# 9

# Making Research Decisions: Formal Research Methods

**Chapter Contents**



Public relations practitioners need more sophisticated research methods as their informational needs evolve from simple fact finding and casual analysis to a more sophisticated understanding of the opinions, attitudes, and motivations of target audience members. In a perfect world, researchers follow a formal, scientific process; use a representative sample of participants that produces results that are high in generalizability; and produce objective results instead of subjective results that reflect their opinions. Public relations practitioners use formal research to measure audiences' precampaign attitudes, opinions, and behaviors for benchmarking purposes; to understand and explain audience motivations and behaviors; to understand media message effectiveness and measure postcampaign effects; and to measure and describe important media characteristics. Ultimately, the results of such research help public relations practitioners and their organizations to successfully understand target audiences and measure campaign outcomes, increasing the likelihood of program success.

Even though all formal research methods could apply to some aspect of public relations, practitioners do not use all scientific research methods

regularly. In addition, communication managers more commonly use informal research methods than formal research methods, despite the increase in sophistication, generalizability, known accuracy, and reliability that formal research methods can provide. For this reason, this chapter introduces readers to a range of formal research methods including surveys, experiments, and content analyses. Detailed discussions of survey research methods and related topics follow in later chapters because surveys are the most commonly applied formal research method in public relations.

## A BRIEF REVIEW OF THE CHARACTERISTICS OF FORMAL, SCIENTIFIC RESEARCH

Understanding research methods increases our knowledge of how to learn about the social world (Adler & Clark, 1999), including the world of our target audiences. The ways we learn about the world of our targeted audiences have benefits and limitations. Because there is a detailed discussion of the characteristics of formal and informal research in chapters 5 and 6, we offer only a brief review here.

Although public relations research can greatly increase the likelihood of program success, poorly conducted research that misinforms campaign planners can have a strong, negative effect on program performance. In the same way, research conducted properly but misapplied to a public relations problem or campaign can have a negative effect on campaign effectiveness. This might be the case, for example, when a focus group (informal research) is used to gauge audience attitudes and opinions in the design phase of a campaign. If the results of the focus group are inaccurate, the campaign will fail to inform and motivate its target audience members. Most practitioners do not need to be formal research experts, but it helps to know and understand basic research issues to use research effectively, as Figure 9.1 demonstrates.

In general, formal, scientific research is *empirical* in nature (derived from the Greek word for "experience") or concerned with the world that can be experienced and measured in a precise manner (Wimmer & Dominick, 2006). As a result, formal research methods produce results that are *objective* and values free. This means the research results do not unduly reflect the biases of researchers or the attitudes and opinions of a few selected individuals but instead reflect events, facts, and behaviors as they exist or naturally occur in a population or group.

Next, formal research methods require that research team members follow a systematic set of procedures to provide for the uniform collection of data. This process helps ensure that researchers treat each participant in a study the same way and that they measure all participants' responses in the same fashion. Scientific research results also rely on a representative

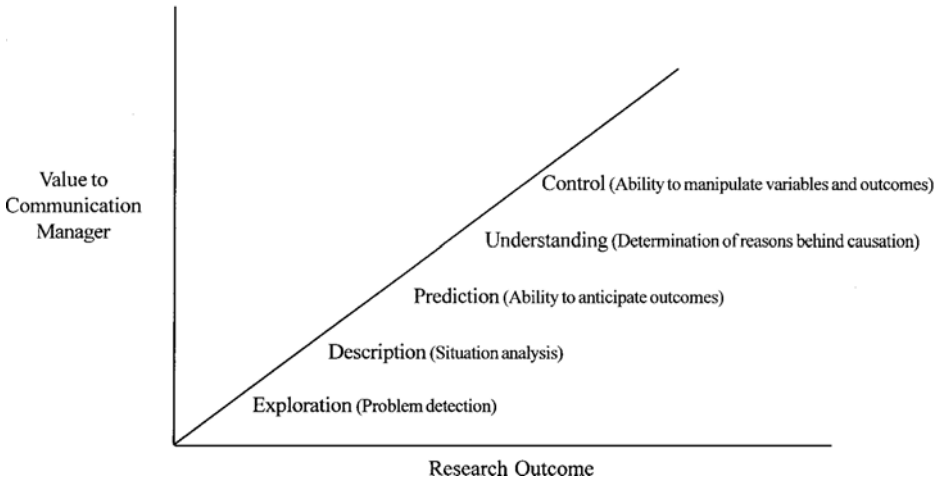


FIG. 9.1. The goals of science. Maximum control of a situation requires the ability to predict what will happen, understand why things happen, and control what will happen. At a lesser level, explorations of a problem and descriptions of constraints and opportunities also are useful outcomes of research and are prerequisites for strategic planning.

sample to the greatest extent possible and, to the greatest extent possible, researchers understand the limitations of samples that are not completely representative. When researchers use probability-based sampling methods and draw a sample of appropriate size (discussed in chapter 6), they help ensure that the behaviors and attitudes of sample members reliably depict the range of behaviors and attitudes found in a population. In reality, no sample is perfectly representative; however, samples collected using probability methods are more trustworthy than other samples. This type of trustworthiness is called *external validity* or projectability. That is, survey results can be projected from a sample to a population with a certain level of confidence (which we can calculate mathematically).

Finally, researchers should be able to reproduce the results of formal research projects. This is known as *replication*. If the results of a project were unique to a single study, we would conclude they may be biased, perhaps because of faulty sampling procedures or problems with the data-collection process. When study results are replicable, they provide accurate information for the population under study. Social scientists generally consider a research project formal to the extent that it incorporates the characteristics of objectivity, systematic collection of data, representative samples, and replicable results into its design. The following discussion of scientific research methods is designed to introduce you to the range of possibilities available for research projects. We begin with a review of survey research, followed by a discussion of experimental research designs, and media

content analyses. Because of the wide application of survey research to public relations, more specific aspects of survey research design are discussed in chapter 10.

## SURVEY RESEARCH OVERVIEW

Survey research is vital to organizations in a variety of different fields including all levels of government, political organizations, mass media corporations, educational institutions, entertainment conglomerates, and other product manufacturers and service providers. In public relations, practitioners use survey research to measure people's attitudes, beliefs, and behavior by asking them questions. Organizations commonly turn to survey research when they want to understand their target audience members' awareness, opinions, attitudes, knowledge, behavioral motivations, media use, and other information necessary for successful campaign implementation or evaluation.

Campaign managers may use research at all stages of the program planning, implementation, and evaluation process. Public relations practitioners most commonly use survey research in the planning and evaluation phases of a campaign. In the campaign planning phase, *precampaign* surveys help practitioners establish target audience benchmarks so that they can set campaign goals. If one of the purposes of a campaign is to increase target audience members' awareness of a client's product, for example, practitioners must establish current audience awareness levels so that they can set appropriate goals and objectives. In this way, precampaign research findings provide a point of reference for campaign evaluation.

Practitioners use *postcampaign* research as part of the campaign evaluation process to help them determine whether a campaign has met its goals and related purposes. If the purpose of a campaign is to increase target audience members' awareness of a client's product by 10%, a postcampaign survey is one of the ways practitioners can determine whether the campaign has been successful. Simply put, campaign outcomes are determined by comparing postcampaign research results with precampaign benchmarks. Postcampaign research also may serve as *between campaign* research. That is, many organizations simply transition from one or more existing campaigns to new campaigns without stopping to conduct new research at every point between campaigns. In these cases, postcampaign research may serve some precampaign research purposes when additional programs are in the planning or early implementation stages.

Sometimes surveys and other forms of research are conducted during a campaign to provide intermediate campaign evaluations. Such monitoring helps campaign managers determine whether a campaign is on course. In such a case, they use research results to monitor campaign progress and to make corrections in campaign strategies and tactics.

In addition, surveys generally fall into one of two broad categories. On the one hand, managers use *descriptive surveys* to document current circumstances and conditions and to generally describe what exists in a population. For more than 50 years, for example, the Bureau of the Census has conducted a monthly survey of about 50,000 households for the Bureau of Labor Statistics. This survey, called the *Current Population Survey*, provides government policy makers and legislators with employment information as they plan and evaluate government programs. Similarly, political candidates, special interest groups, and media organizations regularly survey voters to determine the level of support for a particular candidate or policy initiative or to understand and predict election outcomes. Many applied public relations research projects are descriptive in nature.

Practitioners rely on *analytical surveys*, on the other hand, to explain why certain circumstances, attitudes, and behaviors exist among members of a specific population. This type of survey research is likely to involve advanced forms of statistical analysis to test hypotheses concerning relationships among a group of variables under study. Academic researchers, for example, commonly study the relationship between exposure to negative political advertising and attitudes about politics and political participation. In many cases, surveys serve both descriptive and analytical purposes. In each instance, researchers follow formal procedures and use a systematic process to ensure that data collected are objective, reliable, and accurate.

Regardless of the purpose of a survey, most survey research projects generally follow the same planning process shown in Figure 9.2. Initially, researchers determine the objectives of the research project. Next, researchers design the study. During this phase of a survey they determine the population and sampling procedures they will use in the project, select a specific interview method, and design and pretest the survey instrument or questionnaire. Then, the research team collects, edits, and codes data. Finally, researchers analyze and interpret results.

## Survey Planning

Initially, the most important aspect of survey research planning involves identification of the purpose of a research project. This normally involves identifying a research problem and the potential hypotheses and/or research questions a project will address. Campaign practitioners often give this aspect of a research project relatively brief attention because they are busy and the purpose of many projects appear obvious. As discussed in chapter 4, however, the most successful research projects are those that have a high degree of direction. Surveys that lack direction often fail to live up to their potential as a planning or evaluation tool. For this reason,

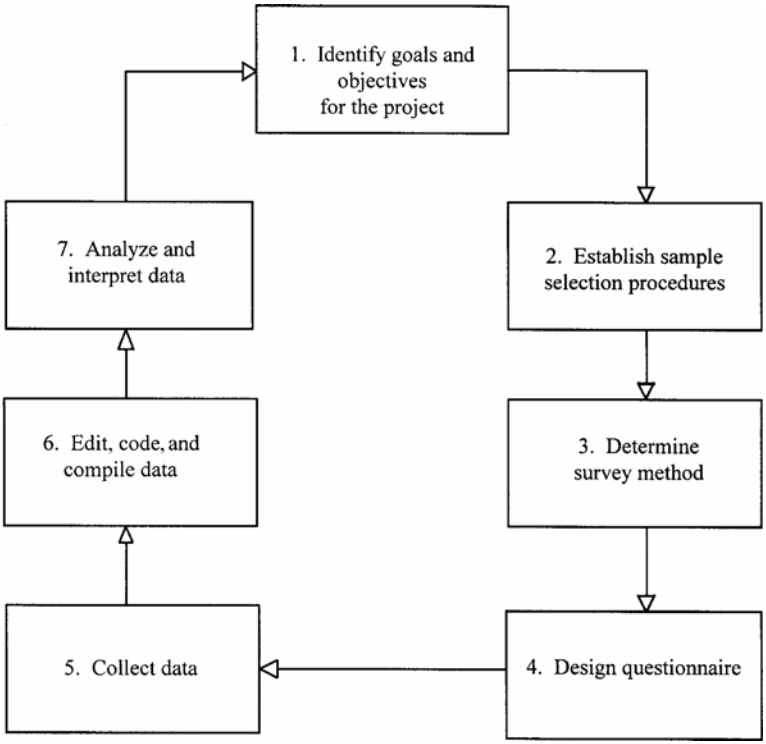


FIG. 9.2. The survey planning process. To help ensure project success, researchers generally follow these steps in a systematic manner when planning and implementing a survey.

although applied research projects typically use research questions, practitioners may find it useful to think about expected research outcomes as a way to formalize their expectations concerning the results of a research project.

## Survey Sampling

Sample selection procedures depend on survey objectives. As discussed in chapter 6, sampling procedures range from convenient to complex. They also vary in terms of their trustworthiness. A scientific technique called *probability sampling* usually provides an accurate and reliable understanding of the characteristics of a population when researchers conduct sampling methods correctly. For this reason, the use of proper sampling methods is one of the most critical aspects of any research project and an especially important characteristic of scientific survey research.

## Determining the Data-Collection Method

The four primary means of collecting survey data are personal interviews, mail surveys, telephone surveys, and electronic surveys conducted via the Internet. In addition, researchers sometimes combine methods to conduct a mixed-mode survey. Selecting a proper data-collection method is critical to the success of a research project, and each method of data collection has its own strengths and weaknesses. There is no single best survey research method, but there almost always is a best survey research method to use given the limitations and requirements of a research project.

The choices at first may seem overwhelming. If the purpose of a project is to interview business professionals working in telecommunications industries, for example, telephone and interpersonal interviewing probably are poor choices because participants will be too busy to respond to a researcher's request for information. Yet respondents can fill out web-based or mail surveys at their convenience, which means that these methods show more promise with this group of respondents. In addition, these survey methods tend to cost less than other survey methods. If time is a major concern, however, regular mail surveys are not the best research method because it takes longer to complete a project. Completion times for mail surveys typically range from a few weeks to several weeks or more if multiple mailings are necessary. Given time concerns, an e-mail survey may be a viable option for data collection. Yet there may be significant sampling limitations in the use of such a survey, making it less appealing. There are still other research methods to consider, each with their own benefits and limitations.

Research professionals must look at a variety of important issues when considering data-collection methods. Selecting an appropriate survey method is crucial to the successful completion of a research project. This topic is addressed in greater detail in chapter 10.

## Questionnaire Design

Proper questionnaire design contributes significantly to the trustworthiness of survey results. Good survey questions, when combined with appropriate data-collection methods, produce accurate responses. Poor survey questions or inappropriate data-collection methods produce untrustworthy results that can misinform public relations managers.

Poorly designed questionnaires often bias participants' responses. In this case, researchers are no longer measuring respondents' true attitudes, opinions, and behaviors, but instead are measuring manufactured participant responses they have created through a poorly designed questionnaire. Normally, practitioners cannot use these responses because they do not

represent the true responses of research participants or target publics. A public relations campaign based on erroneous information is likely to fail. Erroneous information is likely to worsen situations in which practitioners use research as the basis for problem solving.

Several questionnaire characteristics that seem relatively unimportant can bias participant responses, including question wording, question response categories, and question order. In addition, when interviews are administered by another person either face to face or over the telephone, interviewers can bias survey results as they interact with participants. This topic is an important part of communication research, and chapter 11 addresses questionnaire design issues in greater detail.

### Data Collection

Data collection typically is the next step in the survey research process, and in many respects it is the beginning of the final phase of a research project. By this point, the researcher typically has made the most difficult project-related decisions, and well-designed research projects tend to run relatively smoothly (Robinson, 1969). Practitioners' levels of involvement in data collection range from managing all aspects of data collection to leaving all aspects of data collection to a research project manager or field service provider. Although practitioners may leave projects in the hands of capable managers with relative confidence, generally it is in their best interest to at least monitor data collection. Occasionally, practitioners need to make important decisions concerning data collection. When survey response rates appear unusually low or respondents do not understand a question, for example, practitioners should be involved in determining the best solution. A minimum level of practitioner involvement is warranted during data collection to help ensure that the knowledge gathered will best serve the purposes of the project. As a result, chapter 12 presents information to aid in data collection and analysis.

### Editing and Coding

Editing and coding are the processes research team members use to translate the information collected in questionnaires into a form suitable for statistical analysis. When researchers use a computer-assisted telephone interviewing (CATI) or web-based system, editing may be unnecessary. When interviewers record participants' responses using other methods, however, researchers typically must check questionnaires to eliminate or correct incomplete or unintelligible answers. Questionnaires should be edited by a supervisor during data collection to detect errors and provide rapid feedback to their source (often an interviewer who is not paying careful attention). Research team members must pay careful attention to

missing answers and inconsistencies that perhaps reveal a lack of uniformity among interviewers; interviewer differences in wording questions or recording participant responses introduces error into survey results.

Editing and coding may be necessary when a questionnaire has open-ended responses or other data that need categorization. Editing is best conducted by a few trained supervisors working with a fixed set of rules. Using these rules, editors typically place participants' responses into mutually exclusive and exhaustive categories to facilitate data analysis. Often, unseen intricacies are involved in this type of editing, requiring a high degree of consistency among editors to generate reliable results.

Coding is the process of preparing the data for analysis. The essential task in coding is to translate survey data into numerical form so that analysts can access and analyze the results. Each survey project should have a code book, which is a column-by-column explanation of the responses and their corresponding code numbers. Coding questionnaires consists of reading each question, referring to the code book, and assigning the appropriate code for the respondent's answers. Researchers then analyze these data. Chapter 12 provides additional information concerning editing and coding participant responses.

### Analysis and Interpretation

Statistical analysis and interpretation are the next steps in survey research. Although a thorough discussion of statistical procedures is beyond the scope of this text, a brief review of common analytical techniques appears in chapter 12.

### Survey Critique

Survey research is an interesting and effective means of studying public relations issues and publics. A primary advantage of survey research is that research team members often can complete telephone interviews, electronic interviews, and some forms of personal interviews relatively quickly. Cost may be an advantage, as well. The cost of most survey research is reasonable considering the amount of information practitioners receive. In addition, different methods of data collection provide for cost control through the selection and implementation of more or less expensive survey methods. The relatively low cost and ease of implementation make survey research attractive to communication managers.

Nevertheless, no research method is foolproof and survey research has its limitations. First, survey research cannot provide direct evidence of causation. When evaluating campaign outcomes, for example, survey research cannot allow practitioners to determine with certainty that a campaign has had a particular effect on target audience members' attitudes and

behaviors. In addition, researchers occasionally attempt to specify causes when research results do not support such conclusions. If a research project revealed that boating accidents increase as ice cream sales increase, for example, we might be tempted to conclude that ice cream is a culprit in boating accidents. Of course, nothing could be further from the truth. Both ice cream sales and boating accidents simply increase as the weather warms up, and they clearly are not related in terms of a cause-and-effect outcome. Although this example is absurd, researchers need to beware of making conclusions that are equally, if perhaps more subtly, absurd using research data that do not support their conclusions.

Other weaknesses of survey research are specific to the data-collection method researchers use in a project. Large personal interview surveys may be costly, for example, requiring the training of field supervisors and interviewers, as well as covering travel expenses and other costs associated with interviews. Similarly, mail surveys typically take longer than other survey research methods to complete because of the time associated with mailing the questionnaires to a sample and receiving responses back from participants. It is important to know the specific strengths and weaknesses associated with each method of data collection, and these are discussed in detail in chapter 10.

Other concerns associated with survey research apply in some way to all survey data-collection methods. Sometimes respondents are inaccurate in the answers they provide, for example, whether in a direct interview or on a mailed questionnaire. Innacurate responses introduce error into survey results. There are a variety of reasons for this problem. Sometimes, respondents simply do not remember information about themselves or their activities. They may simply make up a response rather than admit they do not know an answer. This also is a problem when respondents lack knowledge regarding the subject of a public affairs question, for example, but answer the question anyway.

Respondents also may provide incorrect answers in an attempt to find favor with interviewers, and some survey questions include responses that are more socially desirable than alternative choices. In other instances, participants may simply choose to deceive researchers by providing incorrect answers to questions. Survey results concerning complex subjects are further complicated by respondents who find it difficult to identify and explain their true feelings, especially using simple numerical scales. As a result, practitioners should consider the potential drawbacks to the successful completion of a survey before they start a research project.

Despite the weaknesses of survey research, its benefits outweigh its drawbacks for many research projects. Survey research is particularly useful for description and association, a necessity given the often exploratory and descriptive nature of many applied projects. In addition, a carefully prepared questionnaire contributes to results that are reliable and accurate.

Telephone and electronic surveys, in particular, enable researchers to collect a large amount of data within a short time at a reasonable cost. Given the needs of data collection and the time and budget constraints placed on many research projects, survey research often is an excellent choice for practitioners. This is why communication campaign managers use it so often.

## EXPERIMENTS

In the most basic sense, an *experiment* involves taking an action and observing the consequences of that action (Baxter & Babbie, 2004). In a sense, experiments are a natural part of public relations because in most cases, practitioners take action of one sort or another and then gauge the effect of that action (in experimental language this is called a *treatment*) on a targeted audience members' attitudes or behavior. Although various study designs exist, generally an experiment requires at least one group of participants to receive a treatment (such as exposure to part of a public relations campaign). Researchers then can determine the effect of that treatment by comparing participants' before-treatment responses with their after-treatment responses on a series of questions designed to measure their opinions or attitudes, for example (Broom & Dozier, 1990).

Experimental research designs may make important contributions to the public relations campaign design and evaluation because they allow practitioners to isolate campaign variables and control them. This high degree of control allows researchers to use experimental designs to systematically examine variables that may or may not influence target audience members. If campaign planners want to determine voter responses to potential campaign advertisements, for example, they might measure the attitudes and projected voting behavior of a relatively small group of voters (perhaps 40 or 50), expose them to the advertising stimuli, then measure their attitudes and projected voting behavior again. If no other variables were introduced in the process, the changes that took place from the first measurement to the second measurement would be due to the advertising.

Practitioners rarely use true experiments in applied settings. Given the previous political advertising example, campaign managers are more likely to conduct a focus group and get participant feedback on different advertising executions (called *copytesting* in advertising) than to conduct an experiment. As already discussed, informal research methods such as focus groups normally produce results that are low in external validity and reliability. The result is that practitioners might use incorrect research results as the basis for making important campaign decisions.

Controlled experiments, on the other hand, are the most powerful means of determining campaign effects because researchers can use them to determine causation. This is the primary benefit of experiments. From a

scientific perspective, three conditions are necessary to determine causation. First, the cause (variable A) must precede the effect (variable B) in time. Second, a change in the first variable (A) must produce a change in the second variable (B). This is called *concomitant variation*, and the idea is that a change in one variable is accompanied by a change in another variable. Third, researchers must control or eliminate all other possible causes of an effect in an experiment. This ensures that the relationship between the variables is not caused by a third variable. By using experiments, researchers can examine and understand variable relationships under uncontaminated conditions. This allows them to develop greater insight into variable relationships, such as the effects of political advertisements on voters.

Researchers use systematic procedures when they conduct experiments. Initially, they select the setting for the experiment. Next, they design or plan the project. In this phase researchers decide how to measure and manipulate variables, select a specific study design, and develop and pretest the materials they will use in the experiment. Finally, researchers collect, analyze, and interpret data.

### Settings

The two main settings in which researchers conduct experiments are research laboratories or similar facilities used for research purposes and the field. A laboratory setting is advantageous because it provides researchers with the ability to control almost all aspects of an experiment. By controlling outside influences, researchers can make exact determinations regarding the nature of the relationships among the variables they are studying. Generally, the more controlled and precise an experiment is, the less error that is present in research results. By controlling the conditions under which an experiment occurs, researchers can reduce the risk of contamination from unwanted sources.

The artificial nature of research laboratories or similar facilities have disadvantages. Isolated research environments that are highly controlled to exclude potential interference are different from most real-life circumstances. In measuring voters' responses to televised political advertisements, for example, it would probably be better to test voters at home where they normally watch television. This environment is a natural setting that is likely to contain all the distractions and other influences people encounter when they watch television. It is in this environment that we most likely would measure participants' most natural responses. Unfortunately, these distractions and other influences also are likely to change research results. This contamination makes the determination of causation nearly impossible. Practitioners have to balance these advantages and disadvantages when choosing a study design. When researchers pull people

out of their natural settings and place them in controlled environments such as laboratories, participants also may react differently to the materials used in the experiment (televised political ads in this example) because this is not their normal viewing environment. Ultimately, the controlled artificiality of research settings tends to produce results high in internal validity (when a measure precisely reflects the concept that it is intended to measure) but low in external validity (the generalizability of results from a sample to a population).

Researchers conduct field experiments in the environment in which participants' behaviors naturally occur. In other words, the field is the environment in which participants live, work, and relax. The dynamics and interactions of small groups, for example, may be studied at places where small groups of people naturally congregate such as common meeting areas in college dormitories. Field experiments tend to have a higher degree of external validity because the real-life settings that researchers use in the field are normal environments and encourage participants to respond naturally. The control available to researchers in field experiments, however, is rarely as tight as the control available to them in laboratory experiments because of the uncontrollable factors that exist in any natural environment.

## Terms and Concepts

Before we discuss specific designs, we briefly should examine (or reexamine in some cases) some important terms so that you have a better understanding of research designs. The basic purpose of an experiment is to determine causation. In an applied public relations setting, practitioners might be interested in determining the effect of a public relations campaign or program on the opinions, attitudes, and behaviors of target audience members. Each of these represent *variables* we are examining. In its simplest sense, a *variable* is a phenomenon or event that we can measure and manipulate (Wimmer & Dominick, 2006). In the preceding example, the public relations program we are testing is the independent variable. The *independent variable* is the variable that researchers manipulate in an experiment to see if it produces change in the dependent variable. Changes in the *dependent variable* depend on, or are caused by, the independent variable. If we wanted to examine the effects of potential campaign messages on target audience members, the messages are the independent variables. As independent variables, the campaign messages affect the dependent variables in the experiment, which are the opinions or attitudes of target audience members toward our organization.

In addition, we might manipulate the independent variable (the content of the campaign message) to determine how to make it more effective. We might consider a humorous message versus a serious message, for example. In this case, variable manipulation is a critical aspect of study

design. We must make sure our humorous and serious messages are equal in terms of key points and features so that the only difference between the messages is the existence of humor or the lack of humor. If all other message characteristics are equal, any differences in participants' responses to the messages most likely would be due to humor. This controlled experiment allows us to test the effect of humor on participants' responses to our message and gives us a scientific basis for determining cause and effect.

Initially, you may notice that in experimental research designs, participants are assigned to a condition. A *condition* consists of all the people in an experiment who are treated the same way. In a source credibility experiment, for example, some participants are exposed to a message delivered by a high-credibility spokesperson, whereas other participants are exposed to a message delivered by a low-credibility spokesperson. Each group exposed to the same spokesperson in our example is part of the same condition.

Participants in the same condition are exposed to the same treatment. A *treatment* occurs when the participants in a condition are exposed to the same material, or *stimulus*, which typically contains the independent variable. Although it sounds confusing, it is really very simple. In the credibility experiment, for example, the message from a high-credibility source is one stimulus, and each participant who receives that stimulus receives the high-credibility treatment (these participants are in the same condition). In the same way, the message from a low-credibility source is a different stimulus. Participants exposed to the message from the low-credibility source receive the low-credibility treatment and are in the same condition.

Researchers typically place some participants in a condition in which they receive no treatment, or at least a meaningless treatment. These participants are in the *control group* or *control condition*. Because control group members receive no meaningful treatment—in other words, they receive no independent variable exposure—researchers can understand the effects of simply conducting the experiment on participants' attitudes or behavior (Baxter & Babbie, 2004). In medical research, for example, members of a treatment condition receive an actual drug, whereas the control group members receive a placebo (commonly sugar pills). This allows researchers to determine the amount of patient improvement due to the new drug versus the amount of patient improvement caused by other factors, including participants' improved mental outlook perhaps caused by the special medical attention they are receiving as part of the study.

Finally, researchers assign participants to either a treatment condition or a control condition in a random manner. When *random* assignment is used, each participant has an equal chance of being included in a condition. Random assignment helps to eliminate the potential influence of outside variables that may hinder the determination of causation (Wimmer & Dominick, 2006). If researchers do not randomly assign participants to

conditions, they cannot be sure the participants in each condition are equal before exposure to experimental stimuli. When the participants in each condition are not equal, this is called *selectivity bias*. Random assignment helps ensure the outcomes that researchers detect in an experiment are caused by exposure to stimuli not by previously existing differences among participants.

## Experimental Research Designs

There are several potential ways to design a true experiment, and although a specific design may have advantages in certain circumstances, no single design is best. Instead, the best experimental design typically depends on researchers' hypothesis or research questions, the nature of the independent and dependent variables, the availability of participants, and the resources available for the project. The three true experimental designs social scientists use are the *pretest–posttest design with control group*, the *posttest-only design with control group*, and the *pretest–posttest design with additional control groups*, commonly referred to as the *Solomon four-group design* (Campbell & Stanley, 1963).

The pretest–posttest design with control group is a fundamental design of experimental research. Researchers use it often because it is applicable to a variety of different settings. When researchers use the pretest–posttest with control group design, they randomly assign participants to treatment or control groups, or conditions, and initially measure the dependent variable (this is the *pretes*t) for each group. Research team members then apply an independent variable manipulation to participants in the treatment condition, followed by further testing to determine independent variable effects. The order of the research procedures, random assignment of participants to conditions, and use of a control group helps eliminate or avoid many of the potential problems that threaten to ruin the internal validity of the experiment. Although a detailed discussion of these problems (called *threats to validity*) is beyond the scope of this book, readers may be interested in reading a short but important book by Campbell and Stanley (1963).

If we wanted to test the effectiveness of a prosocial advertisement designed to encourage young people to eat healthy foods, for example, we could randomly assign participants to one of two conditions: the advertisement condition and the control condition. Initially, we would pretest participants' attitudes by having them complete a questionnaire that measures their attitudes toward eating healthy foods. Following the pretest, we would expose participants in the treatment condition to the advertisement, whereas participants in the control condition might watch a brief clip of a cartoon (perhaps SpongeBob Squarepants) containing no health-related information. Next, we would posttest participants' attitudes in both

conditions using the same questions and scales that we used in the pretest. Normally, participants' pretest attitudes toward healthy eating would be similar in both the treatment and the control conditions. If our advertisement was effective, however, the posttest scores of participants who viewed the prosocial advertisement would reflect some important changes. First, treatment group members would have more positive attitudes toward healthy eating than control group members. More important, the change in the attitudes of treatment group participants toward healthy eating would be greater than the change in the attitudes of control group participants. Because each condition was identical and only one condition received a treatment, any significant differences that existed between participants at the end of the experiment likely would have been caused by the treatment. As an additional note, if control group participants' attitudes changed in the same way that attitudes of treatment group members did, then we would not be able to determine causation and might have evidence of *testing* whereby all participants changed their answers because they were sensitized to the issue as a result of taking the pretest rather than watching the prosocial advertisement.

A second design that researchers commonly use when they conduct experiments is the posttest-only design with a control group. In this research design there is no pretest. Instead, research team members randomly assign subjects to treatment and control conditions. One group is exposed to the experimental manipulation, or treatment, followed by a posttest of both groups. After they collect posttest scores, researchers statistically compare participants' dependent variable scores. Returning to our previous example, if a posttest examination of participants' scores revealed that members of the treatment condition had more positive attitudes toward healthy eating than members of the control condition, then we could feel confident that these differences were due to the prosocial advertisement.

Pretesting, although an important part of experimental research, is not required to conduct a true experiment (Campbell & Stanley, 1963). Instead, the random assignment of participants to conditions allows researchers to assume participants in each condition are equal at the beginning of the experiment. The random assignment of subjects controls for selectivity biases. This design is especially useful to researchers when pretesting is unavailable or inconvenient, or may somehow interfere with the experiment (Campbell & Stanley, 1963).

The Solomon four-group design is a complete combination of the first two designs. The Solomon design uses four conditions, in conjunction with random assignment, to help identify and control threats to validity including the effects of pretesting on participants' attitudinal measurement scores. Participants in the first condition receive a pretest, a treatment, and a posttest. Participants in the second condition receive a pretest and a posttest with no treatment. Those in the third condition receive no pretest,

a treatment, and a posttest, whereas participants in the final condition receive only a single measurement, the equivalent of a posttest. Using our previous example, researchers measure participants' attitudes toward healthy eating and expose them to the prosocial advertisement in conditions one and three. In conditions two and four, however, participants receive no exposure to the treatment, only attitudinal measurement.

The Solomon four-group design is the most rigorous type of experiment, allowing researchers to separate and identify treatment effects independently of the effects of pretesting. In other words, researchers can figure out specifically whether participants' posttest scores changed because they were influenced by taking a pretest, as opposed to whether the experimental treatment caused their posttest scores to change. The biggest drawbacks to the use of the four-group design are practical. Four groups are needed to properly execute the design, requiring a high number of participants and increased costs. As a result, researchers' use of this design is relatively rare.

To this point, the research designs we have discussed are completely randomized designs. This means they require researchers to randomly assign all participants to one condition whether it is a control or a treatment condition. Researchers call this design *between-subjects* because they make determinations regarding treatment effects by finding differences between groups of participants, or subjects, based on their exposure to stimuli as part of a treatment condition. We can compare a between-subjects design to a *within-subjects* design in which researchers use each participant in all conditions. Experts commonly call this type of design a *repeated-measures* design because researchers measure each participant two or more times as they expose him or her to different stimuli throughout the course of an experiment. In this design, each participant serves as his or her own control by providing a baseline measure, and any differences in measurement scores researchers find between treatment conditions are based on measurements they take from the same set of participants (Keppel, 1991). When researchers are concerned about having enough participants, they may opt to use a within-subjects design because it requires fewer participants. This design also provides an important way for researchers to learn how variables combine to influence attitudes and behavior. This type of design is called a *factorial* design, and it allows researchers to learn how independent variables interact. In our previous example concerning attitudes toward healthy eating, it may be that gender and perceived body image combine to influence participants' responses to our prosocial advertisement. Researchers can examine how these variables interact when they use a within-subjects design.

Project managers sometimes use other designs that are not fully experimental, often when they have limited options and decide that collecting some data is better than collecting no data at all. Researchers commonly consider these designs preexperimental or quasiexperimental, and they

include case studies and the one-group pretest–posttest design among other possibilities. Quasiexperimental studies suffer from design flaws because they lack control conditions or because researchers use nonrandom procedures to assign participants to different conditions in an experiment. Researcher use quasiexperimental designs for various purposes, including exploration, but these methods are not scientific and practitioners, therefore, cannot trust their results.

It often is impossible or impractical to use probability sampling methods when recruiting experimental research participants. Instead, researchers commonly select participants using incidental, or convenience, samples in experimental research (see chapter 6). Because research participants may not be completely representative of a target audience or other population, the results of an experiment may lack external validity, or generalizability, from the sample to the population. In general, this is not as detrimental for explanatory research such as experiments as it is for descriptive research such as surveys. Social process and the patterns of causal relationships generally are stable across populations and, because of this, are more generalizable than individual characteristics (Baxter & Babbie, 2004). In reality, the samples used in experiments are so small that they would not be highly representative even if probability sampling were used. With this in mind, convenience sampling normally suffices in experiments when probability sampling is impossible or impractical, and researchers use random assignment to ensure participants' characteristics are equal or balanced in each condition.

As with any other research project, research team members should pretest variable manipulations (we also call these *treatments*), measurement questionnaires, and the procedures they will use in an experiment before they collect data. Pretesting allows researchers to correct any deficiencies in the procedures they will use for data collection and provides for a check of independent variable manipulations. A manipulation check is particularly important in helping to ensure the success of a study. A *manipulation check* is a procedure that helps researchers ascertain whether something that was supposed to happen actually did happen. If one community was supposed to see a fear-based prosocial advertisement, for example, and another community was supposed to see a humor-based advertisement, a manipulation check would help researchers determine whether the people in the communities thought the fear-based message actually was scary and the humorous message actually was funny.

Finally, research team members must develop a procedure for telling participants what the purpose of the study is and how they will use the study's results. Research managers answer participants' questions at this time in a process called *debriefing*. Debriefing allows researchers to eliminate potential harms, however small, that may befall participants as a result of their involvement in a research project. Debriefing must be

comprehensive enough to eliminate any long-term effects on participants that may result from project participation.

### Bias in Data Collection, Analysis, and Interpretation

It is essential for researchers to collect, analyze, and interpret data carefully. Project managers must pay particular attention to the introduction of bias during data collection. Bias may be introduced in several ways, including through the behavior of researcher team members. Any changes in participant behavior due to the actions of researchers introduce bias into the experiment, unless the behavior of the experimenter is intended to be part of the study. Researchers may inadvertently encourage a behavior they are seeking by demonstrating tension or relief, for example. One way researchers control unintended experimenter influences is by using automated procedures and equipment such as computers and DVDs. Project managers also can minimize bias by using researchers who, along with participants, generally are unaware of the purpose of a study (called a *double-blind* experiment) or who have differing expectations regarding experimental outcomes.

### Experiment Critique

When conducted properly, formal experiments allow researchers to isolate variables and establish causation. This is a powerful benefit that only properly designed and executed experiments provide. In laboratory experiments, researchers have a high degree of control over the research environment, independent and dependent variables, and the selection and assignment of subjects. This high degree of control and isolation provides conditions that are free from the competing influences of normal activity and ideal for examining independent and dependent variable relationships (Wimmer & Dominick, 2006). Although field experiments do not allow as high a degree of control as laboratory experiments, they generally provide enough control for researchers to make determinations of causation when properly conducted.

Another benefit of experimental research designs is their ease of replication. Because project managers typically make the variables and manipulations they use in experiments available to other researchers, it is common for social scientists to replicate research findings. Replication may take the form of an identical experiment or one that provides replication under slightly different conditions. The successful replication of research findings contributes to increased confidence in the validity and generalizability of research findings (Baxter & Babbie, 2004).

Finally, the cost of experimental research can be low when compared with other research methods. Laboratory research, in particular, tends to

be limited in scope, requiring relatively little time and a relatively small number of participants. These requirements often combine to provide a high degree of explanatory power at a relatively low cost.

There are two primary disadvantages to using experimental research designs: artificiality and the introduction of bias. Although isolation and control are necessary to determine causation, research environments may be so isolated and so controlled that they do not represent environments found in natural social settings. Here, the external validity, or generalizability, of research findings may be hindered. The artificiality of laboratory research settings presents a particular problem in applied campaign studies because it does not reflect the busy, competitive environment in which practitioners conduct most communication campaigns. In this instance, the generalizability of research findings from laboratory experiments to communication campaign settings may be limited.

A second disadvantage of experimental research is the potential for biased results. During an experiment there are a variety of possible sources of bias. When a study produces biased results, research outcomes are inaccurate and provide a poor basis for campaign planning and execution.

Finally, experiments can be challenging to conduct. It often is difficult, for example, for researchers to measure complex human processes using a series of simple questions or other measures. It may be that participants have never considered the reasons for some of their attitudes and behaviors, and they may find it difficult to identify their responses. Sometimes, participants simply are unable to express their feelings, even if it involves answering just a few questions. Project managers also may find it difficult to manipulate the stimuli used in experiments or to execute procedures with the care necessary to determine causation. In fact, it is possible to plan an experiment that is virtually impossible to conduct. Experiments, like all research methods, are useful only for specific situations, and campaign practitioners should carefully consider their limitations.

## CONTENT ANALYSIS

Content analysis is a scientific research method used for describing communication content in a quantitative, or numerical, form. Researchers use content analysis to develop objective, systematic, and quantitative descriptions of specific aspects of communication (Berelson, 1952). Many communication campaign practitioners work to place messages in the media on a regular basis and continually monitor and track media coverage concerning issues, events, and clients. In public relations, clip files have long served as the basis for evaluating public relations campaign success and, right or wrong, organizational management typically sees them as a critical measure of practitioners' achievements (Broom & Dozier, 1990).

Evaluating the contents of clip files or other important media messages—including the messages of competing organizations—often is difficult. The sheer volume of material can make even a basic description and analysis a daunting task. When practitioners desire additional information concerning the specific content attributes of different stories—the tone of media coverage or the balance of media portrayals, for example—the task becomes quite difficult for researchers. Content analyses are objective because their results are not based on the informal observations and biases of those conducting the study but instead rely on an objective classification system. They are systematic because a set of procedures is established and a formal process is followed when media content is analyzed. Content analyses are quantitative because the results of the classification process produce numerical classifications of content that are subjected to appropriate statistical analyses. The result is a scientific (i.e., trustworthy) description of communication content in terms of the themes, styles, and techniques that exist within media messages.

If managers wanted to better understand the ways in which reporters portrayed their organization in local media, for example, a practitioner might decide to comb through a collection of media stories to determine the frequency of coverage, evaluate the general tone of the stories, and note recurring themes and major issues. This analysis would provide some useful information but likely would suffer from some important weaknesses. Alternatively, a practitioner could conduct a formal content analysis. In this case, the practitioner would determine the aspects of media coverage most important to the company and then categorize and quantitatively analyze media content. The results and conclusions from such a study potentially would be sophisticated and accurate and would provide managers with an unbiased assessment of the media coverage concerning the organization. Study findings could serve as the basis for future media relations efforts or might be part of an analysis of the messages of competing organizations. The results also might serve as a benchmark if the company decided to undertake an effort to improve its media coverage.

Content analyses typically require several steps similar to those used by project managers in survey research. In fact, a content analysis is a lot like a survey, except that the researchers collect and analyze samples of messages instead of people and their opinions. Initially, investigators identify a research problem and develop research questions or hypotheses. Next, they choose an appropriate sample of messages. Then, they determine the procedures and categories research team members will use when they code the content. Researchers must train those who code the data, and they usually conduct a small pilot study (the equivalent of a pretest) to ensure that the study is well designed. Content coding takes place once the pilot study proves successful, followed by data analysis and interpretation.

## Research Problem and Question/Hypothesis Development

As with any other research project, investigators must clearly understand the purpose of the study, including any problems that they must address, in the first phase of a content analysis. This helps them design a useful study with realistic procedures. A good research design clearly integrates the procedures for selecting the sample, the content categories and other aspects of the analysis, and study design into a comprehensive plan, as discussed in chapter 4. By implication, an investigator must understand the reason for the study, specify the evidence needed to test ideas or relationships, and know the methods of analysis that will be used once researchers gather and code the data.

Researchers can use content analyses to study almost any form of communication, although they most often use it to address research questions or hypotheses concerning specific message attributes. This may include an analysis of messages over time (e.g., to see whether media coverage concerning an issue has become more positive or negative), an analysis of messages occurring in different situations (e.g., during different or competing campaigns), or an analysis of messages directed to different audiences (e.g., messages in trade publications versus messages in general interest magazines). Researchers sometimes go beyond description to make inferences about the origins of messages based on the results of a content analysis. Such analyses generally focus on the author of a message and attempt to associate authorship with meanings and values inherent in the messages analyzed, such as to determine whether certain reporters or media outlets favor particular types of story themes.

Finally, too often researchers erroneously use content analyses to make inferences about the effects of messages on receivers, such as effects of violent content on children's behavior. Content analyses conducted for this purpose are fatally flawed because they make several untenable assumptions. As chapter 14 explains, people interpret similar messages differently. Exposure to a message does not lead to uniform message effects. Simply put, content analyses do not allow researchers to determine causation.

## Sample Selection

Researchers must select the messages to analyze after they have determined research questions or hypotheses. First, they determine the body of messages, or population, from which they will draw the sample, just as the survey manager chooses a population of people to study. In this process, also known as defining the *universe* or *sampling frame*, investigators choose the body of content from which they will draw their sample, such as popular magazines published during the past 6 months. Just as

with survey research, content analysts usually do not try to analyze all relevant messages (this would be a census). The sheer volume of potentially relevant messages normally makes some form of sampling necessary, especially given the time and monetary limitations that accompany most research projects. Researchers need to make sure the message population is comprehensive and logically consistent with the purposes and goals of their study.

It is important to distinguish between all the content potentially relevant to a study and a subset, or sample, of content researchers needed to answer research questions or test hypotheses. Various techniques lend themselves to the selection of materials for analysis. Sampling techniques are discussed in chapter 6.

Content analyses may require some type of multistage sampling involving sample selection procedures at two or more levels. At the initial stage of sample selection, researchers might select specific media sources—daily newspapers published within 6 months of an election, for example—from among all possible content sources. At a second stage of sampling, researchers might choose specific stories from each selected newspaper. Additional stages of sampling may be necessary, as well. Researchers may find it advantageous to first select specific pages, for example, and then select specific stories as an additional sampling stage.

## Units of Analysis

Determining the unit of analysis and content categories is a critical part of any content-based study because researchers can analyze content in different forms. Each form of content they analyze is a *unit* for purposes of measurement and evaluation. A *unit of analysis* is a distinct portion of content, meaning this is the element researchers actually count (Riffe, Lacy, & Fico, 1998). Units of analysis can include stories or articles, words or terms, themes, paragraphs, characters, and more. In a study designed to examine the media's portrayal of an organization, for example, the units of analysis may include positive, negative, or mixed stories about the corporation, specific aspects of the corporation's image mentioned in stories, mention of specific corporate programs in stories, names of competing organizations stories contain, and other information managers deem relevant. Specification of the units of analysis often is challenging and generally requires research team members to pretest and make decisions through trial and error. Often researchers begin with a rough draft definition of a unit. Then they analyze a sample of representative content to see what kinds of problems exist. This procedure typically results in the modification and further refinement of unit descriptions.

## Categories of Analysis

Researchers code and classify units of analysis, placing them into categories created for a study. Researchers may label a newspaper story as being favorable or unfavorable in its portrayal of an organization, for example. Well-constructed categories are essential, forming the substance of an investigation. Researchers who develop content categories that are vaguely drawn or poorly articulated will produce a study with inferior quality and limited usefulness. To be effective, category systems must be *mutually exclusive, exhaustive,* and *reliable*. Categories are *mutually exclusive* when research team members can place a unit of analysis into only one category. If a unit simultaneously falls into more than one category, revisions are necessary for either or both categories. One means of avoiding problems related to exclusivity is to have category definitions that possess a high degree of specificity. When project managers use well-defined category units, research team members will have fewer questions regarding unit placement among categories.

Categories must be exhaustive, in addition to being mutually exclusive. Categories that are *exhaustive* provide space for every existing unit of analysis. It is necessary for project managers to expand content categories when researchers discover units that are not covered by existing categories. When only a few miscellaneous units are not covered by existing category systems, researchers typically use an "other" category.

Finally, the category system must be reliable. To be *reliable*, different coders need to agree on the placement of units of analyses within categories most of the time. This is called *intercoder reliability*. Content categories that are poorly defined and lack specificity generally suffer from low intercoder reliability. Conversely, well-defined category systems increase intercoder reliability. The extensive pretesting of sample data for unit placement helps researchers develop and refine categories that are mutually exclusive, exhaustive, and reliable.

## Coding Content

Coding content involves the placement of units of analysis into content categories. This process generally is the most time-consuming aspect of content analysis, requiring researchers to train coders, develop a pilot study, and code the data. Reliability is critical in content analysis because content analyses are supposed to produce objective results. Researchers must use reliable measures to produce study results that are objective (Wimmer & Dominick, 2006). The measures used in a study are reliable when repeated measurement of the same material produces the same results. Normally, a subset of data is coded by two coders working independently. Analysts

can compare the results of each coder's work to determine the level of accuracy between the coders. This produces a test of intercoder reliability. Intercoder reliability can be calculated using one of several methods. Holsti (1969) reported a simple formula commonly used for calculating intercoder reliability:

$$\text{reliability} = \frac{M}{n1 + n2}$$

In this formula, $M$ represents the number of coding decisions coders agreed upon, and each $n$ refers to the total number of coding decisions made by the first and second coder, respectively. This formula has some limitations, but it is easy to use. Project managers may be interested in using other formulas if they need a more sophisticated measure of reliability. Researchers commonly use Scott's pi (1955) or Cohen's kappa (1960) in this case because these reliability coefficients take into account chance agreement between coders and provide a more accurate estimate of reliability.

The thorough training of coders generally results in a more reliable analysis. It is helpful to have several training sessions in which coders work on sample data. Investigators compare the results among coders, discuss differences, and then repeat this process. Coders rely on detailed instruction sheets, and rigorous training efforts normally result in higher intercoder reliability. After a thorough training period, research team members conduct a pilot study to check intercoder reliability. As a result of the pilot study, researchers may need to revise definitions and category boundaries and alter coding sheets. This process continues until coders are comfortable with the materials and procedures and are able to maintain a high degree of reliability.

Finally, research team members code content. They use standardized score sheets developed during training to help them collect data quickly and accurately. When coders are working with broadcast media, they often record it so that coders can start and stop a tape at their convenience. As a final note, researchers can enhance data collection with the use of computers, which they also use to tabulate and analyze the results.

### Content Analysis Critique

The objective and systematic nature of this research method often helps researchers to produce content descriptions and analyses that are high in validity and reliability and to avoid the subjective interpretations of less rigorous methods of analyzing content. In addition, many content analyses are inexpensive to conduct, and researchers can use them to examine content as it evolves over long periods of time. This gives researchers an

important perspective not easily available in other scientific research methods. Further, although most research methods typically pose little risk to participants, content analyses involve even less risk because human participants are not part of the population under investigation (Baxter & Babbie, 2004). Together, these benefits make content analysis an attractive and useful research method.

Organizational managers must use content analysis carefully despite its potential usefulness. Kerlinger (1973) suggested that content analysis is not an easy method to use correctly. The primary concerns include problems of reliability, validity, and inference. The concept of reliability is of maximum importance in content analysis. A high degree of reliability may be particularly difficult to achieve when analyzing content such as negative political advertising. Determining whether a negative advertisement contains a direct attack on an opponent, for example, may involve making several slight distinctions between ads. Does an ad in which a candidate is referred to, but not named, contain a direct reference? Do ads that refer to a candidate's political party or position without mentioning the candidate by name contain direct references? Do ads that contain negative testimonials without naming a candidate contain direct references? Even determining whether an ad is negative or positive often involves making judgment calls. These types of difficulties are common in content analyses. They typically create problems for coders and contribute to low levels of reliability in content studies.

Researchers typically determine validity in content studies by examining the degree to which an instrument actually measures what it is supposed to measure. Validity is directly connected to the procedures used in content analysis. When sampling designs are incorrect, if categories are not mutually exclusive and exhaustive or if reliability is low, the results of a content analysis are inaccurate and possess a low degree of validity.

The final concern regarding the use of content analysis involves problems associated with inference. The strength of most content analyses depends on their ability to provide a precise description of communication content. Researchers sometimes are tempted, however, to use content studies to draw conclusions and interpretations of wider application than the content itself. Such interpretations are untenable. Practitioners purchasing content analytic services should carefully evaluate managers' claims based on the results of the analysis. There are a number of reputable organizations, including some public relations firms, that offer specialized content analysis. The problem comes when a company equates content analysis with public opinion analysis. Remember that public opinion resides in the perceptions of the public, not in the content of media messages.

## FINAL THOUGHTS

Formal research methods provide essential information for communication campaign managers. Because formal methods offer objectivity, systematic data collection, representative samples, and replicable designs, they provide trustworthy information. Only dependable information can help practitioners accurately describe situations and publics, predict the outcome of an election, understand the reasons why public opinion seems to have turned against an organization, and exert some degree of influence over what happens in the future. Each formal method has its strengths and weaknesses, which means that practitioners can use each method well or misuse each method badly. As a result, a good understanding of the benefits and limitations of each method can help the managers conduct independent, in-house research. It also enables managers to knowledgeably weigh the promises and strategies of research firms and helps them to purchase reputable services that provide useful information at a reasonable cost.