the health hazards of cigarettes. Worse, these findings "contradict the tobacco industry's contention during the past three decades that it has not been proved that cigarettes are harmful or that nicotine is addictive" ("Tobacco Firm," p. 7). There is even an Institute for Tobacco and Health, an oxymoron if ever there was one, at the University of Kentucky, where the sole purpose is to conduct research that shows the health benefits of tobacco! It is this kind of systematic disinformation that led to the lawsuits in which the tobacco companies are being forced to pay a lot of money.

While it may not surprise some, even the United States government engages in disinformation with respect to research. In the case of Dr. Gallo, a report to the House Subcommittee on Investigations revealed that "senior U.S. government officials colluded in the misrepresentation and may actually have organized and promoted a cover-up [of the facts]" (Crewdson, 1991, p. 1). Consumer groups in the early 1990s accused the Department of Transportation of manipulating car crash tests and sharing only the results of tests that showed that larger cars were more safe than smaller cars, while not publicizing the many tests that showed otherwise, thereby lending support to the automobile industry's claim that stricter fuel economy standards would produce more dangerous cars ("Auto Safety Tests," 1991).

The examples given above are not meant to depress you (although they should!); they are intended to show how difficult it has become to evaluate the validity of the research findings to which we are exposed on a daily basis. Individual researchers and groups of scientists are to blame in many cases for using faulty methods or engaging in blatant falsification and misrepresentation, and

the media feeding frenzy over outrageous predictions and findings only makes things worse.

But let's also lay some of the blame on us—the general public. Let's face it, to the extent that we are ignorant of the way research is produced, and the many potential problems that can jeopardize the validity of research findings, we have no basis for accepting or rejecting research-based claims and evidence. This puts us in a position to be taken advantage of by scientists, the media, the government, and snakeoil salespeople alike.

Being taken advantage of by others because of a lack of knowledge is a common occurrence. If you know little about auto mechanics and take your car into the shop and the service person says you need a new transmission, how do you know whether he or she is telling the truth? You don't—you literally have to take this claim on the basis of faith. Now we are not saying you are being lied to, but there have been times when customers have been charged for work that was not needed, as documented by such television investigative news programs as *Sixty Minutes.*

People who know about cars, however, are not fooled so easily; they can ask good questions and discuss the problem in an intelligent manner. They demand proof before they pay all that money for a new transmission. The same is true with regard to research findings in that people who know how research is conducted and how data are analyzed are able to understand and evaluate research-based information. Unfortunately, most people simply don't know about research methods and, thus, can't differentiate between valid and invalid research-based claims.

The inability to differentiate valid from invalid research-based information is having some terrible effects at the societal level. Take the legal system, where research plays a crucial role in deciding many cases, especially those involving liability claims. Huber (1991) maintains that juries and judges alike are having problems differentiating science from **pseudoresearch,** or what he calls **junk science,** which he describes as "claims dressed up in the form of serious science but lacking serious empirical and conceptual credentials"

(p. 223). Junk science looks, smells, and tastes like real science, but it isn't.

How has junk science infected the courtroom? In 1923, the federal courts adopted what became known as the *Frye* rule, which "allowed experts into court only if their testimony was founded on theories, methods, and procedures 'generally accepted' as valid among other scientists in the field" (Huber, 1991, p. 14). In 1975, however, in the Federal Rules of Evidence, the courts allowed expert testimony if "scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact" (Huber, p. 15).

This ruling essentially opened the door for anyone with some minimum qualification, such as a college degree, to be an expert. While we all know there is a big difference between a general practitioner and a brain surgeon, the two are now treated equally with respect to testifying about brain surgery. No longer is one required to be a specialist in the area under consideration. Worse yet, so-called junk scientists, whose theories, methods, and procedures sound valid to the naive listener but are not considered so by scientists in the field, can now be hired to testify (some have even said "hired to lie") as expert witnesses.

Unfortunately, junk scientists have had some success. For example, the drug Bendectin, which was used to treat women for "morning sickness," which in some cases can be so severe that it threatens the health of both mother and child, was pulled from the market because of a few lawsuits in which supposed medical experts, whose credentials and theories were later discredited, testified that the drug caused birth defects. The parent company actually lost only one of the cases brought against it, due no doubt to jurors' inability to recognize an expert from a junk scientist. After all, each trial is a brand new ball game in which science must prove itself all over again. The trials, however, cost the company upward of $100 million for its vindication, so it decided it was easier to pull the drug from the market than continue fighting a legal battle (Huber, 1991).

Another example is that of Audi, whose car sales plummeted after the media's coverage of the

Audi 5000's problem of "sudden acceleration," where the car supposedly lurched forward even though a person's foot was on the brake. After numerous research studies, including three independent government investigations, the problem was shown to be due to people having their foot on the accelerator, not the brake! But this didn't stop so-called experts from testifying and winning a couple of lawsuits.

The consequences of such lawsuits are, indeed, costly. In the two examples cited above, pregnant women lost a valuable drug to aid in the fight against morning sickness, and what was widely regarded as one of the safest cars on the road disappeared virtually overnight.

But the problem of junk science isn't limited to civil suits against companies with "deep pockets"; it is also affecting criminal trials as well. In what must surely be one of the most bizarre examples of junk science, consider the case of Michael H. West, a forensic dentist who matches bite marks with the teeth that made them, wounds with weapons, and so forth. Matching such things makes some sense, but it is West's methods that raises concerns. He uses a special blue light to study wound patterns, and claims to be able to see things that are invisible otherwise. Now that isn't particularly startling, as blue lights have been used for quite some time to look for clues at the scene of a crime. What is startling, as M. Hansen (1996) explains, is that

> according to his scientific counterparts, West sees things under [the blue light] that he cannot document and that nobody else can see.... [He has] failed to follow generally accepted scientific techniques, and testified about his findings with an unheard of degree of scientific certainty—"indeed and without a doubt"—is his standard operating opinion. (p. 51)

West has been suspended from the American Board of Forensic Odontology because he "misrepresented evidence and testified outside his field of expertise," and he resigned from the American Academy of Forensic Sciences after "its ethics committee recommended that he be ex-

pelled for allegedly failing to meet professional standards of research, misrepresenting data to support a general acceptance of his techniques, and offering opinions that exceed a reasonable degree of scientific certainty" (M. Hansen, p. 52). And in 1993, faced with growing concern over expert testimony, the United States Supreme Court ruled that expert testimony must be validated scientifically, which clearly rules out West and his methods. But none of that has stopped West from serving and being in high demand as an expert witness. He has testified about 55 times, half of them capital murder cases, in nine states over the past decade or so, and with the exception of his first trial, he has not been on the losing side in a single case, helping to put dozens of defendants in prison, some for life and two on death row (M. Hansen, 1996).

Stopping the spread of false information is not just the responsibility of individual scientists, the media, the government, and the courts (which, in many trials, is decided by a group of common citizens)—it is everybody's business. It is, thus, incumbent on us to learn the difference between astronomy and astrology or between chemistry and alchemy so that we are not taken advantage of by those who would deceive us while cloaking themselves in the mantle of "research." We must become knowledgeable and critical consumers if we intend to separate the valid and valuable information from that which is invalid and useless. Rather than giving the benefit of the doubt to any research finding that comes along, we must, instead, seriously question that information and accept it only after it is shown to be true beyond a reasonable doubt.

The problem is that most people have a way to go to become knowledgeable and critical consumers of research, for they are starting out almost from scratch. When you walk into a history, science, or mathematics course, you have studied these topics throughout your educational careers. While there are other college courses for which you have not studied the material previously in a formal manner, you have, in many cases, been studying the topic informally for years. For example, you

have been involved in intimate interpersonal relationships all your life and have undoubtedly drawn conclusions on the basis of these experiences that may serve you well in an interpersonal communication course.

In the case of a communication research methods course, however, the odds are that you have no previous experience, or only limited experience, at best. Some of you may have taken a methods course in another discipline, but many have not. This means that most students start off with virtually no knowledge about the nature of the research process.

Don't panic, however, for this book is designed exactly for such students. We are going to signed exactly for such students. We are going to walk you through the process step-by-step, sharing with you the excitement of research, the discipline required for rigorous research, and common errors that impede researchers' progress. You will learn characteristics of high-quality research and what it

takes to achieve them, and you will learn about the shortcomings in research and what it takes to avoid them. By the end of the text, we promise that you will be a more knowledgeable and critical consumer of research than you are now.

CONCLUSION

We are confronted by research findings every day. If we are to be knowledgeable and critical consumers of this research, we must understand the processes used to conduct it. To do that, we have to learn about the research culture—its assumptions about how the world works, the various methods employed, and the rules of conduct to be followed. Once we know the code of research conversations, we have a better chance of distinguishing valid from invalid information. Our goal is to teach you how to understand and take part in these conversations.

ASKING QUESTIONS
ABOUT COMMUNICATION

Research begins with curiosity. Researchers notice something about communication and wish to learn more about it. That moment might occur in the midst of the give-and-take of social interaction in a family, business, or community, or it might occur while perusing the published literature in communication journals and books.

Researchers move from that sense of curiosity to formulating a question that can be answered by engaging in a research project. The articulation of such "researchable" questions is a primary and essential step in the research process. As the saying from the world of computers goes: "Garbage in, garbage out." The questions we ask suggest what information we will gather (the "in"-put of a research study), and the conclusions we will draw (the "out"-put of the study) are based on that information. So phrasing worthwhile questions is a key turning point in the research process. The research question outlines the framework on which the entire research project will be built.

In this chapter, we examine the process of asking questions about communication. We start by describing the domain of human behavior examined in communication research. We then explore commonly studied areas of communication research, two important starting points for communication research, and some ways to justify the selection of particular topics. We conclude this chapter by examining the ways researchers phrase topics and ideas in formal research questions and hypotheses.

DEFINING COMMUNICATION

Defining the term *communication* is like trying to describe a three-ring circus to a child—how can

we put into a sentence or two everything that goes on when so *much* goes on? Indeed, over 20 years ago, Dance and Larson (1976) had already found (in a survey of the literature) that there were 126 different definitions for the word communication!

You've probably noticed that a variety of images come to mind when you tell people you are studying communication. Some assume you're studying public speaking, others think of organizational communication, and still others picture journalism, electronic broadcasting, telephone technology, and who knows what else. They react so variably because communication is an umbrella term that covers numerous, apparently disparate, activities.

But all these activities do have important elements in common. In fact, the term communication, historically, is derived from the Latin word, *communis,* which means "to make common." Today, most definitions of communication emphasize one of two different views about making things common. As Pearce (1995) explains:

> There is a difference in the connotations of communication depending on whether the emphasis is on *that which is made* common (shared meanings, cultural symbols, traditions, common ground, understanding) *or on the process of* making *things common* (the transmission of messages from place to place; the languages in which things are framed; the patterns of action in which they occur; the things that people actually do and say to each other). (p. 7)

Those who focus on the process of *making* things common adopt what can be called an *information exchange perspective;* they are primarily

concerned with how communication can be used as a tool to transfer information from one person or place (a source) to another (a receiver). In contrast, those who emphasize that which is made *common* adopt what can be called a *meaning-based* or *constitutive perspective;* they are concerned with how "our experiences of reality are a product of communicative activity" (Mokros & Deetz, 1996, p. 32).

In this text, we acknowledge these two views on "making things common" in the following definition: **Communication** refers to the processes by which verbal and nonverbal messages are used to create and share meaning. This definition acknowledges that communication is both a meaning-based, creative process, as well as a tool used to exchange information.

WHAT CONSTITUTES COMMUNICATION RESEARCH?

We admit that this is a broad, abstract definition of communication. To better help you understand what is done in the communication discipline, we need to divide it into more concrete parts. A traditional model of communication—*people exchanging messages through channels within a context*—provides a useful way to focus on the types of research done by communication scholars.

This model contains four important components: people, messages, channels, and contexts. The pivotal element of the four is *messages*. Messages are the usual target of communication researchers—messages we send to ourselves, to others, within small groups or organizations, via the media, or within and between cultures.

The other three components of the model—people, channels, and contexts—are usually studied only as they influence messages. We depend on scholars in other disciplines to study the psychological, biological, and many other dimensions of human life. For example, studying how people's self-esteem changes as they grow older is more appropriate for psychology researchers than for communication researchers because the focus isn't on message behavior. However, studying how self-esteem affects communication apprehension (fear

of communicating, such as fear of public speaking) is appropriate for communication research because the focus is on message behavior and not just on psychological variables. Similarly, studying how electronic signals travel through a television cable (a channel) is within the domain of physicists, not communication researchers. Studying whether people acquire more information from messages received via mass-mediated or face-to-face channels, however, certainly is relevant communication research. In the same way, studying how much business organizations (a context) spend on computers is important to accountants and/or computer consultants, but not to communication researchers per se. Studying how new technologies affect the flow of information within business organizations, however, is a concern of communication research.

Communication research, thus, focuses primarily on messages—messages sent intrapersonally, interpersonally, or within and between groups, organizations, and cultures/societies. To make the other elements of people, channels, and/or contexts relevant to communication interests, researchers must relate them to message behavior.

AREAS OF COMMUNICATION RESEARCH

Because message behavior covers such a large array of processes, little can be said about "communication in general." In fact, researchers' first step involves carving out and defining the precise slice of the big communication pie they will investigate. They identify the **research topic,** the novel idea they consider worth studying and hope to understand better. Their goal is to be able to say with some certainty a few specific things about that slice. They also want to compare and contrast what they've learned with what others have discovered about that slice and with what is known about the slices studied by other researchers. Over time, as researchers describe more pie slices more accurately, the communication pie gradually takes on new meaning.

The communication realm can be divided in many ways. One way is to look at the institutional structure of the discipline. Scholars affiliate with

colleagues studying similar topics within the professional associations in the communication discipline. The National Communication Association (NCA), the International Communication Association (ICA), and the Association for Educational Journalism and Mass Communication (AEJMC), for example, are major associations for those who study communication. There are also four regional associations (the Central States, Eastern, Southern States, and Western States Communication Associations) and many state associations, as well as other associations that represent more specific communication interests, such as Women in Communication (WIC), or specific interests communication scholars share with those in other disciplines, such as the Public Relations Society of America (PRSA).

Professional associations are themselves organized into different interest areas, each of which addresses the common concern(s) of a group of scholars. These interest areas are often labeled according to their *size* (e.g., NCA "divisions" have at least 300 members, while "commissions" have at least 100 members) or *mission* (e.g., NCA "caucuses" represent the interests of members in specific demographic or socially defined groups—united by gender and race, for instance—who seek to realize the objectives specified in NCA's Affirmative Action Statement) (see Figure 2.1).

Professional associations often publish academic journals (see Chapter 3). Several journals are oriented toward scholars who study particular interest areas (e.g., the journal *Health Communication*). Professional associations also hold conventions where scholars present their work. To make a presentation, scholars send their papers and panel proposals to an elected officer (typically, the chair or vice-chair) of that interest area. These officers are

FIGURE 2.1   Divisions, commissions, and caucuses of the 1999 National Communication Association

A. Divisions

Applied Communication
Argumentation and
    Forensics
Asian Pacific American
    Communication Studies
Basic Course
Critical and Cultural Studies
Ethnography
Family Communication
Feminist and Women Studies
Gay, Lesbian, Bisexual/
    Transgender
    Communication Studies
Group Communication
Health Communication
Instructional Development
International and Intercultural
    Communication
Interpersonal Communication
Language and Social
    Interaction
Latina/Latino Communication
    Studies
Mass Communication

Organizational
    Communication
Performance Studies
Political Communication
Public Address
Public Relations
Rhetorical and
    Communication Theory
Theatre
Training and Development

B. Commissions

African American Communi-
    cation and Culture
American Parliamentary
    Practice
American Studies
Communication and Aging
Communication and Law
Communication Apprehension
    and Avoidance
Communication Assessment
Communication in the Future
Communication Needs of
    Students at Risk

Environmental
    Communication
Ethics Communication
Experiential Learning in
    Communication
Freedom of Expression
Human Communication and
    Technology
Intrapersonal Communication/
    Social Cognition
Peace and Conflict
    Communication
Semiotics and Communication
Spiritual Communication
Visual Communication

C. Caucuses

Asian/Pacific American
Black
Disability Issues
Emeritus/Retired Members
Gay and Lesbian Concerns
La Raza (Chicano/Latino
    culture and communication)
Women's

themselves scholars who have devoted some of their own work to that area.

The interest areas of the communication discipline are reflected in the courses taught at universities and colleges, and, in some cases, in the concentrations offered for communication majors (e.g., public relations or mass communication). The material taught within your communication classes is, in this way, defined by the areas scholars in the communication professional associations choose to study.

Within each interest area, several general topics attract scholars' attention. For example, M. W. Allen, Gotcher, and Siebert's (1993) review of journal articles published between 1980 and 1991 identified 18 general topic areas of organizational communication research (see Figure 2.2). Within each of those general areas, many specific topics interest scholars. For example, how superior-to-subordinate feedback affects subordinates' levels of satisfaction and performance has received much attention within the general area of interpersonal relations within organizations.

Existing interest areas within the communication discipline suggest fruitful directions for research. Some journal articles and chapters in scholarly texts, such as the one by M. W. Allen et al. (1993), provide an overview and critique of available research in an area. These publications are an excellent starting point for discovering what is known about an area and what needs to be investigated next (see Chapter 3 about reviewing the research literature).

Officially designated interest areas are not mutually exclusive compartments within which all communication research can be neatly classified. In fact, research, and especially cutting-edge research, is often concerned with the intersections of interest areas, such as the effects of the mass media on interpersonal interactions or rhetorical analyses of organizational communication. As Zarefsky (1993), then President of NCA, noted, "Some of the most exciting recent developments in communication not only have occurred in total disrespect of our disciplinary substructure but make much of that structure irrelevant" (p. 2).

Perhaps different structures for organizing communication scholarship and pedagogy will emerge in the future.

BASIC VERSUS APPLIED COMMUNICATION RESEARCH TOPICS

Another distinction communication scholars make is between: (a) research designed to test and refine theory, referred to as **basic research,** and (b) research designed to solve a practical problem, referred to as **applied research.**

Basic Communication Research

People often misinterpret the word *theory,* sometimes contrasting it negatively with practical knowledge, such as in the cliche, "It may work in theory but not in practice." People, therefore, sometimes distrust theory. The 1930s movie detective Charlie Chan once said, "Theories are like the mist on the eyeglasses: They tend to obscure one's vision."

This caricature of theory is misleading. A **theory** is simply a generalization about a phenomenon, an explanation of how or why something occurs. It is, as Kaplan (1964) explains, "a way of making sense of a disturbing situation" (p. 295). Looked at from this perspective, "Everybody uses theories; we cannot live without them" (Littlejohn, 1996, p. 2).

There is, however, an important difference between "commonsense" theories and "scientifically tested" theories. An example of a commonsense theory is what H. H. Kelly (1950, 1967) called "implicit personality theories." He discovered that people have implicit theories about which personality characteristics go together. For example, many people believe that writing ability and oral communication competence go together. If someone says that his or her friend, Jack, writes well, many people would expect Jack to also be good at social interaction. But this isn't necessarily so. Implicit personality theories are an example of how we use a commonsense assumption or theory to form impressions of others.

FIGURE 2.2 Areas of organizational communication research in journal articles, 1980–1981

1. Interpersonal Relations within Organizations (233 articles): Articles that investigate superior-subordinate relationships, additional interpersonal relations (e.g., expressions of emotions at work), interviewing, interpersonal communication and stress, and issues of gender and race.

2. Communication Skills and Strategies (120): Articles that focus on a wide variety of communication skills in the workplace, including persuasion and influence strategies, listening, self-presentation, and feedback seeking and delivery, as well as the outcomes associated with skills.

3. Organizational Culture and Symbolism (99): Articles that analyze the symbolic aspects of organizational life (e.g., metaphors and rituals) or that discuss organizational culture.

4. Information Flow and Channels (74): Articles that identify issues affecting information flow in organizations (e.g., structural characteristics of organizations).

5. Power and Influence (67): Articles that conceptualize and assess the effects of power and influence in organizations.

6. Positive Outcomes Associated with Communication (67): Articles that assess the effects of organizational communication processes on a variety of outcomes, such as performance, productivity, and employee commitment.

7. Decision Making and Problem Solving (67): Articles that study decision making and problem solving either as outcomes or as processes, and identify constraints on, and prescriptions for improved, decision making.

8. Communication Networks (57): Articles that identify antecedents and outcomes associated with network membership, links between technology and networks, measurement-related issues, and interorganizational networks.

9. Cognitive, Communication, and Management Styles (57): Articles that examine possible relationships between communication/management styles and outcomes.

10. Organization—Environment Communication Interface (53): Articles that address an organization's external communication, such as image-related communication, corporate communication, and boundary spanning.

11. Technology (45): Articles that study how technological advances (e.g., computer-assisted communication) affect organizations and employees.

12. Language and Message Content (41): Studies that concentrate on language as a means of shaping or framing ideas of reality and/or message content.

13. Structure (42): Articles that explore relationships between an organization's structure and communication.

14. Uncertainty and Information Adequacy (40): Articles that focus on interorganizational uncertainty, information adequacy, and information search.

15. Groups and Organizational Effectiveness (41): Articles that focus on the outcomes associated with group interactions in organizations.

16. Ethics (28 articles): Articles that deal with ethical issues associated with the strategic use of communication, as well as information flow issues.

17. Cross-cultural Research (24): Articles that focus on crosscultural and intercultural organizational communication research, including communication patterns and managerial communication.

18. Climate (18): Articles that investigate the determinants or components of organizational climate.

Source: Adapted from Allen, M. W., Gotcher, J. M., & Siebert, J. H. (1993). A decade of organizational communication research: Journal articles 1980–1991. In S. A. Deetz (Ed.), *Communication yearbook 16* (pp. 252–330). Newbury Park, CA: Sage.

Scholars are more systematic in the way they develop and test theories. The purpose of **basic communication research** is to increase our knowledge about communication phenomena by testing, refining, and elaborating theory.

Numerous theories have been developed to explain a wide array of communication events and processes, far too many for us to catalogue in this chapter. (For specific examples, see communication theory textbooks by Baran & Davis, 1995; E. Griffin, 1997; Infante, Rancer, & Womack, 1996; Littlejohn, 1996; Severin & Tankard, 1992; Trenholm, 1991.) But if you pick up almost any issue of a scholarly communication journal, you will see that many of the articles propose and/or test the validity, or increase the precision and scope, of particular theories.

Not all theories proposed by scholars are equally worthwhile. The value of a given theory is judged by the extent to which it explains an important phenomenon satisfactorily, organizes knowledge, predicts certain outcomes, focuses research efforts, and excites inquiry (see Figure 2.3).

The process of testing a theory scientifically is relatively straightforward (see Figure 2.4). The first step involves the selection of a research topic. The next step is the choice of an appropriate theory to help explain important aspects of the research topic. A hypothesis (or hypotheses) is then derived from the theory, and the accuracy of that prediction is tested in a study. Data are collected and analyzed, and they are used to gauge the merits of the prediction. If the findings confirm or support the hypothesis, the theory has one more piece of support. If the findings do not support the hypothesis, more research may need to be conducted, the hypothesis may need to be revised, and/or the theory may need to be revised or rejected.

As an example, many researchers who study interpersonal communication (an area) are interested in communication behavior during initial interactions (a topic). One theory that is especially useful for explaining communication during initial interactions is Berger and Calabrese's (1975) Uncertainty Reduction Theory (URT), a theory that describes the relationship between uncertainty and communication. The theory starts with the premise that people experience a lot of uncertainty during initial interactions (e.g., about the other person, how to behave, etc.) and that they engage in communication to reduce their uncertainty. Berger and Calabrese subsequently derived a number of hypotheses from this theory. For example, they hypothesized that "High levels of uncertainty cause increases in information-seeking behavior."

This hypothesis, among others derived from URT, was tested by W. Douglas (1994). His study involved several steps. He first told research participants that they would be interacting with another person whom they didn't know. They then completed a questionnaire that measured how uncertain they typically are when meeting new people (called "global uncertainty"). Participants then interacted in dyads for 4 minutes and their conversations were tape-recorded. After interacting, they filled out another questionnaire that measured how uncertain they were about their conversational partner. The conversations were transcribed and coded with respect to information-seeking behaviors, such as the number of questions people asked of one another. The results showed that high levels of global uncertainty on the preconversation measure were associated with high levels of question asking, a finding that supported the hypothesis and, consequently, the theory. However, postconversation uncertainty was consistently unrelated to the number of questions asked, a finding not predicted by the hypothesis. This finding calls into question another prediction implied by URT, and Douglas proposed a modification of that theory to account for it.

This research study shows that a theory is really never complete. Theorists are trying to explain an ever-widening range of communication behavior, and always fall a little short of their goal. Their reach always extends beyond their grasp. They continually try to describe, explain, understand, predict, and control more communication phenomena than anyone could before. Theories, like communication, are ongoing and ever-changing, and can always benefit from further refinement and elaboration.

FIGURE 2.3 Evaluating theories

The following is a synthesis of some of the most important functions that theory serves, functions that can be used to evaluate any theory. This synthesis is based on work by Barnlund (1968), Bross (1953), Dance (1982), Hall and Lindzey (1970), Hawes (1975), Kaplan (1964), Kuhn (1970), Littlejohn (1996), and Poole (1990).

1. Explanation: Theories clarify, make sense of, and account for a subject matter. Theories help us understand what something involves by organizing and summarizing knowledge into a system. To the extent that a theory explains something, it is considered to have explanatory power.
   a. Theoretical Scope: The explanatory power of any theory is limited by its boundary—the behavior, people/texts, or contexts it covers. A theory might explain many things or something specific.
   b. Validity: A theory must be internally valid, or consistent, being free from contradiction. A theory also needs to be externally valid, being consistent with observed facts and common everyday experiences.
   c. Simplicity/Parsimony: A theory should be as simple, or parsimonious, as possible. Generally, the fewer the number of propositions, the better the theory. The desire to simplify theories and explanations is known as *Ockham's Razor,* named after William of Ockham (1285–1349).
2. Prediction: Theories foretell what will happen before it does happen. They provide informed guesses about what will occur and when. To the extent that a theory provides testable predictions about something, it is considered precise.
   a. Focusing: A theory focuses attention on the most important variables and the expected outcomes.
   b. Observational Aid: A theory tells what to look for in observing and measuring important variables and their effects.
   c. Open to Falsification: A theory is open to falsification, or corroboration. It must be able to be tested to determine the extent to which it is true or false.
3. Control: To the extent that a theory explains and predicts something, some measure of control can often be gained over that phenomenon. Such control allows the object to be produced and directed in meaningful ways, by setting up the necessary conditions for causing or inhibiting its occurrence.
4. Heuristic: A theory should generate scholarly research. Theory serves as an impetus for testing its concepts and predictions. Scholars usually devote their energies to testing the most promising theories. Thus, theories that have been examined widely are usually deemed most noteworthy.
5. Communicative: A theory serves as an important focus for discussion and debate. It is a public message about a phenomenon that scholars argue for and against.
6. Inspiration: A theory ought to be exciting, catch the imagination, and teach people something. It ought to help solve important puzzles and intriguing mysteries and should address important and meaningful concerns.

Applied Communication Research

Applied communication research is conducted for the purpose of solving a "real-world," socially relevant communication problem. As Cissna (1982), the first editor of the *Journal of Applied Communication Research,* explained:

> *Applied research sets out to contribute to knowledge by answering a real, pragmatic, social question or by solving a real pragmatic, social problem. Applied communication research involves such a question or problem of human communication or examines human communication in order to provide an answer or solution to the question or problem. (Editor's note)*

Applied communication research, thus, seeks to demonstrate the relevance of communication knowledge to a particular event or challenge of

FIGURE 2.4 The process of basic communication research

1. Select Topic of Interest
   Example: Communication behavior during
   initial interactions

2. Select Appropriate Theory
   Example: Uncertainty Reduction Theory:
   People experience uncertainty during initial
   interactions and seek to reduce it by engaging
   in communication behavior (Berger &
   Calabrese, 1975)

3. Derive a Hypothesis
   Example: "High levels of uncertainty cause
   increases in information seeking behavior"
   (Berger & Calabrese, 1975, p. 103)

4. Design Study and Test Hypothesis
   A. If hypothesis is confirmed, study provides
      support for the theory
   B. If hypothesis is not confirmed:
      1. Conduct additional research
      2. Revise hypothesis
      3. Revise or reject theory

everyday life. Applied researchers start with a communication problem in a specific context and conduct a study to lessen its intensity and/or prevalence. Hopefully, the study yields valid generalizations about, and potential solutions to, the problem.

Many important problems experienced by individuals, couples, groups, organizations, and societies have attracted the attention of communication scholars. Figure 2.5 provides some recent examples of applied communication research. As you see, communication researchers have channeled their energies and resources toward helping to solve some very important problems.

One type of applied research that has important consequences for the study of communication is **action research**, "a collaborative approach to *inquiry* or *investigation* that provides people with the

means to take systematic *action* to resolve specific problems" (Stringer, 1996, p. 15). Action research stresses *participative inquiry,* that is, communication and collaboration with community group members throughout the course of a research study. Working with a researcher, stakeholders define a problem in their community, determine the methods to be used to collect, analyze, and reflect on the data, and use their new understandings to design action steps to resolve and manage the problem (see Argyris, Putnam, & Smith, 1985; Heron & Reason, 1997; Reason, 1994).

One important type of applied communication research that lends itself well to action research methods is **social justice communication research.** This research deals with and contributes to the well-being of people who are economically, socially, politically, and/or culturally underresourced and disenfranchised (see Ray, 1996a, 1996b; Swartz, 1997a). One way researchers do this is by identifying and critiquing dominant structures that underwrite inequality. Clair and Thompson (1996), for example, interviewed 50 working women to describe how pay inequity articulates patriarchical conditions. They found that pay inequity is viewed as a sign of oppression, a symbol of privilege to some groups and marginalization to others. Sometimes social justice communication researchers go beyond identification and critique to actively change an oppressive situation. Schmitz, Rogers, Phillips, and Paschal (1995), for example, conducted a 6-year study of the Public Electronic Network (PEN), a free, computer-based electronic communication network designed by one of the authors and used by over 5,000 Santa Monica, California, residents. The study showed how PEN spurred participation in confronting the problem of homelessness by persons not customarily given "voice." As another example, Hartnett (1998) not only critiqued the "correctional-industrial-complex" (the interlocking interests of police/correctional organizations and industrial corporations that profit from the symbolic construction of racism, fear of crime, and law and order that lead to the solution of prisons), as an activist teaching in a prison, he had his

FIGURE 2.5 Examples of recent applied communication research

1. R. J. Adams and Parrott (1994) studied pediatric nurses' communication of role expectations to parents of hospitalized children. Both nurses and parents were more satisfied and perceived a reduction in role ambiguity when nurses communicated rules in writing and/or orally, as compared to no formal communication.

2. Dillard, Plotnick, Godbold, Freimuth, and Edgar (1996) investigated the extent to which public service announcements on the topic of AIDS/HIV evoked emotional responses and the degree to which those feelings predicted receivers' reactions to such messages.

3. Ferguson and Dickson (1995) examined children's feelings and expectations regarding their single parents' dating behavior. They found that children's connectedness, informational certainty, openness, interpersonal acceptance, emotional security, and boundaries were related to their perceptions of this aspect of their parents' lives.

4. Henriksen (1996) studied what skills underlie children's comprehension of advertisements' intent. The results suggested that how well they understand that selling implies an exchange of money for goods influences how young viewers interpret advertisers' motives.

5. Manusov, Cody, Donohue, and Zappa (1994) investigated the frequency, type, and sequence of accusations made during child custody mediation sessions. Accusations were found to be detrimental. Couples were more likely to reach

custody agreements when mediators intervened after accusations and when discussion of specific offending behavior was avoided.

6. M. Miller (1995) explored messages across four generations of six women in one family who had engaged in nonfatal suicide behaviors. She discovered recurrent patterns of communication that may have put the female members of this family at risk for suicide.

7. Olson and Olson (1994) studied how judges' statements and decisions in jury trials, through both their trial-management approaches and the accounts of law and justice embedded in their comments during trials, influence jurors' verdicts.

8. T. R. Peterson et al. (1994) conducted a field study of Texas farmers to identify persuasive strategies (such as following a narrative format and avoiding the appearance of relying on technical expertise at the expense of common sense) that work to reduce injuries involving use of farm equipment.

9. Stamp and Sabourin (1995) collected and categorized accounts of 15 abusive males to understand violence between spouses and to design effective treatment programs for them.

10. Vangelisti (1994a) studied marital and relational counselors and found that many focus on individual, rather than interpersonal and relational, factors when conceiving and treating the cause of communication problems.

communication class reenact the 1858 Lincoln/Douglas debate over slavery, and added the voice of the black abolitionist David Walker. The research report documents how this public speaking exercise transformed the class into a workshop for democracy, teaching these students/prisoners and invited guests—guards, administrators, other prisoners, and members of the press—about the complicated systems that then supported and contested slavery, many of which still exist today in the fight

for racial equality and social justice. As Hartnett explains, "The debate, therefore, enabled us to stage an empowering *counterpublic,* in which a marginalized and viciously stereotyped group of men were able to construct the shape and texture of their own voices while engaging in thoughtful, serious political debate" (p. 237). As L. R. Frey, Pearce, Pollock, Artz, and Murphy (1996) contend, these and other communication scholars (see, for example, Artz, 1998; Crabtree, 1998; T. S. Jones &

Bodtker, 1998; Ryan, Carragee, & Schwerner, 1998; Varallo, Ray, & Ellis, 1998) "have channeled their energies and resources toward challenging the norms, practices, relations, and structures that underwrite inequality and injustice" (p. 110).

An Integrated Model of Basic and Applied Communication Research

Although there are some important differences between basic and applied communication research (see Figure 2.6), these should not be treated as unrelated endeavors. Theory and practice are inherently intertwined. K. Lewin (1951) argued that "there is nothing so practical as a good theory" (p. 169), and Levy-Leboyer (1988) later added that "there is nothing so theoretical as a good application" (p. 785). "Theory and practice," Boyer (1990) concluded, "vitally interact, and one renews the other" (p. 23).

The interrelationship of theory and application is especially important in a "practical discipline" such as communication that has enormous potential to make a difference in people's lives (see R. T. Craig, 1989, 1995; R. T. Craig & Tracy, 1995). As Craig (1995) claims, "All research in a practical discipline is ultimately pursued not for its own sake but for the sake of practice" (p. 151). Moreover, a practical field is inherently theoretical. Wood (1995) contends that there is a dynamic interplay between theory and practice that characterizes what is typically called "applied" communication research: "Applied communication research is practicing theory and theorizing practice" (p. 157). Hence, any strict distinction between "basic" and "applied" communication research, according to G. R. Miller (1995), is "more an intellectual and professional liability than an asset" (p. 49).

FIGURE 2.6 Some differences between basic and applied communication research

DEFINING CHARACTERISTIC	BASIC COMMUNICATION RESEARCH	APPLIED COMMUNICATION RESEARCH
Nature of the problem	Seeks to establish general principles about communication.	Seeks to understand an important communication problem.
Goals of the research	To produce theoretical principles that simplify and explain apparently complex or related communication processes.	To provide knowledge that can be immediately useful to a policymaker who seeks to eliminate or alleviate a communication problem.
Guiding theory	Other scholars' theoretical perspectives.	Any idea, including lay theories or other scholars' theoretical perspectives, that holds promise of changing an unsatisfying situation into a more desirable one.
Appropriate techniques	Theory formulation, hypothesis testing, sampling, data collection techniques (direct observation, interview, questionnaire, scale measurement), statistical treatment of data, validation or rejection of hypothesis.	Observe or ask actors about events leading up to current situation; trial and evaluation of proposed solution.

Source: Adapted from Miller, D. C., *Handbook of research design and social measurement,* p. 4, copyright © 1991 by Sage Publications, Inc. Adapted by Permission of Sage Publications, Inc.

FIGURE 2.7 Basic/Applied Research Grid
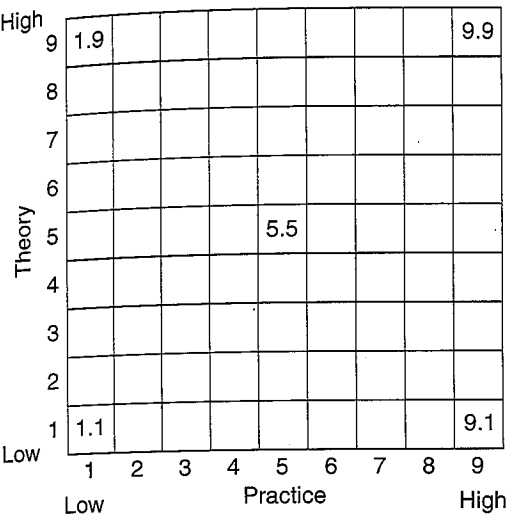
Source: Gary L. Kreps, Lawrence R. Frey, and Dan O'Hair, "Applied Communication Research: Scholarship That Can Make a Difference," *Journal of Applied Communication Research, 19*(1/2), p. 74. Copyright © 1991 by National Communication Association. Reproduced by permission of the publisher.

Kreps, Frey, and O'Hair (1991) advanced a conceptual model that integrates concerns for theory with concerns for practice (see Figure 2.7). This model employs two axes: one axis describes the relative emphasis of a particular study on theory and the other axis references the relative emphasis on application/practice.

This model is useful for assessing the potential benefits of research studies. A study low on both theory and application (1/1) is rarely worth doing. For example, many scholars bemoan what they call "variable-analytic research," in which aspects of a communication process are related for no apparent purpose, not because they can potentially advance theory or solve a real-world problem. It might be easy and fun to study whether people born under different astrological signs speak faster or use longer sentences, but this find-ing would have little theoretical or pragmatic significance. (When lots of variables are studied for no apparent reason, this is called a "shotgun approach," because a researcher essentially aims a gun, metaphorically speaking, in a general direction and hopes to hit something.)

A study may have relatively high theoretical interest but little apparent practical application (1/9), at least in the short run. For many years, former U.S. Senator William Proxmire of Wisconsin presented a dubious achievement award called the "Golden Fleece" to what he thought were wasteful federally funded research projects. Senator Proxmire may have had good intentions, but he seemed to assume that the only standard for evaluating research was obvious and immediate economic or practical value. However, theoretical research often concerns phenomena that do not seem immediately relevant to the citizens funding it with their tax dollars. In fact, the more developed a science is, the less laypersons can judge what will eventually be important if it is pursued. We must, therefore, be very careful about dismissing this type of research, because sometimes practical benefits are not immediately apparent. For example, it may seem frivolous to fund a study of conflict styles based on how people compete in a table game, such as the Prisoner's Dilemma, "a mixed-motive game or simulation which forces two sets of players to make a choice in a situation where the outcome or payoff is a function of the interaction between the decisions of the players" (Ashmore, 1987, p. 117). But if the styles identified in that study are later used in another study to reveal how the arguments of couples who get a divorce differ from the arguments of couples whose marriages last, or how the arguments evidenced in successful organizational work teams differ from those in teams in organizations that go bankrupt, the first study proves to have practical value after all.

A study rated high on applied value but low on theory (9/1) is one in which the research solves an important problem in a particular context, but the findings can't be generalized to other contexts (see Chapter 5). For example, say a communication consultant is called in to study a problem of

information flow in a company. After conducting extensive research in that organization, the consultant finds that the problem is due to a particular individual and recommends that this individual be fired. In this instance, the company gained valuable information and solved its problem, but that single case does not appear to yield a generalization that can be applied in any other context.

Many studies fall between the extremes, of course (5/5 studies, for example), but communication scholars should aim to do research that has high concern/potential for both theory and practice (9/9). Many 9/9 communication research studies have been done. For example, K. Miller, Birkholt, Scott, and Stage (1995) studied the relationship between emotional communication and job burnout for human service workers. Their study of workers who provide services to the homeless extends the Empathetic Communication Model of Burnout (see K. I. Miller, Stiff, & Ellis, 1988), which explains how different types of empathy are related to communicative effectiveness and subsequent burnout. Their 1995 study includes three important concepts not discussed in the original theory/model: job involvement, organizational role, and attitude regarding service recipients. This study, thus, not only provided support for a modified version of this model, but offered a more full understanding of, and ways of managing, emotional communication—an important cause of burnout, which is a significant problem for many human service workers.

JUSTIFYING COMMUNICATION RESEARCH TOPICS

R. K. Tucker, Weaver, and Berryman-Fink (1981) argue that all researchers should be prepared to answer the questions: "So what?" and "Who cares?" Researchers, therefore, must develop a clear rationale for why their research topic is worth studying.

We have said that the best topics have the potential to both extend theory and help solve important social problems. Research should, thus, contribute to the "conversation" between those who conduct research and those who might use

their research findings. In that light, research can be addressed to three primary audiences, each of which has slightly different needs: scholars, practitioners, and the general public.

A research project is important to communication scholars when it investigates an important communication phenomenon/problem, extends previous research by providing a more complete understanding of that phenomenon/problem, tests and refines theory, and suggests directions for future research. A communication research project valuable to scholars contributes to a better understanding of the significance of previous investigations and suggests directions for subsequent research endeavors.

A second audience is practitioners who apply the knowledge that scholars produce. Practitioners include educators who translate research findings for students, communication consultants who help organizations solve communication problems, counselors who help couples communicate better, and executives who produce television shows. The best practitioners who use communication to carry out their work try to keep informed about the latest research so that their practice is up-to-date. They value communication research projects that help them do their job better.

A third audience is the general public, non-professionals who want to know what messages will help them handle their everyday communication challenges better. Occasionally, books about "how to communicate better with your partner" or "how to dress for success," which essentially translate communication-related research findings into easily understood prescriptions (although some don't seem to rely on research at all), have become best-sellers. A communication research project, therefore, is important to the members of the general public to the extent that it helps them live a more fulfilling life.

Some communication research has utility for all three audiences. For example, studying the effects of media violence on children potentially benefits all three audiences. This type of research has a long history, dating back to the 1920s (see Gunter, 1994) and has contributed substantially to

theories about relationships between messages and behavior. Understanding these effects is also important to practitioners, such as producers of television shows (e.g., the recent decision by television executives to increase the number of hours per week devoted to nonviolent, family-oriented shows) and doctors who treat aggressive children (the American Medical Association recently issued guidelines about counteracting such effects). And, of course, such effects are important to parents concerned about their children's television-viewing habits. Thus, while any particular research may benefit some audience(s) more than others, the best communication research potentially benefits all three audiences.

RESEARCH QUESTIONS AND HYPOTHESES

In research articles, researchers first explain why they chose their topic, review the relevant literature (see Chapter 3), and then they articulate the research question or statement that guided their investigation. These questions and/or statements usually are designed to accomplish one of two goals: (a) to describe communication behavior, or (b) to relate communication behavior to other variables.

Describing Communication Behavior

One important purpose of communication research is to describe the nature and characteristics of a particular communication behavior or sequence of communication behaviors. A **research question,** a formal question posed to guide research, of this type essentially asks, "What is the nature of communication behavior 'X'?" For example, consider the following research questions that scholars have asked about communication behavior:

RQ: What receiver behaviors trigger perceived suspicion? (J. K. Burgoon, Buller, Dillman, & Walther, 1995)

RQ: What topics do recipients report being teased about? (Alberts, Kellar-Guenther, & Corman, 1997)

RQ: What are the types of interpersonal rituals reported in friendships and marital relationships? (Bruess & Pearson, 1997)

RQ: What supervisor communication occurs during the dismissal process? (Cox & Kramer, 1995)

RQ: What is the structure of memorable support and nonsupport messages? (L. A. Ford & Ellis, 1998)

RQ: How do able-bodied instructors communicate with students with disabilities? (R. D. Hart & Williams, 1995)

RQ: What are the rules those sexually abused report using to disclose about this crime? (Petronio, Reeder, Hecht, & Ros-Mendoza, 1996)

RQ: What do the emotional experiences of 911 call-takers and citizens look like? (Tracy & Tracy, 1998)

RQ: What are adolescents' motivations for viewing graphic horror? (Johnston, 1995)

RQ: What is the global structure of international news flow? (K. Kim & Barnett, 1996)

These questions are descriptive—much like the who, what, where, when, and why questions journalists ask when covering a news story. But these questions also do something very important: They attempt to categorize a concept and, thereby, measure it and turn it into a variable (see Chapter 4 for a fuller discussion of measurement). A **variable** is any concept that can have two or more values. A single object, therefore, is not a variable; it becomes a variable only when it exists in different types or in different amounts and we understand those different states. A particular make of car, such as a Honda, would not be a variable if all Hondas were identical or we didn't know how to differentiate them. Once we learn that Hondas are divided into such categories as "Accord," "Prelude," and "Civic," we are talking about "types of Hondas," which can be a variable.

To illustrate the process of turning a communication behavior into a variable, take the research question posed by Cox and Kramer (1995) about supervisor communication during the dismissal

process. Before they did this study, supervisor communication during this process was talked about as a global, single concept. To turn it into a variable, the researchers asked managers what they said during termination meetings with employees. They discovered that supervisors engaged in a number of specific communication behaviors, such as asking employees about their performance or conduct, explaining the problem and/or reviewing the documentation, and offering some assistance or advice to the dismissed employee. With this information, we can study more precisely how particular behaviors affect the outcome of the process. Therefore, these categories show how supervisor communication behavior during the dismissal process varies in meaningful ways. Describing communication behavior by showing how it varies by type or amount and, thereby, turning concepts into variables, is, thus, important research.

Relating Communication Behavior to Other Variables

Turning a communication concept into a variable makes it possible to examine the relationship between that communication behavior/variable and other important variables. Researchers can answer specific instances of the general research question, "How is communication variable 'X' related to other variables?" Consider, for example, the following research questions:

RQ: Is affective orientation related to the reported use of specific types of nonverbal comforting behaviors? (Bullis & Horn, 1995)

RQ: Is the sex of the siblings related to the amount of verbally aggressive messages? (Teven, Martin, & Newpauer, 1998)

RQ: Are there associations between a woman's surname and men's and women's perceptions of a woman's commitment to the relationship or love for her partner? (Stafford & Kline, 1996)

RQ: What role will gender and psychological type play in conflict style preference for experi-

enced managers? (Sorenson, Hawkins, & Sorenson, 1995)

RQ: To what extent is perceived nonverbal immediacy of teachers related to the students' evaluations of those behaviors? (McCroskey, Richmond, Sallinen, Fayer, & Barraclough, 1995)

RQ: To what degree do international students' frequency of interaction with American students and lengths of time in the United States, the local community, and attending the university increase their perceptions of adaptation to American culture? (S. Zimmermann, 1995)

RQ: How does technology affect the interactions in the classroom? (McHenry & Bozik, 1995)

Each of these questions asks about the relationship between a communication behavior that varies in measurable ways (e.g., nonverbal comforting behavior, verbally aggressive messages, etc.) and other variables.

To understand more fully how scholars pose research questions involving relationships between variables, we must make several more distinctions between: (a) independent and dependent variables, (b) ordered and nominal variables, and (c) research questions and hypotheses.

Independent versus Dependent Variables. When researchers study how two variables are related, they often assume that one of them influences the other. They call the variable that is thought to influence changes in another variable an **independent variable (IV)** (sometimes called an **explanatory variable;** in nonexperimental research, a **predictor variable**). They call the variable thought to be changed by another variable a **dependent variable (DV)** (in nonexperimental research, sometimes called the **criterion variable** or **outcome variable**), because changes in it are dependent on changes in the other variable. For example, in the hypothesis, "If you say 'please,' people are more likely to do what you ask," "saying please" is the independent variable and "people doing what you ask" is the dependent variable. These labels distinguish variables that are thought to influence other

variables (independent variables) from variables thought to be influenced by other variables (dependent variables).

Sometimes researchers suspect a **causal relationship** between variables, believing that changes in the independent variable *cause* observed changes in the dependent variable. For example, many researchers believe that smoking cigarettes (the independent variable) causes cancer (the dependent variable). Researchers sometimes study independent variables that are not about messages, but are thought to influence people's communication behavior. For example, the attractiveness of people's appearance may influence how others talk to them, television or radio may influence the comments political candidates make, and newspaper editorials about the bombings of Iraq may be different depending on whether the editorial is published in a United States or Middle Eastern newspaper. These suspected relationships focus on how independent variables (such as the person, channel, and context variables discussed earlier in this chapter) that precede, or exist prior to, communication (called *input variables*) cause changes in a dependent variable that concerns some aspect of communication behavior.

Communication behavior, of course, can also be studied as an independent variable that causes changes in a dependent variable. For example, researchers may suspect that certain messages designed to get other people to comply with a request may actually cause people to *resist* doing what was asked rather than agreeing to it. Researchers may also believe that exposure to violent television messages causes children to tolerate violence on their playgrounds. In such instances, communication is the independent variable that is thought to cause changes in the dependent, or *outcome,* variable.

It should be pointed out that causality is very difficult to establish. We would not want to conclude that a drug cured a disease on the basis of a single study, or two or three, and the same is true when attempting to establish causal principles for communication behavior (see Chapter 5 regarding

the replication of studies). Careful design of studies that yield ample evidence must be obtained before a causal relationship between variables can be inferred. We will examine how to design such studies in Chapter 7 when we explore experimental research.

There are also various models of causal relationships between variables. For example, in some models of causality, called **recursive causal models,** the causal relationship is one way—one variable influences another but not the other way around, that is, one is the cause and the other is the effect. For example, age may influence the amount that people self-disclose about themselves, but self-disclosure can't influence people's age. In other models, called **nonrecursive causal models,** the causal relationship is reciprocal or two way, in that a variable can be both a cause and an effect. For example, studying may lead to better grades, but better grades may well make it more likely that a person studies.

At other times, researchers assume a **noncausal relationship** between variables, meaning that the variables are associated, or occur together, without one necessarily causing changes in the other. A study may discover, for example, that people like people they know more about; that is, self-disclosure and liking are related. But the causal relationship may well remain a chicken-and-egg question. Changes in self-disclosure *may* cause changes in liking and not the other way around, but it could just as easily be that changes in liking cause changes in self-disclosure and not the other way around. Of course, it could also be a nonrecursive causal model, with one variable causing changes in the other that then lead to changes in the first variable. In cases where a relationship between two variables is suspected, but it is not clear which is the cause and which is the effect, a noncausal relationship is assumed.

When posing formal research questions for a study that assesses noncausal relationships, researchers typically designate one variable as the independent variable and the other as the dependent variable, depending on their primary interest. For

example, if they are most interested in how changes in self-disclosure relate to changes in liking, then they should designate self-disclosure as the independent variable and liking as the dependent variable. If they think changes in liking are related to changes in self-disclosure, then liking would be viewed as the independent variable and self-disclosure would be the dependent variable.

Ordered versus Nominal Variables. Variables can also be differentiated with regard to the values researchers assign to them or the kind of "scale" used to measure them (see Chapter 4). **Ordered variables** can be assigned numerical values that indicate how much of the concept is present. Variables such as age, weight, temperature, and income are ordered variables. Being 10 years old, for example, is less than being 20 years old, which is less than being 30 years old, and so forth. We can measure how much older or younger one person is than another. The numerical value, in this case, indicates how much age a person possesses, so age is an ordered variable.

   Nominal variables (also called **categorical, classificatory,** or **discrete variables**), by contrast, can be differentiated only on the basis of type (nominal means "in name only"). Variables such as gender (male and female), race (e.g., Caucasian, African American, Hispanic, and Native American), and political affiliation (e.g., Democrat, Republican, and Independent) are nominal variables since they identify different types. No meaningful quantities can be assigned to the categories of a nominal variable. Although numbers are sometimes used to represent nominal categories, for example, we can call males "1" and females "2," we don't mean that females have twice as much of something as males. (A nominal variable such as gender that can only be divided into two categories is called a **dichotomous** or **binomial variable;** if there are more than two categories, such as the many categories used to reference ethnicity, it is called a **polytomous variable.**) License plates are another good example. If you have license plate F1000 and your friend has license plate F3000,

that doesn't mean your friend has more license plate than you! Nominal variables, therefore, indicate what something is or whether an attribute is present or absent, not how *much* of a concept is present.

   In some cases, a potentially ordered variable is treated as a nominal variable. Instead of being measured on an ordered scale, it is divided into categories along an ascending or descending range (such as low, medium, or high on communication apprehension). One can easily transform any ordered variable into a nominal variable. We could, for example, say that temperatures of 50 degrees or above constitute warm weather whereas temperatures below 50 degrees constitute cool weather. (An ordered variable that is divided into two categories like this is called a **dichotomized variable.**) But note how much information we have lost in the process. There is, after all, a big difference between 50 degrees and 120 degrees, but both get classified as warm weather in this particular example. Because of this loss of important information, researchers typically don't turn ordered variables into nominal variables.

   It is also sometimes possible to turn a nominal variable into an ordered variable. Bem (1979), for example, studied gender as an ordered variable by using numerical values to measure the psychological orientations of men and women regarding traditionally feminine and masculine traits, which she called "psychological gender orientation." Her research participants indicated on a 5-point ordered scale their agreement with many statements representing these male-associated/female-associated traits and were then given a total score for each type of trait. An imbalance of male and female traits signifies whether one has a traditionally male or traditionally female psychological gender orientation; if the scores are relatively equal, people are considered androgynous in their psychological gender orientation. In contrast, biological gender can only be treated as a nominal variable.

Research Questions versus Hypotheses. Research studies usually are designed to answer

research questions or test hypotheses about relationships between variables. Questions typically are posed when researchers don't have enough evidence, on the basis of the literature reviewed (see Chapter 3), to predict the nature of that relationship. They may, for example, be studying variables that haven't been related before. Therefore, they have little information on which to base a claim about the nature of the relationship. It might also be the case that the literature has revealed conflicting evidence, with some studies showing a relationship between two (or more) variables and others showing no relationship. In such cases, researchers typically pose a research question about the relationship between the variables.

   At other times, however, researchers have a hunch or tentative answer about the nature of the relationship between an independent and dependent variable. This tentative answer usually is derived from a theory or from the available body of literature about the variables, and sometimes from logic and/or observations of how the variables interact in everyday life.

   When researchers feel confident enough to make a prediction, they advance a **hypothesis** (H_a is the general symbol for a research hypothesis; H_1 is used to refer to a specific research hypothesis), a tentative statement about the relationship between the independent and dependent variables. It may simply predict a relationship between variables without specifying the nature of that relationship, called a **two-tailed hypothesis** (sometimes called a **two-direction hypothesis** or, less accurately, a **nondirectional hypothesis**), or it may predict the specific nature of the relationship, called a **one-tailed hypothesis** (sometimes called a **directional hypothesis**) (see Chapter 12).

Posing Research Questions and Hypotheses about Relationships between Variables. How the research question or hypothesis for a communication study is phrased usually depends on two things: (a) whether the independent variable is nominal or ordered, and (b) whether a researcher wishes to pose a research question or a hypothesis

about the relationship between the independent and dependent variables. We will use two hypothetical examples—the effects of gender on self-disclosure and the effects of age on self-disclosure—to explain the general form that research questions and hypotheses take (see Figure 2.8), and along the way, we will take a look at some actual examples as well.

   When the independent variable is *nominal,* divided into categories, the research question asks whether there is a *difference* between *a* (the first category of the nominal independent variable) and *b* (the second category of the nominal independent variable) with respect to *c* (the dependent variable). For example, in studying the effects of gender (the independent variable) on self-disclosure (the dependent variable), the research question asks whether there is a difference between males (*a,* the first category of the nominal variable) and females (*b,* the second category of the nominal variable) with regard to self-disclosure (*c,* the dependent variable).

   What we just described is a template for how researchers pose a research question when the independent variable is nominal. In actual practice, this form may differ slightly, as the following research questions from actual studies show:

RQ: Will females provide more sensitive comforting messages than males? (Hoffner & Haefner, 1997)

RQ: How do doctors and patients differ in their covert responses during the medical interview? (Cegala, McNeilis, McGee, & Jonas, 1995)

RQ: Do program enrollees and nonenrollees [in a Breast and Cervical Cancer Control Program] differ in their preference for persuasive messages delivered through mass media, one-to-several interpersonal channels, or one-to-one interpersonal channels? (A. A. Marshall, Smith, & McKeon, 1995)

RQ: Do individuals exhibiting high, moderate, and low Adventurousness, Impulsiveness, and Disinhibition, respectively, differ in reported condom use behavior? (Sheer & Cline, 1995)

FIGURE 2.8 Research questions and hypotheses for nominal and ordered independent variables

NOMINAL INDEPENDENT VARIABLE

A. Research Question

1. Form

RQ: Is there a difference between *a* (the first category of the independent variable) and *b* (the second category of the independent variable) with respect to *c* (the dependent variable)?

2. Example: Effects of Gender on Self-disclosure (*a* = Males; *b* = Females; *c* = Self-disclosure)

RQ: Is there a difference between males and females with respect to self-disclosure?

B. Hypothesis (One-Tailed)

1. Forms

H: *A* (the first category of the independent variable) is greater on *c* (the dependent variable) than *b* (the second category of the independent variable).

or

H: *A* (the first category of the independent variable) is lower on *c* (the dependent variable) than *b* (the second category of the independent variable).

2. Examples: Effects of Gender on Self-disclosure (*a* = Males; *b* = Females; *c* = Self-disclosure)

H: Males self-disclose more than females.

or

H: Males self-disclose less than females.

ORDERED INDEPENDENT VARIABLE

A. Research Question

1. Form

RQ: Is there a relationship between *x* (the independent variable) and *y* (the dependent variable)?

2. Example: Effects of Age on Self-disclosure (*x* = Age; *y* = Self-disclosure)

RQ: Is there a relationship between age and self-disclosure?

B. Hypothesis (One-Tailed)

1. Forms

H: There is a positive relationship between *x* (the independent variable) and *y* (the dependent variable).

or

H: There is a negative relationship between *x* (the independent variable) and *y* (the dependent variable).

2. Examples: Effects of Age on Self-Disclosure (*x* = Age; *y* = Self-disclosure)

H: There is a positive relationship between age and self-disclosure.

or

H: There is a negative relationship between age and self-disclosure.

RQ: Compared to Caucasian students will Native American students perceive their teachers to have less communication competence? (Bolls, Tan, & Austin, 1997).

A hypothesis for a nominal independent variable predicts the nature of the difference between the two (or more) categories of the independent variable. It takes the form: *a* (the first category of the nominal independent variable) will be greater (or less) on *c* (the dependent variable) than will *b* (the second category of the nominal independent

variable). Regarding the effects of gender on self-disclosure, the hypothesis might state that "Men self-disclose more than women" (or "Men self-disclose less than women"). (Note: Like most research hypotheses, this statement is one-tailed; a two-tailed hypothesis would state: "Men and women self-disclose differently." A difference is still predicted, but investigators are unsure of its direction or location.)

In actual practice, this form varies somewhat. The following hypotheses provide illustrations of its use:

H: Women report more than men that verbal interactions contribute to their relational closeness. (Floyd & Parks, 1995)

H: Employees provided with justifications will perceive the manager's actions as fairer than employees provided with excuses or no social accounts. (Tata, 1996)

H: Older people will evaluate their communication with young family adults more positively than young people in general. (Cai, Giles, & Noels, 1998)

H: Concrete news items will have better recall than abstract news items. (David, 1998)

H: Group members from individualistic cultures will initiate more conflicts than group members from collectivist cultures. (Oetzel, 1998)

When the independent variable is *ordered*, measured in sequenced numbers, the research question asks whether there is a *relationship* between *x* (the independent variable) and *y* (the dependent variable). Say we want to know how age (*x*, the independent variable) affects self-disclosure (*y*, the dependent variable). Because age is an ordered variable, the research question asks whether there is a relationship between the variables of age and self-disclosure.

In actual practice, of course, this basic template is varied quite a bit, as the following research questions reveal:

RQ: How are proportions of argument complexity associated with perceptions of communication satisfaction? (Canary, Brossman, Brossman, & Weger, 1995)

RQ: What is the association between leadership evaluations and specific types of leadership-relevant talk? (Pavitt, Whitchurch, McClurg, & Petersen, 1995)

RQ: What is the relationship between perpetrator message affect and negotiator affect behavior? (Rogan & Hammer, 1995)

RQ: What is the relationship of patients' perceptions of physician communicator styles to patient satisfaction? (Cardello, Ray, & Pettey, 1995)

RQ: Is there a relationship between the length of the answering machine message and the caller's message? (Buzzanell, Burrell, Stafford, & Berkowitz, 1997)

Finally, a hypothesis for an ordered independent variable specifies the nature of the relationship between the independent and dependent variable. While independent and dependent variables may be related in quite a few ways (see Chapter 14), we focus here on two types of relationships: (a) a **positive relationship** (also called **direct relationship**), in which increases in an independent variable are associated with increases in a dependent variable (e.g., the more hours one spends studying before an exam, the higher one's exam scores will be); or (b) a **negative relationship** (also called **inverse relationship**), in which increases in an independent variable are associated with decreases in a dependent variable (e.g., the more hours one spends "partying" the night before an exam, the lower one's exam scores will be). A hypothesis, thus, takes the form: *x* (the independent variable) is positively (or negatively) related to *y* (the dependent variable). For the effects of age on self-disclosure, the hypothesis might be either "Age is positively related to self-disclosure" or "Age is negatively related to self-disclosure." (A two-tailed hypothesis would simply state: "Age and self-disclosure are related.")

Once more, as actual examples of research hypotheses show, this format is sometimes changed slightly:

H: Cognitive efficiency will be positively related to interaction involvement (Jordan, 1998)

H: Increases in the amount of gaze, smiles, head nods, and forward lean will be positively correlated with increases in amount of liking toward the actor. (Palmer & Simmons, 1995)

H: Frequent viewing of nonviolent children's programs leads over time to an increase in children's positive-intense daydreaming. (Valkenburg & van der Voort, 1995)

H: Electronic mail usefulness perceptions will be positively related to frequency of media use. (Fulk, Schmitz, & Ryu, 1995)

H: A positive relationship exists between students' reports of teacher content relevant communication and students' stated motivation to study. (Frymier & Shulman, 1995)

You now have the basic form for posing formal research questions and hypotheses. Before leaving this discussion, however, let us point out two things. First, some independent variables are obviously nominal or ordered, such as the variables of gender and age used above, but others can be treated as either nominal or ordered. For example, are intelligence, self-esteem, and communication apprehension nominal or ordered variables? They could be either, depending on how they are defined and measured. As a general rule, if a variable can be measured either way, it should be treated as ordered and a scale should be used to measure it. As we discussed previously, meaningful numbers give us more information than general categories.

The examples given so far also only refer to one independent and one dependent variable. Researchers, however, are often interested in the effects of *multiple* independent variables on a dependent variable (and even multiple dependent variables). In such situations, researchers are especially interested in **interaction effects** (also called **conditioning, contingency, joint,** and **moderating effects;** sometimes known as **multiplicative relations** in nonexperimental research)—effects due to the unique combinations of the independent variables that make a difference on the dependent variable(s). Interaction effects are due to the effects of multiple independent variables working together, in contrast to the effects of each independent variable working alone (called **main effects**) that we focused on before. For example, people lose weight by dieting (a main effect) and they also lose weight by exercising (another main effect), but when people both diet and exercise, they lose the most weight. The effects due to the combination of dieting and exercising are an example of an interaction effect.

As we will see later in this text, many communication researchers study interaction effects to capture the complex ways in which variables are related. For now, just be aware that some research questions and hypotheses ask about or predict interaction effects. Here are some examples:

RQ: Do argumentativeness and verbal aggression interact to predict an individual's reported use of evidentiary appeals to respond to refusal of a request? (Ifert & Bearden, 1998)

RQ: What are the differences, if any, between the expressed attributions put forth by adolescents and those put forth by young adults in (a) success situations and (b) failure situations? (Roghaar & Vangelisti, 1996)

RQ: What are the effects of sex of subject, sex of partner, and the interaction of sex of subject and partner on the following 11 verbal communication behaviors: number of words spoken, vocalized pauses, verbal fillers, interruptions, overlaps, justifiers, intensifiers, qualifiers, questions, tag questions, and agreement? (Turner, Dindia, & Pearson, 1995)

RQ: Does vividness interact with story or statistical evidence to produce a more persuasive type of evidence? (Baesler & Burgoon, 1994)

H: The combination of interpersonal communication apprehension and receiver apprehension is more strongly associated with sexual communication satisfaction for women than men in sexually intimate, heterosexual relationships. (Wheeless & Parsons, 1995)

H: There will be an interaction between the biological sex of the introducer of an item of information and the level of redundancy of that item of information in its usage. (Propp, 1995)

H: There will be an ordinal interaction between efficacy expectations and relational commitment such that the relationship between efficacy expectations and relational satisfaction will be of greater magnitude at high rather than low levels of relational commitment. (Makoul & Roloff, 1998)

H: There will be an interaction between conflict situation and nationality such that Japanese subjects will equivocate more in avoidance-avoidance conflict situations, relative to non-

conflict situations, than will American subjects. (Tanaka & Bell, 1996)

CONCLUSION

Communication scholars study varied and complex phenomena. There is still much we don't know about communication behavior. The first step researchers take is making sure they select a topic appropriate for communication research. Through careful consideration, they narrow their focus from a general topic to a specific research question or hypothesis.

But researchers don't work without guides. Throughout the process of narrowing their focus, researchers consult what their colleagues in the field have reported in the research literature. To learn what else is known about the topic, they need to know where to find and how to read relevant publications. We explain how they do this in Chapter 3.