Investigators place signposts to carry the reader through a plan for a study. The first signpost is the purpose statement, which establishes the central direction for the study. From the broad, general purpose statement, the researcher narrows the focus to specific questions to be answered or predictions based on hypotheses to be tested. This chapter begins by advancing several principles in designing and scripts for writing qualitative research questions; quantitative research questions, objectives, and hypotheses; and mixed methods research questions.

QUALITATIVE RESEARCH QUESTIONS

In a qualitative study, inquirers state research questions, not objectives (i.e., specific goals for the research) or hypotheses (i.e., predictions that involve variables and statistical tests). These research questions assume two forms: a central question and associated subquestions.

The central question is a broad question that asks for an exploration of the central phenomenon or concept in a study. The inquirer poses this question, consistent with the emerging methodology of qualitative research, as a general issue so as to not limit the inquiry. To arrive at this question, ask, “What is the broadest question that I can ask in the study?” Beginning researchers trained in quantitative research might struggle with this approach because they are accustomed to the reverse approach: identifying specific, narrow questions or hypotheses based on a few variables. In qualitative research, the intent is to explore the complex set of factors surrounding the central phenomenon and present the varied perspectives or meanings that participants hold. The following are guidelines for writing broad, qualitative research questions:

- Ask one or two central questions followed by no more than five to seven sub-questions. Several subquestions follow each general central question; the
subquestions narrow the focus of the study but leave open the questioning. This approach is well within the limits set by Miles and Huberman (1994), who recommended that researchers write no more than a dozen qualitative research questions in all (central and subquestions). The subquestions, in turn, can become specific questions used during interviews (or in observing or when looking at documents). In developing an interview protocol or guide, the researcher might ask an ice breaker question at the beginning, for example, followed by five or so subquestions in the study (see Chapter 9). The interview would then end with an additional wrap-up or summary question or ask, as I did in one of my qualitative case studies, “Who should I turn to, to learn more about this topic?” (Asmussen & Creswell, 1995).

Relate the central question to the specific qualitative strategy of inquiry. For example, the specificity of the questions in ethnography at this stage of the design differs from that in other qualitative strategies. In ethnographic research, Spradley (1980) advanced a taxonomy of ethnographic questions that included a mini-tour of the culture-sharing group, their experiences, use of native language, contrasts with other cultural groups, and questions to verify the accuracy of the data. In critical ethnography, the research questions may build on a body of existing literature. These questions become working guidelines rather than truths to be proven (Thomas, 1993, p. 35). Alternatively, in phenomenology, the questions might be broadly stated without specific reference to the existing literature or a typology of questions. Moustakas (1994) talks about asking what the participants experienced and the contexts or situations in which they experienced it. A phenomenological example is, “What is it like for a mother to live with a teenage child who is dying of cancer?” (Nieswiadomy, 1993, p. 151). In grounded theory, the questions may be directed toward generating a theory of some process, such as the exploration of a process as to how caregivers and patients interact in a hospital setting. In a qualitative case study, the questions may address a description of the case and the themes that emerge from studying it.

**Begin the research questions with the words what or how to convey an open and emerging design.** The word why often implies that the researcher is trying to explain why something occurs, and this suggests to me a cause-and-effect type of thinking that I associate with quantitative research instead of the more open and emerging stance of qualitative research.

**Focus on a single phenomenon or concept.** As a study develops over time, factors will emerge that may influence this single phenomenon, but begin a study with a single focus to explore in great detail.

**Use exploratory verbs that convey the language of emerging design.** These verbs tell the reader that the study will
- Discover (e.g., grounded theory)
- Seek to understand (e.g., ethnography)
- Explore a process (e.g., case study)
- Describe the experiences (e.g., phenomenology)
- Report the stories (e.g., narrative research)
- Use these more exploratory verbs that are nondirectional rather than directional words that suggest quantitative research, such as “affect,” “influence,” “impact,” “determine,” “cause,” and “relate.”
- Expect the research questions to evolve and change during the study in a manner consistent with the assumptions of an emerging design. Often in qualitative studies, the questions are under continual review and reformulation (as in a grounded theory study). This approach may be problematic for individuals accustomed to quantitative designs, in which the research questions remain fixed throughout the study.

**Use open-ended questions** without reference to the literature or theory unless otherwise indicated by a qualitative strategy of inquiry.

**Specify the participants and the research site** for the study, if the information has not yet been given.

Here is a script for a qualitative central question:

_______ (How or what) is the _______ (“story for” for narrative research; “meaning of” the phenomenon for phenomenology; “theory that explains the process of” for grounded theory; “culture-sharing pattern” for ethnography; “issue” in the “case” for case study) of _________ (central phenomenon) for _________ (participants) at _________ (research site).

The following are examples of qualitative research questions drawn from several types of strategies.

**Example 7.1 A Qualitative Central Question From an Ethnography**

Finders (1996) used ethnographic procedures to document the reading of teen magazines by middle-class European American seventh-grade girls. By examining the reading of teen zines (magazines), the researcher explored how the girls perceive and construct their social roles and relationships as they enter junior high school. She asked one guiding central question in her study:

How do early adolescent females read literature that falls outside the realm of fiction?

(Finders, 1996, p. 72)
Finders's (1996) central question begins with how; it uses an open-ended verb, read; it focuses on a single concept, the literature or teen magazines; and it mentions the participants, adolescent females, as the culture-sharing group. Notice how the author crafted a concise, single question that needed to be answered in the study. It is a broad question stated to permit participants to share diverse perspectives about reading the literature.

Example 7.2 Qualitative Central Questions From a Case Study

Padula and Miller (1999) conducted a multiple case study that described the experiences of women who went back to school, after a time away, in a psychology doctoral program at a major Midwestern research university. The intent was to document the women's experiences, providing a gendered and feminist perspective for women in the literature. The authors asked three central questions that guided the inquiry:

(a) How do women in a psychology doctoral program describe their decision to return to school? (b) How do women in a psychology doctoral program describe their reentry experiences? And (c) How does returning to graduate school change these women's lives?

(Padula & Miller, 1999, p. 328)

These three central questions all begin with the word how; they include open-ended verbs, such as “describe,” and they focus on three aspects of the doctoral experience—returning to school, reentering, and changing. They also mention the participants as women in a doctoral program at a Midwestern research university.

QUANTITATIVE RESEARCH QUESTIONS AND HYPOTHESES

In quantitative studies, investigators use quantitative research questions and hypotheses, and sometimes objectives, to shape and specifically focus the purpose of the study. Quantitative research questions inquire about the relationships among variables that the investigator seeks to know. They are used frequently in social science research and especially in survey studies. Quantitative hypotheses, on the other hand, are predictions the researcher makes about the expected relationships among variables. They are numeric estimates of population values based on data collected from samples. Testing of hypotheses employs statistical procedures in which the investigator draws inferences about the population from a study sample. Hypotheses are used often in experiments in which investigators compare groups. Advisers often recommend their use in a formal research project, such as a dissertation or thesis, as a means of stating the direction a study will take. Objectives, on the other hand, indicate the goals or objectives for a study. They often appear in proposals for funding, but tend to be used with less frequency in social and health science research today. Because of this, the focus here will be on research questions and hypotheses. Here is an example of a script for a quantitative research question:

Does _______ (name the theory) explain the relationship between _________ (independent variable) and _________ (dependent variable), controlling for the effects of _________ (control variable)?

Alternatively, a script for a quantitative null hypothesis might be as follows:

There is no significant difference between _________ (the control and experimental groups on the independent variable) on _________ (dependent variable).

Guidelines for writing good quantitative research questions and hypotheses include the following.

- The use of variables in research questions or hypotheses is typically limited to three basic approaches. The researcher may compare groups on an independent variable to see its impact on a dependent variable. Alternatively, the investigator may relate one or more independent variables to one or more dependent variables. Third, the researcher may describe responses to the independent, mediating, or dependent variables. Most quantitative research falls into one or more of these three categories.

- The most rigorous form of quantitative research follows from a test of a theory (see Chapter 3) and the specification of research questions or hypotheses that are included in the theory.

- The independent and dependent variables must be measured separately. This procedure reinforces the cause-and-effect logic of quantitative research.

- To eliminate redundancy, write only research questions or hypotheses, not both, unless the hypotheses build on the research questions (discussion follows). Choose the form based on tradition, recommendations from an adviser or faculty committee, or whether past research indicates a prediction about outcomes.
If hypotheses are used, there are two forms: null and alternative. A null hypothesis represents the traditional approach: it makes a prediction that in the general population, no relationship or no significant difference exists between groups on a variable. The wording is, "There is no difference (or relationship)" between the groups. The following example illustrates a null hypothesis.

Example 7.3 A Null Hypothesis
An investigator might examine three types of reinforcement for children with autism: verbal cues, a reward, and no reinforcement. The investigator collects behavioral measures assessing social interaction of the children with their siblings. A null hypothesis might read,

There is no significant difference between the effects of verbal cues, rewards, and no reinforcement in terms of social interaction for children with autism and their siblings.

The second form, popular in journal articles, is the alternative or directional hypothesis. The investigator makes a prediction about the expected outcome, basing this prediction on prior literature and studies on the topic that suggest a potential outcome. For example, the researcher may predict that "Scores will be higher for Group A than for Group B" on the dependent variable or that "Group A will change more than Group B" on the outcome. These examples illustrate a directional hypothesis because an expected prediction (e.g., higher, more change) is made. The following illustrates a directional hypothesis.

Example 7.4 Directional Hypotheses
Mascarenhas (1989) studied the differences between types of ownership (state-owned, publicly traded, and private) of firms in the offshore drilling industry. Specifically, the study explored such differences as domestic market dominance, international presence, and customer orientation. The study was a controlled field study using quasi-experimental procedures.

Hypothesis 1: Publicly traded firms will have higher growth rates than privately held firms.

Hypothesis 2: Publicly traded enterprises will have a larger international scope than state-owned and privately held firms.

Mascarenhas (1989, pp. 585-588) another type of alternative hypothesis is nondirectional—a prediction is made, but the exact form of differences (e.g., higher, lower, more, less) is not specified because the researcher does not know what can be predicted from past literature. Thus, the investigator might write, "There is a difference" between the two groups. An example follows which incorporates both types of hypotheses:

Example 7.5 Nondirectional and Directional Hypotheses

Mascarenhas (1989) studied the differences between types of ownership (state-owned, publicly traded, and private) of firms in the offshore drilling industry. Specifically, the study explored such differences as domestic market dominance, international presence, and customer orientation. The study was a controlled field study using quasi-experimental procedures.

Hypothesis 3: State-owned firms will have a greater share of the domestic market than publicly traded or privately held firms.

Hypothesis 4: Publicly traded firms will have broader product lines than state-owned and privately held firms.

Hypothesis 5: State-owned firms are more likely to have state-owned enterprises as customers overseas.

Hypothesis 6: State-owned firms will have a higher customer-base stability than privately held firms.

Hypothesis 7: In less visible contexts, publicly traded firms will employ more advanced technology than state-owned and privately held firms.

Sometimes directional hypotheses are created to examine the relationship among variables rather than to compare groups. For example, Moore (2000) studied the meaning of gender identity for religious and secular Jewish and Arab women in Israeli society. In a national probability sample of Jewish and Arab women, the author identified three hypotheses for study. The first is nondirectional and the last two are directional.

H_1: Gender identity of religious and secular Arab and Jewish women are related to different sociopolitical social orders that reflect the different value systems they embrace.

H_2: Religious women with salient gender identity are less socio-politically active than secular women with salient gender identities.

H_3: The relationships among gender identity, religiosity, and social actions are weaker among Arab women than among Jewish women.
Unless the study intentionally employs demographic variables as predictors, use nondemographic variables (i.e., attitudes or behaviors) as independent and dependent variables. Because quantitative studies attempt to verify theories, demographic variables (e.g., age, income level, educational level, and so forth) typically enter these models as intervening (or mediating or moderating) variables instead of major independent variables.

Use the same pattern of word order in the questions or hypotheses to enable a reader to easily identify the major variables. This calls for repeating key phrases and positioning the variables with the independent first and concluding with the dependent in left-to-right order (as discussed in Chapter 6 on good purpose statements). An example of word order with independent variables stated first in the phrase follows.

A Model for Descriptive Questions and Hypotheses

Consider a model for writing questions or hypotheses based on writing descriptive questions (describing something) followed by inferential questions or hypotheses (drawing inferences from a sample to a population). These questions or hypotheses include both independent and dependent variables. In this model, the writer specifies descriptive questions for each independent and dependent variable and important intervening or moderating variables. Inferential questions (or hypotheses) that relate variables or compare groups follow these descriptive questions. A final set of questions may add inferential questions or hypotheses in which variables are controlled.

Example 7.6  Standard Use of Language in Hypotheses

1. There is no relationship between utilization of ancillary support services and academic persistence for non-traditional-aged women college students.
2. There is no relationship between family support systems and academic persistence for non-traditional-aged college women.
3. There is no relationship between ancillary support services and family support systems for non-traditional-aged college women.

Example 7.7  Descriptive and Inferential Questions

To illustrate this approach, a researcher wants to examine the relationship of critical thinking skills (an independent variable measured on an instrument) to student achievement (a dependent variable measured by grades) in science classes for eighth-grade students in a large metropolitan school district. The researcher controls for the intervening effects of prior grades in science classes and parents' educational attainment. Following the proposed model, the research questions might be written as follows:

Descriptive Questions

1. How do the students rate on critical thinking skills? (A descriptive question focused on the independent variable)
2. What are the student’s achievement levels (or grades) in science classes? (A descriptive question focused on the dependent variable)
3. What are the student’s prior grades in science classes? (A descriptive question focused on the control variable of prior grades)
4. What is the educational attainment of the parents of the eighth-graders? (A descriptive question focused on another control variable, educational attainment of parents)

Inferential Questions

1. Does critical thinking ability relate to student achievement? (An inferential question relating the independent and the dependent variables)
2. Does critical thinking ability relate to student achievement, controlling for the effects of prior grades in science and the educational attainment of the eighth-graders’ parents? (An inferential question relating the independent and the dependent variables, controlling for the effects of the two controlled variables)

This example illustrates how to organize all the research questions into descriptive and inferential questions. In another example, a researcher may want to compare groups, and the language may change to reflect this comparison in the inferential questions. In other studies, many more independent and dependent variables may be present in the model being tested, and a longer list of descriptive and inferential questions would result. I recommend this descriptive–inferential model.

This example also illustrates the use of variables to describe as well as relate. It specifies the independent variables in the first position in the questions, the dependent in the second, and the control variables in the third. It employs demographics as controls rather than central variables in the questions, and a reader needs to assume that the questions flow from a theoretical model.
MIXED METHODS RESEARCH QUESTIONS AND HYPOTHESES

In discussions about methods, researchers typically do not see specific questions or hypotheses especially tailored to mixed methods research. However, discussion has begun concerning the use of mixed methods questions in studies and also how to design them (see Creswell & Plano Clark, 2007; Tashakkori & Creswell, 2007). A strong mixed methods study should start with a mixed methods research question, to shape the methods and the overall design of a study. Because a mixed methods study relies on neither quantitative or qualitative research alone, some combination of the two provides the best information for the research questions and hypotheses. To be considered are what types of questions should be presented and when and what information is most needed to convey the nature of the study:

- Both qualitative and quantitative research questions (or hypotheses) need to be advanced in a mixed methods study in order to narrow and focus the purpose statement. These questions or hypotheses can be advanced at the beginning or when they emerge during a later phase of the research. For example, if the study begins with a quantitative phase, the investigator might introduce hypotheses. Later in the study, when the qualitative phase is addressed, the qualitative research questions appear.

- When writing these questions or hypotheses, follow the guidelines in this chapter for scripting good questions or hypotheses.

- Some attention should be given to the order of the research questions and hypotheses. In a two-phase project, the first-phase questions would come first, followed by the second-phase questions so that readers see them in the order in which they will be addressed in the proposed study. In a single-phase strategy of inquiry, the questions might be ordered according to the method that is given the most weight in the design.

- Include a mixed methods research question that directly addresses the mixing of the quantitative and qualitative strands of the research. This is the question that will be answered in the study based on the mixing (see Creswell & Plano Clark, 2007). This is a new form of question in research methods, and Tashakkori and Creswell (2007, p. 208) call it a “hybrid” or “integrated” question. This question could either be written at the beginning or when it emerges; for instance, in a two-phase study in which one phase builds on the other, the mixed methods questions might be placed in a discussion between the two phases. This can assume one of two forms. The first is to write it in a way that conveys the methods or procedures in a study (e.g., Does the qualitative data help explain the results from the initial quantitative phase of the study? See Creswell & Plano Clark, 2007). The second form is to write it in a way that conveys the content of the study (e.g., Does the theme of social support help to explain why some students become bullies in schools? (see Tashakkori & Creswell, 2007.)

- Consider several different ways that all types of research questions (i.e., quantitative, qualitative, and mixed) can be written into a mixed methods study:

  - Write separate quantitative questions or hypotheses and qualitative questions. These could be written at the beginning of a study or when they appear in the project if the study unfolds in stages or phases. With this approach, the emphasis is placed on the two approaches and not on the mixed methods or integrative component of the study.

  - Write separate quantitative questions or hypotheses and qualitative questions and follow them with a mixed methods question. This highlights the importance of both the qualitative and quantitative phases of the study as well as their combined strength, and thus is probably the ideal approach.

  - Write only a mixed methods question that reflects the procedures or the content (or write the mixed methods question in both a procedural and a content approach), and do not include separate quantitative and qualitative questions. This approach would enhance the viewpoint that the study intends to lead to some integration or connection between the quantitative and qualitative phases of the study (i.e., the sum of both parts is greater than each part).

Example 7.8 Hypotheses and Research Questions in a Mixed Methods Study

Houts (1995) provides an example of a two-phase study with the separate quantitative and qualitative research hypotheses and questions stated in sections introducing each phase. She did not use a separate, distinct mixed methods research question. Her study investigated the differences between middle-school (nontraditional) and junior high (traditional) instructional strategies for seventh-grade and eighth-grade students and their attitudes toward science and their science achievement. Her study was conducted at a point when many schools were moving away from the two-year junior high concept to the three-year middle school (including sixth grade) approach to education. In this two-phase study, the first phase involved assessing pre-test...
and post-test attitudes and achievement using scales and examination scores. Houtz then followed the quantitative results with qualitative interviews with science teachers, the school principal, and consultants. This second phase helped to explain differences and similarities in the two instructional approaches obtained in the first phase.

With a first-phase quantitative study, Houtz (1995, p. 630) mentioned the hypotheses guiding her research:

> It was hypothesized that there would be no significant difference between students in the middle school and those in the junior high in attitude toward science as a school subject. It was also hypothesized that there would be no significant difference between students in the middle school and those in the junior high in achievement in science.

These hypotheses appeared at the beginning of the study as an introduction to the quantitative phase. Prior to the qualitative phase, Houtz raised questions to explore the quantitative results in more depth. Focusing in on the achievement test results, she interviewed science teachers, the principal, and the university consultants and asked three questions:

> What differences currently exist between the middle school instructional strategy and the junior high instructional strategy at this school in transition?
> How has this transition period impacted science attitude and achievement of your students? How do teachers feel about this change process?

(Houtz, 1995, p. 649)

Examining this mixed methods study shows that the author included both quantitative and qualitative questions, specified them at the beginning of each phase of her study, and used good elements for writing both quantitative hypotheses and qualitative research questions. Had Houtz (1995) developed a mixed methods question, it might have been stated from a procedural perspective:

> How do the interviews with teachers, the principal, and university consultants help to explain any quantitative differences in achievement for middle-school and junior high students?

Alternatively, the mixed methods question might have been written from a content orientation, such as:

> How do the themes mentioned by the teachers help to explain why middle-school children score lower than the junior high students?

**Example 7.9  A Mixed Methods Question Written in Terms of Mixing Procedures**

To what extent and in what ways do qualitative interviews with students and faculty members serve to contribute to a more comprehensive and nuanced understanding of this predicting relationship between CEEP scores and student academic performance, via integrative mixed methods analysis?

(Lee & Greene, 2007)

This is a good example of a mixed methods question focused on the intent of mixing, to integrate the qualitative interviews and the quantitative data, the relationship of scores and student performance. This question emphasized what the integration was attempting to accomplish—a comprehensive and nuanced understanding—and at the end of the article, the authors presented evidence answering this question.

**SUMMARY**

Research questions and hypotheses narrow the purpose statement and become major signposts for readers. Qualitative researchers ask at least one central question and several subquestions. They begin the questions with words such as how or what and use exploratory verbs, such as explore or describe. They pose broad, general questions to allow the participants to explain their ideas. They also focus initially on one central phenomenon of interest. The questions may also mention the participants and the site for the research.

Quantitative researchers write either research questions or hypotheses. Both forms include variables that are described, related, categorized into groups for comparison, and the independent and dependent variables are measured separately. In many quantitative proposals, writers use research questions; however, a more formal statement of research employs hypotheses. These hypotheses are predictions about the outcomes of the results, and they may be written as alternative hypotheses specifying the exact results to be expected (more or less, higher or lower of something). They also may be stated in the null form, indicating no expected difference or no relationship between groups on a dependent variable. Typically, the researcher writes the independent variable(s) first, followed by the dependent variable(s). One model for ordering the questions in a quantitative proposal is to begin with descriptive questions followed by the inferential questions that relate variables or compare groups.
I encourage mixed methods researchers to construct separate mixed methods questions in their studies. This question might be written to emphasize the procedures or the content of the study, and it might be placed at different points. By writing this question, the researcher conveys the importance of integrating or combining the quantitative and qualitative elements. Several models exist for writing mixed methods questions into studies: writing only quantitative questions or hypotheses and qualitative questions, or writing both quantitative questions or hypotheses and qualitative questions followed by a mixed methods question, or writing only a mixed methods question.

For a qualitative study, write one or two central questions followed by five to seven subquestions.

For a quantitative study, write two sets of questions. The first set should be descriptive questions about the independent and dependent variables in the study. The second set should pose questions that relate (or compare) the independent variable(s) with the dependent variable(s). This follows the model presented in this chapter for combining descriptive and inferential questions.

3. Write a mixed methods research question. Write it first as a question incorporating the procedures of your mixed methods study and then rewrite it to incorporate the content. Comment on which approach works best for you.

**Additional Readings**


In this chapter, I discuss the nine steps in conducting a mixed methods study. These are as follows:

1. Determine if a mixed methods study is needed to study the problem;
2. Consider whether a mixed methods study is feasible;
3. Write both qualitative and quantitative research questions;
4. Review and decide on the types of data collection;
5. Assess the relative weight and implementation strategy for each method;
6. Present a visual model;
7. Determine how the data will be analyzed;
8. Assess the criteria for evaluating the study; and
9. Develop a plan for the study.

In writing the research questions, I recommend developing both qualitative and quantitative types and stating within them the type of qualitative strategy of inquiry being used.


This editorial addresses the use and nature of research questions in mixed methods research. It highlights the importance of research questions in the process of research and discusses the need for a better understanding of the use of mixed methods questions. It asks, "How does one frame a research question in a mixed methods study?" (p. 207). Three models are presented: writing separate qualitative and quantitative questions, writing an overarching mixed methods question, or writing research questions for each phase of a study as the research evolves.


Janice Morse, a nursing researcher, identifies and describes the major design issues involved in planning a qualitative project. She compares several strategies of inquiry and maps the type of research questions used in each strategy. For phenomenology and ethnography, the research calls for meaning and descriptive questions. For grounded theory, the questions need to address process, whereas in ethnomethodology and discourse analysis, the questions relate to verbal interaction and dialogue. She indicates that the wording of the research question determines the focus and scope of the study.


Bruce Tuckman provides an entire chapter on constructing hypotheses. He identifies the origin of hypotheses in deductive theoretical positions and in inductive observations. He further defines and illustrates both alternative and null hypotheses and takes the reader through the hypothesis testing procedure.
For many proposal writers, the method section is the most concrete, specific part of a proposal. This chapter presents essential steps in designing quantitative methods for a research proposal or study, with specific focus on survey and experimental designs. These designs reflect postpositivist philosophical assumptions, as discussed in Chapter 1. For example, determinism suggests that examining the relationships between and among variables is central to answering questions and hypotheses through surveys and experiments. The reduction to a parsimonious set of variables, tightly controlled through design or statistical analysis, provides measures or observations for testing a theory. Objective data result from empirical observations and measures. Validity and reliability of scores on instruments lead to meaningful interpretations of data.

In relating these assumptions and the procedures that implement them, this discussion does not exhaustively treat quantitative research methods. Excellent, detailed texts provide information about survey research (e.g., see Babbie, 1990, 2007; Fink, 2002; Salant & Dillman, 1994). For experimental procedures, some traditional books (e.g., Campbell & Stanley, 1963; Cook & Campbell, 1979), as well as some newer texts, extend the ideas presented here (e.g., Bausell, 1994; Boruch, 1998; Field & Hole, 2003; Keppel, 1991; Lipsey, 1990; Reichardt & Mark, 1998). In this chapter, the focus is on the essential components of a method section in proposals for a survey and an experiment.

DEFINING SURVEYS AND EXPERIMENTS

A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. From sample results, the researcher generalizes or makes claims about the population. In an experiment, investigators may also identify a sample and generalize to a population; however, the basic intent of an experimental design is to test the impact of a treatment (or an intervention) on an
outcome, controlling for all other factors that might influence that outcome. As one form of control, researchers randomly assign individuals to groups. When one group receives a treatment and the other group does not, the experimenter can isolate whether it is the treatment and not other factors that influence the outcome.

COMPONENTS OF A SURVEY METHOD PLAN

The design of a survey method section follows a standard format. Numerous examples of this format appear in scholarly journals, and these examples provide useful models. The following sections detail typical components. In preparing to design these components into a proposal, consider the questions on the checklist shown in Table 8.1 as a general guide.

The Survey Design

In a proposal or plan, one of the first parts of the method section can introduce readers to the basic purpose and rationale for survey research. Begin the discussion by reviewing the purpose of a survey and the rationale for its selection for the proposed study. This discussion can

- Identify the purpose of survey research. This purpose is to generalize from a sample to a population so that inferences can be made about some characteristic, attitude, or behavior of this population (Babbie, 1990). Provide a reference to this purpose from one of the survey method texts (several are identified in this chapter).

- Indicate why a survey is the preferred type of data collection procedure for the study. In this rationale, consider the advantages of survey designs, such as the economy of the design and the rapid turnaround in data collection. Discuss the advantage of identifying attributes of a large population from a small group of individuals (Babbie, 1990; Fowler, 2002).

- Indicate whether the survey will be cross-sectional, with the data collected at one point in time, or whether it will be longitudinal, with data collected over time.

- Specify the form of data collection. Fink (2002) identifies four types: self-administered questionnaires; interviews; structured record reviews to collect financial, medical, or school information; and structured observations. The data collection may also involve creating a Web-based or Internet survey and administering it online (Nesbary, 2000; Sue & Ritter, 2007). Regardless of the form of data collection, provide a rationale for the procedure, using arguments based on its strengths and weaknesses, costs, data availability, and convenience.

The Population and Sample

Specify the characteristics of the population and the sampling procedure. Methodologists have written excellent discussions about the underlying

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<tr>
<th>Table 8.1 A Checklist of Questions for Designing a Survey Method</th>
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<td>(a) Is the purpose of a survey design stated?</td>
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<td>(b) Are the reasons for choosing the design mentioned?</td>
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<td>(c) Is the nature of the survey (cross-sectional vs. longitudinal) identified?</td>
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<td>(d) Are the population and its size mentioned?</td>
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<td>(e) Will the population be stratified? If so, how?</td>
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<td>(f) How many people will be in the sample? On what basis was this size chosen?</td>
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<td>(g) What will be the procedure for sampling these individuals (e.g., random, nonrandom)?</td>
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<td>(h) What instrument will be used in the survey? Who developed the instrument?</td>
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<td>(i) What are the content areas addressed in the survey? The scales?</td>
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<td>(j) What procedure will be used to pilot or field test the survey?</td>
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<td>(k) What is the timeline for administering the survey?</td>
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<td>(l) What are the variables in the study?</td>
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<td>(m) How do these variables cross-reference with the research questions and items on the survey?</td>
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<td>(n) What specific steps will be taken in data analysis to</td>
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<td>(o) analyze returns?</td>
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<td>(p) check for response bias?</td>
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<td>(q) conduct a descriptive analysis?</td>
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<td>(r) collapse items into scales?</td>
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<td>(s) check for reliability of scales?</td>
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<td>(t) run inferential statistics to answer the research questions?</td>
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<td>(u) How will the results be interpreted?</td>
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</table>
logic of sampling theory (e.g., Babbie, 1990, 2007). Here are essential aspects of the population and sample to describe in a research plan:

- Identify the population in the study. Also state the size of this population, if size can be determined, and the means of identifying individuals in the population. Questions of access arise here, and the researcher might refer to availability of sampling frames—mail or published lists—of potential respondents in the population.

- Identify whether the sampling design for this population is single stage or multistage (called clustering). Cluster sampling is ideal when it is impossible or impractical to compile a list of the elements composing the population (Babbie, 2007). A single-stage sampling procedure is one in which the researcher has access to names in the population and can sample the people (or other elements) directly. In a multistage or clustering procedure, the researcher first identifies clusters (groups or organizations), obtains names of individuals within those clusters, and then samples within them.

- Identify the selection process for individuals. I recommend selecting a random sample, in which each individual in the population has an equal probability of being selected (a systematic or probabilistic sample). Less desirable is a nonprobability sample (or convenience sample), in which respondents are chosen based on their convenience and availability (Babbie, 1990). With randomization, a representative sample from a population provides the ability to generalize to a population.

- Identify whether the study will involve stratification of the population before selecting the sample. Stratification means that specific characteristics of individuals (e.g., both females and males) are represented in the sample and the sample reflects the true proportion in the population of individuals with certain characteristics (Fowler, 2002). When randomly selecting people from a population, these characteristics may or may not be present in the sample in the same proportions as in the population; stratification ensures their representation. Also identify the characteristics used in stratifying the population (e.g., gender, income levels, education). Within each stratum, identify whether the sample contains individuals with the characteristic in the same proportion as the characteristic appears in the entire population (Babbie, 1990; Miller, 1991).

- Discuss the procedures for selecting the sample from available lists. The most rigorous method for selecting the sample is to choose individuals using a random numbers table, a table available in many introductory statistics texts (e.g., Gravetter & Wallnau, 2000).

- Indicate the number of people in the sample and the procedures used to compute this number. In survey research, I recommend that one use a sample size formula available in many survey texts (e.g., see Babbie, 1990; Fowler, 2002).

**Instrumentation**

As part of rigorous data collection, the proposal developer also provides detailed information about the actual survey instrument to be used in the proposed study. Consider the following:

- Name the survey instrument used to collect data. Discuss whether it is an instrument designed for this research, a modified instrument, or an intact instrument developed by someone else. If it is a modified instrument, indicate whether the developer has provided appropriate permission to use it. In some survey projects, the researcher assembles an instrument from components of several instruments. Again, permission to use any part of other instruments needs to be obtained. In addition, instruments are being increasingly designed for online surveys (see Sue & Ritter, 2007). An online survey tool is SurveyMonkey (SurveyMonkey.com), a commercial product available since 1999. Using this service, researchers can create their own surveys quickly using custom templates and post them on Web sites or e-mail them for participants to complete. SurveyMonkey then can generate results and report them back to the researcher as descriptive statistics or as graphed information. The results can be downloaded into a spreadsheet or a database for further analysis. The basic program is free for 100 responses per survey and no more than 10 questions per survey. For additional responses, more questions, and several custom features, SurveyMonkey charges a monthly or annual fee.

- To use an existing instrument, describe the established validity and reliability of scores obtained from past use of the instrument. This means reporting efforts by authors to establish validity—whether one can draw meaningful and useful inferences from scores on the instruments. The three traditional forms of validity to look for are content validity (do the items measure the content they were intended to measure), predictive or concurrent validity (do scores predict a criterion measure? Do results correlate with other results?), and construct validity (do items measure theoretical constructs or concepts?). In more recent studies, construct validity has also included whether the scores serve a useful purpose and have positive consequences when they are used in practice (Humbley & Zumbo, 1996). Establishing the validity of the scores in a survey helps to identify whether an instrument might be a good one to use in survey research. This form of validity is different than identifying the threats to validity in experimental research, as discussed later in this chapter.

Also discuss whether scores resulting from past use of the instrument demonstrate reliability. Look for whether authors report measures of internal consistency (are the items' responses consistent across constructs?)
and test–retest correlations (are scores stable over time when the instrument is administered a second time?). Also determine whether there was consistency in test administration and scoring (were errors caused by carelessness in administration or scoring?; Borg, Gall, & Gall, 1993).

- When one modifies an instrument or combines instruments in a study, the original validity and reliability may not hold for the new instrument, and it becomes important to reestablish validity and reliability during data analysis.

- Include sample items from the instrument so that readers can see the actual items used. In an appendix to the proposal, attach sample items or the entire instrument.

- Indicate the major content sections in the instrument, such as the cover letter (Dillman, 1978, provides a useful list of items to include in cover letters), the items (e.g., demographics, attitudinal items, behavioral items, factual items), and the closing instructions. Also mention the type of scales used to measure the items on the instrument, such as continuous scales (e.g., strongly agree to strongly disagree) and categorical scales (e.g., yes/no, rank from highest to lowest importance).

- Discuss plans for pilot testing or field testing the survey and provide a rationale for these plans. This testing is important to establish the content validity of an instrument and to improve questions, format, and scales. Indicate the number of people who will test the instrument and the plans to incorporate their comments into final instrument revisions.

- For a mailed survey, identify steps for administering the survey and for following up to ensure a high response rate. Salant and Dillman (1994) suggest a four-phase administration process. The first mail-out is a short advance-notice letter to all members of the sample, and the second mail-out is the actual mail survey, distributed about 1 week after the advance-notice letter. The third mail-out consists of a postcard follow-up sent to all members of the sample 4 to 8 days after the initial questionnaire. The fourth mail-out, sent to all nonrespondents, consists of a personalized cover letter with a handwritten signature, the questionnaire, and a preaddressed return envelope with postage. Researchers send this fourth mail-out 3 weeks after the second mail-out. Thus, in total, the researcher concludes the administration period 4 weeks after its start, providing the returns meet project objectives.

Variables in the Study

Although readers of a proposal learn about the variables in purpose statements and research questions/hypotheses sections, it is useful in the method section to relate the variables to the specific questions or hypotheses on the instrument. One technique is to relate the variables, the research questions or hypotheses, and items on the survey instrument so that a reader can easily determine how the researcher will use the questionnaire items. Plan to include a table and a discussion that cross-reference the variables, the questions or hypotheses, and specific survey items. This procedure is especially helpful in dissertations in which investigators test large-scale models. Table 8.2 illustrates such a table using hypothetical data.

| Table 8.2 | Variables, Research Questions, and Items on a Survey |
|---|---|---|
| Variable Name | Research Question | Item on Survey |
| **Independent Variable 1:** Prior publications | Descriptive research Question 1: How many publications did the faculty member produce prior to receipt of the doctorate? | See Questions 11, 12, 13, 14, and 15: publication counts for journal articles, books, conference papers, book chapters published before receiving the doctorate |
| **Dependent Variable 1:** Grants funded | Descriptive research Question 3: How many grants has the faculty member received in the past 3 years? | See Questions 16, 17, and 18: grants from foundations, federal grants, state grants |
| **Control Variable 1:** Tenure status | Descriptive research Question 5: Is the faculty member tenured? | See Question 19: tenured (yes/no) |

Data Analysis and Interpretation

In the proposal, present information about the steps involved in analyzing the data. I recommend the following research tips, presenting them as a series of steps so that a reader can see how one step leads to another for a complete discussion of the data analysis procedures.

Step 1. Report information about the number of members of the sample who did and did not return the survey. A table with numbers and percentages describing respondents and nonrespondents is a useful tool to present this information.

Step 2. Discuss the method by which response bias will be determined. Response bias is the effect of nonresponses on survey estimates (Fowler, 2002). Bias means that if nonrespondents had responded, their responses would have substantially changed the overall results. Mention the procedures used to check for response bias, such as wave analysis or
a respondent/nonrespondent analysis. In wave analysis, the researcher examines returns on select items week by week to determine if average responses change (Leslie, 1972). Based on the assumption that those who return surveys in the final weeks of the response period are nearly all nonrespondents, if the responses begin to change, a potential exists for response bias. An alternative check for response bias is to contact a few nonrespondents by phone and determine if their responses differ substantially from respondents. This constitutes a respondent-nonrespondent check for response bias.

Step 3. Discuss a plan to provide a descriptive analysis of data for all independent and dependent variables in the study. This analysis should indicate the means, standard deviations, and range of scores for these variables.

Step 4. If the proposal contains an instrument with scales or a plan to develop scales (combining items into scales), identify the statistical procedure (i.e., factor analysis) for accomplishing this. Also mention reliability checks for the internal consistency of the scales (i.e., the Cronbach alpha statistic).

Step 5. Identify the statistics and the statistical computer program for testing the major inferential research questions or hypotheses in the proposed study. The inferential questions or hypotheses relate variables or compare groups in terms of variables so that inferences can be drawn from the sample to a population. Provide a rationale for the choice of statistical test and mention the assumptions associated with the statistic. As shown in Table 8.3, base this choice on the nature of the research question (e.g., relating variables or comparing groups as the most popular), the number of independent and dependent variables, and the number of variables controlled (e.g., see Rudestam & Newton, 2007). Further, consider whether the variables will be measured on an instrument as a continuous score (e.g., age, from 18 to 36) or as a categorical score (e.g., women = 1, men = 2). Finally, consider whether the scores from the sample might be normally distributed in a bell-shaped curve if plotted out on a graph or non-normally distributed. There are additional ways to determine if the scores are normally distributed (see Creswell, 2008). These factors, in combination, enable a researcher to determine what statistical test will be suited for answering the research question or hypothesis. In Table 8.3, I show how the factors, in combination, lead to the selection of a number of common statistical tests. For further types of statistical tests, readers are referred to statistics methods books, such as Gravetter and Wallnau (2000).

Step 6. A final step in the data analysis is to present the results in tables or figures and interpret the results from the statistical test. An interpretation of the results means that the researcher draws conclusions from the results for the research questions, hypotheses, and the larger meaning of the results. This interpretation involves several steps.

- Report whether the results of the statistical test were statistically significant or not, such as "the analysis of variance revealed a statistically significant difference between men and women in terms of attitudes toward banning smoking in restaurants $F(2; 6) = 8.55, p = .001."
- Report how these results answered the research question or hypothesis. Did the results support the hypothesis or did they contradict what was expected?
- Indicate what might explain why the results occurred. This explanation might refer back to the theory advanced in the proposed study (see Chapter 3), past literature as reviewed in the literature review (see Chapter 2), or logical reasoning.
- Discuss the implications of the results for practice or for future research on the topic.

<table>
<thead>
<tr>
<th>Nature of Question</th>
<th>Number of Independent Variables</th>
<th>Number of Dependent Variables</th>
<th>Number of Control Variables (covariates)</th>
<th>Type of Score Independent Dependent Variables</th>
<th>Distribution of Scores</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group comparison</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Categorical/continuous</td>
<td>Normal</td>
<td>t-test</td>
</tr>
<tr>
<td>Group comparison</td>
<td>1 or more</td>
<td>1</td>
<td>0</td>
<td>Categorical/continuous</td>
<td>Normal</td>
<td>Analysis of variance</td>
</tr>
<tr>
<td>Group comparison</td>
<td>1 or more</td>
<td>1</td>
<td>1</td>
<td>Categorical/continuous</td>
<td>Normal</td>
<td>Analysis of covariance</td>
</tr>
<tr>
<td>Group comparison</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Categorical/continuous</td>
<td>Non-normal</td>
<td>Mann-Whitney U test</td>
</tr>
<tr>
<td>Association between groups</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Categorical/categorical</td>
<td>Non-normal</td>
<td>Chi-square</td>
</tr>
<tr>
<td>Relate variables</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Continuous/continuous</td>
<td>Normal</td>
<td>Pearson product moment correlation</td>
</tr>
<tr>
<td>Relate variables</td>
<td>2 or more</td>
<td>1</td>
<td>0</td>
<td>Continuous/continuous</td>
<td>Normal</td>
<td>Multiple regression</td>
</tr>
<tr>
<td>Relate variables</td>
<td>1</td>
<td>1 or more</td>
<td>0</td>
<td>Categorical/categorical</td>
<td>Non-normal</td>
<td>Spearman-rank-order correlation</td>
</tr>
</tbody>
</table>
Example 8.1  A Survey Method Section

An example follows of a survey method section that illustrates many of the steps just mentioned. This excerpt (used with permission) comes from a journal article reporting a study of factors affecting student attrition in one small liberal arts college (Bean & Creswell, 1980, pp. 321–322).

Methodology

The site of this study was a small (enrollment 1,000), religious, coeducational, liberal arts college in a Midwestern city with a population of 175,000 people. (Authors identified the research site and population.)

The dropout rate the previous year was 25%. Dropout rates tend to be highest among freshmen and sophomores, so an attempt was made to reach as many freshmen and sophomores as possible by distribution of the questionnaire through classes. Research on attrition indicates that males and females drop out of college for different reasons (Bean, 1978, in press; Spady, 1971). Therefore, only women were analyzed in this study.

During April 1979, 169 women returned questionnaires. A homogeneous sample of 136 women who were 25 years old or younger, unmarried, full-time U.S. citizens, and Caucasian was selected for this analysis to exclude some possible confounding variables (Kerlinger, 1973).

Of these women, 71 were freshmen, 55 were sophomores, and 9 were juniors. Of the students, 95% were between the ages of 18 and 21. This sample is biased toward higher-ability students as indicated by scores on the ACT test. (Authors presented descriptive information about the sample.)

Data were collected by means of a questionnaire containing 116 items. The majority of these were Likert-like items based on a scale from "a very small extent" to "a very great extent." Other questions asked for factual information, such as ACT scores, high school grades, and parents' educational level. All information used in this analysis was derived from questionnaire data. This questionnaire had been developed and tested at three other institutions before its use at this college. (Authors discussed the instrument.)

Concurrent and convergent validity (Campbell & Fiske, 1959) of these measures was established through factor analysis, and was found to be at an adequate level. Reliability of the factors was established through the coefficient alpha. The constructs were represented by 25 measures—multiple items combined on the basis of factor analysis to make indices—and 27 measures were single item indicators. (Validity and reliability were addressed.)

Multiple regression and path analysis (Helse, 1969; Kerlinger & Pedhazur, 1973) were used to analyze the data.

In the causal model . . . intent to leave was regressed on all variables which preceded it in the causal sequence. Intervening variables significantly related to intent to leave were then regressed on organizational variables, personal variables, environmental variables, and background variables. (Data analysis steps were presented.)

Participants

Readers need to know about the selection, assignment, and number of participants who will take part in the experiment. Consider the following suggestions when writing the method section for an experiment:

- Describe the selection process for participants as either random or nonrandom (e.g., conveniently selected). The participants might be selected by random selection or random sampling. With random selection or random sampling, each individual has an equal probability of being selected from the population, ensuring that the sample will be representative of the population (Keppel, 1991). In many experiments, however, only a convenience sample is possible because the investigator must use naturally formed groups (e.g., a classroom, an organization, a family unit) or volunteers. When individuals are not randomly assigned, the procedure is called a quasi-experiment.

- When individuals can be randomly assigned to groups, the procedure is called a true experiment. If random assignment is made, discuss how the project will randomly assign individuals to the treatment groups. This means that of the pool of participants, Individual 1 goes to Group 1, Individual 2 to Group 2, and so forth, so that there is no systematic bias in assigning the individuals. This procedure eliminates the possibility of systematic differences among characteristics of the participants that could affect the outcomes, so that any differences in outcomes can be attributed to the experimental treatment (Keppel, 1991).

- Identify other features in the experimental design that will systematically control the variables that might influence the outcome. One approach is matching participants in terms of a certain trait or characteristic and then assigning one individual from each matched set to each group. For example, scores on a pre-test might be obtained. Individuals might then be assigned to groups, with each group having the same numbers of high, medium, and low scorers on the pre-test. Alternatively, the criteria for matching might be ability levels or demographic variables.
Table 8.4: A Checklist of Questions for Designing an Experimental Procedure

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who are the participants in the study?</td>
</tr>
<tr>
<td>What is the population to which the results of the participants will be generalized?</td>
</tr>
<tr>
<td>How were the participants selected? Was a random selection method used?</td>
</tr>
<tr>
<td>How will the participants be randomly assigned? Will they be matched? How?</td>
</tr>
<tr>
<td>How many participants will be in the experimental and control group(s)?</td>
</tr>
<tr>
<td>What is the dependent variable or variables (i.e., outcome variable) in the study? How will it be measured? Will it be measured before and after the experiment?</td>
</tr>
<tr>
<td>What is the treatment condition(s)? How was it operationalized?</td>
</tr>
<tr>
<td>Will variables be covaried in the experiment? How will they be measured?</td>
</tr>
<tr>
<td>What experimental research design will be used? What would a visual model of this design look like?</td>
</tr>
<tr>
<td>What instrument(s) will be used to measure the outcome in the study? Why was it chosen? Who developed it? Has permission been sought to use it?</td>
</tr>
<tr>
<td>What are the steps in the procedure (e.g., random assignment of participants to groups, collection of demographic information, administration of pretest, administration of treatment(s), administration of posttest)?</td>
</tr>
<tr>
<td>What are potential threats to internal and external validity for the experimental design and procedure? How will they be addressed?</td>
</tr>
<tr>
<td>Will a pilot test of the experiment be conducted?</td>
</tr>
<tr>
<td>What statistics will be used to analyze the data (e.g., descriptive and inferential)?</td>
</tr>
<tr>
<td>How will the results be interpreted?</td>
</tr>
</tbody>
</table>

A researcher may decide not to match, however, because it is expensive, takes time (Salkind, 1990), and leads to incomparable groups if participants leave the experiment (Rosenthal & Rosnow, 1991). Other procedures to place control into experiments involve using covariates (e.g., pre-test scores) as moderating variables and controlling for their effects statistically, selecting homogeneous samples, or blocking the participants into subgroups or categories and analyzing the impact of each subgroup on the outcome (Creswell, 2008).

- Tell the reader about the number of participants in each group and the systematic procedures for determining the size of each group. For experimental research, investigators use a power analysis (Lipsey, 1990) to identify the appropriate sample size for groups. This calculation involves
  - A consideration of the level of statistical significance for the experiment, or alpha
  - The amount of power desired in a study—typically presented as high, medium, or low—for the statistical test of the null hypothesis with sample data when the null hypothesis is, in fact, false
  - The effect size, the expected differences in the means between the control and experimental groups expressed in standard deviation units

- Researchers set values for these three factors (e.g., alpha = .05, power = .80, and effect size = .50) and can look up in a table the size needed for each group (see Cohen, 1977; Lipsey, 1990). In this way, the experiment is planned so that the size of each treatment group provides the greatest sensitivity that the effect on the outcome actually is due to the experimental manipulation in the study.

Variables

The variables need to be specified in an experiment so that it is clear to readers what groups are receiving the experimental treatment and what outcomes are being measured. Here are some suggestions for developing ideas about variables in a proposal:

- Clearly identify the **independent variables** in the experiment (recall the discussion of variables in Chapter 3). One independent variable must be the **treatment variable**. One or more groups receive the experimental manipulation, or treatment, from the researcher. Other independent variables may simply be measured variables in which no manipulation occurs (e.g., attitudes or personal characteristics of participants). Still other independent variables can be statistically controlled, such as demographics (e.g., gender or age). The method section must list and clearly identify all the independent variables in an experiment.

- Identify the **dependent variable or variables** (i.e., the outcomes) in the experiment. The dependent variable is the response or the criterion variable that is presumed to be caused by or influenced by the independent treatment conditions and any other independent variables. Rosenthal and
Rosnow (1991) advanced three prototypic outcomes measures: the direction of observed change, the amount of this change, and the ease with which the participant changes (e.g., the participant reacquires the correct response as in a single-subject design).

**Instrumentation and Materials**

During an experiment, one makes observations or obtains measures using instruments at a pre-test or post-test (or both) stage of the procedures. A sound research plan calls for a thorough discussion about the instrument or instruments—their development, their items, their scales, and reports of reliability and validity of scores on past uses. The researcher also should report on the materials used for the experimental treatment (e.g., the special program or specific activities given to the experimental group).

- Describe the instrument or instruments participants complete in the experiment, typically completed before the experiment begins and at its end. Indicate the established validity and reliability of the scores on instruments, the individuals who developed them, and any permissions needed to use them.

- Thoroughly discuss the materials used for the experimental treatment. One group, for example, may participate in a special computer-assisted learning plan used by a teacher in a classroom. This plan might involve handouts, lessons, and special written instructions to help students in this experimental group learn how to study a subject using computers. A pilot test of these materials may also be discussed, as well as any training required to administer the materials in a standard way. The intent of this pilot test is to ensure that materials can be administered without variability to the experimental group.

**Experimental Procedures**

The specific experimental design procedures also need to be identified. This discussion involves indicating the overall experiment type, citing reasons for the design, and advancing a visual model to help the reader understand the procedures.

- Identify the type of experimental design to be used in the proposed study. The types available in experiments are pre-experimental designs, true experiments, quasi-experiments, and single-subject designs. With pre-experimental designs, the researcher studies a single group and provides an intervention during the experiment. This design does not have a control group to compare with the experimental group. In quasi-experiments, the investigator uses control and experimental groups but does not randomly assign participants to groups (e.g., they may be intact groups available to the researcher). In a true experiment, the investigator randomly assigns the participants to treatment groups. A single-subject design or N of 1 design involves observing the behavior of a single individual (or a small number of individuals) over time.

  - Identify what is being compared in the experiment. In many experiments, those of a type called between-subject designs, the investigator compares two or more groups (Keppel, 1991; Rosenthal & Rosnow, 1991). For example, a factorial design experiment, a variation on the between-group design, involves using two or more treatment variables to examine the independent and simultaneous effects of these treatment variables on an outcome (Vogt, 1999). This widely used behavioral research design explores the effects of each treatment separately and also the effects of variables used in combination, thereby providing a rich and revealing multidimensional view (Keppel, 1991). In other experiments, the researcher studies only one group in what is called a within-group design. For example, in a repeated measures design, participants are assigned to different treatments at different times during the experiment. Another example of a within-group design would be a study of the behavior of a single individual over time in which the experimenter provides and withholds a treatment at different times in the experiment, to determine its impact.

  - Provide a diagram or a figure to illustrate the specific research design to be used. A standard notation system needs to be used in this figure. A research tip I recommend is to use a classic notation system provided by Campbell and Stanley (1963, p. 6):

    - X represents an exposure of a group to an experimental variable or event, the effects of which are to be measured.
    - O represents an observation or measurement recorded on an instrument.
    - X's and O's in a given row are applied to the same specific persons, X's and O's in the same column, or placed vertically relative to each other, are simultaneous.
    - The left-to-right dimension indicates the temporal order of procedures in the experiment (times indicated with an arrow).
    - The symbol R indicates random assignment.
    - Separation of parallel rows by a horizontal line indicates that comparison groups are not equal (or equated) by random assignment. No horizontal line between the groups displays random assignment of individuals to treatment groups.

In the following examples, this notation is used to illustrate pre-experimental, quasi-experimental, true experimental, and single-subject designs.
Example 8.2 Pre-Experimental Designs

One-Shot Case Study
This design involves an exposure of a group to a treatment followed by a measure.
Group A X— 0

One-Group Pre-Test-Post-Test Design
This design includes a pre-test measure followed by a treatment and a post-test for a single group.
Group A 01—X—02

Static Group Comparison or Post-Test-Only With Nonequivalent Groups
Experimenters use this design after implementing a treatment. After the treatment, the researcher selects a comparison group and provides a post-test to both the experimental group(s) and the comparison group(s).
Group A X— 0
Group B — 0

Alternative Treatment Post-Test-Only With Nonequivalent Groups Design
This design uses the same procedure as the Static Group Comparison, with the exception that the nonequivalent comparison group received a different treatment.
Group A X1— 0
Group B X2— 0

Example 8.3 Quasi-Experimental Designs

Nonequivalent (Pre-Test and Post-Test) Control-Group Design
In this design, a popular approach to quasi-experiments, the experimental group A and the control group B are selected without random assignment. Both groups take a pre-test and post-test. Only the experimental group receives the treatment.

Example 8.4 True Experimental Designs

Pre-Test-Post-Test Control-Group Design
A traditional, classical design, this procedure involves random assignment of participants to two groups. Both groups are administered both a pre-test and a post-test, but the treatment is provided only to experimental Group A.
Group A R—X—0
Group B R— 0

Post-Test-Only Control-Group Design
This design controls for any confounding effects of a pre-test and is a popular experimental design. The participants are randomly assigned to groups, a treatment is given only to the experimental group, and both groups are measured on the post-test.
Group A R—X—0
Group B R— 0

Solomon Four-Group Design
A special case of a 2 X 2 factorial design, this procedure involves the random assignment of participants to four groups. Pre-tests and treatments are varied for the four groups. All groups receive a post-test.
Group A R—X—0
Group B R—X—0
Group C R— 0
Group D R— 0
Example 8.5 Single-Subject Designs

A-B-A Single-Subject Design

This design involves multiple observations of a single individual. The target behavior of a single individual is established over time and is referred to as a baseline behavior. The baseline behavior is assessed, the treatment provided, and then the treatment is withdrawn.

<table>
<thead>
<tr>
<th>Baseline A</th>
<th>Treatment B</th>
<th>Baseline A</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0-0-0-0</td>
<td>X-X-X-X-X</td>
<td>0-0-0-0-0</td>
</tr>
</tbody>
</table>

Threats to Validity

There are several threats to validity that will raise questions about an experimenter’s ability to conclude that the intervention affects an outcome and not some other factor. Experimental researchers need to identify potential threats to the internal validity of their experiments and design them so that these threats will not likely arise or are minimized. There are two types of threats to validity: internal threats and external threats. Internal validity threats are experimental procedures, treatments, or experiences of the participants that threaten the researcher’s ability to draw correct inferences from the data about the population in an experiment. Table 8.5 displays these threats, provides a description of each one of them, and suggests potential responses by the researcher so that the threat may not occur. There are those involving participants (i.e., history, maturation, regression, selection, and mortality), those related to the use of an experimental treatment that the researcher manipulates (i.e., diffusion, compensatory and resentful demoralization, and compensatory rivalry), and those involving procedures used in the experiment (i.e., testing and instruments).

Potential threats to external validity also must be identified and designs created to minimize these threats. External validity threats arise when experimenters draw incorrect inferences from the sample data to other persons, other settings, and past or future situations. As shown in Table 8.6, these threats arise because of the characteristics of individuals selected for the sample, the uniqueness of the setting, and the timing of the experiment. For example, threats to external validity arise when the researcher generalizes beyond the groups in the experiment to other racial or social groups not under study, to settings not studied, or to past or future situations. Steps for addressing these potential issues are also presented in Table 8.6.

Other threats that might be mentioned in the method section are the threats to statistical conclusion validity that arise when experimenters draw inaccurate inferences from the data because of inadequate statistical

<table>
<thead>
<tr>
<th>Type of Threat to Internal Validity</th>
<th>Description of Threat</th>
<th>In Response, Actions the Researcher Can Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>Because time passes during an experiment, events can occur that unduly influence the outcome beyond the experimental treatment.</td>
<td>The researcher can have both the experimental and control groups experience the same external events.</td>
</tr>
<tr>
<td>Maturation</td>
<td>Participants in an experiment may mature or change during the experiment, thus influencing the results.</td>
<td>The researcher can select participants who mature or change at the same rate (e.g., same age) during the experiment.</td>
</tr>
<tr>
<td>Regression</td>
<td>Participants with extreme scores are selected for the experiment. Naturally, their scores will probably change during the experiment.</td>
<td>A researcher can select participants who do not have extreme scores as entering characteristics for the experiment.</td>
</tr>
<tr>
<td>Selection</td>
<td>Participants can be selected who have certain characteristics that predispose them to have certain outcomes (e.g., they are brighter).</td>
<td>The researcher can select participants randomly so that characteristics have the probability of being equally distributed among the experimental groups.</td>
</tr>
<tr>
<td>Mortality</td>
<td>Participants drop out during an experiment due to many possible reasons. The outcomes are thus unknown for these individuals.</td>
<td>A researcher can recruit a large sample to account for dropouts or compare those who drop out with those who continue, in terms of the outcome.</td>
</tr>
<tr>
<td>Diffusion of treatment</td>
<td>Participants in the control and experimental groups communicate with each other. This communication can influence how both groups score on the outcomes.</td>
<td>The researcher can keep the two groups as separate as possible during the experiment.</td>
</tr>
</tbody>
</table>

(Continued)
Table 8.5 (Continued)

<table>
<thead>
<tr>
<th>Type of Threat to Internal Validity</th>
<th>Description of Threat</th>
<th>In Response, Actions the Researcher Can Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensatory/resentful demoralization</td>
<td>The benefits of an experiment may be unequal or resented when only the experimental group receives the treatment (e.g., experimental group receives therapy and the control group receives nothing).</td>
<td>The researcher can provide benefits to both groups, such as giving the control group the treatment after the experiment ends or giving the control group some different type of treatment during the experiment.</td>
</tr>
</tbody>
</table>

| Compensatory rivalry            | Participants in the control group feel that they are being devalued, as compared to the experimental group, because they do not experience the treatment. | The researcher can take steps to create equality between the two groups, such as reducing the expectations of the control group. |
| Testing                          | Participants become familiar with the outcome measure and remember responses for later testing. | The researcher can have a longer time interval between administrations of the outcome or use different items on a later test than were used in an earlier test. |
| Instrumentation                  | The instrument changes between a pre-test and post-test, thus impacting the scores on the outcome. | The researcher can use the same instrument for the pre-test and post-test measures. |

SOURCE: Adapted from Creswell (2008).

Table 8.6 Types of Threats to External Validity

<table>
<thead>
<tr>
<th>Types of Threats to External Validity</th>
<th>Description of Threat</th>
<th>In Response, Actions the Researcher Can Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction of selection and treatment</td>
<td>Because of the narrow characteristics of participants in the experiment, the researcher cannot generalize to individuals who do not have the characteristics of participants.</td>
<td>The researcher restricts claims about groups to which the results cannot be generalized. The researcher conducts additional experiments with groups with different characteristics.</td>
</tr>
<tr>
<td>Interaction of setting and treatment</td>
<td>Because of the characteristics of the setting of participants in an experiment, a researcher cannot generalize to individuals in other settings.</td>
<td>The researcher needs to conduct additional experiments in new settings to see if the same results occur as in the initial setting.</td>
</tr>
<tr>
<td>Interaction of history and treatment</td>
<td>Because results of an experiment are time-bound, a researcher cannot generalize the results to past or future situations.</td>
<td>The researcher needs to replicate the study at later times to determine if the same results occur as in the earlier time.</td>
</tr>
</tbody>
</table>

SOURCE: Adapted from Creswell (2008).

- Discuss how you plan to address the threat in the design of your experiment.
- Cite references to books that discuss the issue of threats to validity, such as Cook and Campbell (1979); Creswell (2008); Reichardt and Mark (1998); Shadish, Cook, & Campbell (2001); and Tuckman (1999).

The Procedure

A proposal developer needs to describe in detail the procedure for conducting the experiment. A reader should be able to understand the design being used, the observations, the treatment, and the timeline of activities.

- Discuss a step-by-step approach for the procedure in the experiment. For example, Borg and Gall (1989, p. 679) outlined six steps typically used in the procedure for a pre-test–post-test control group design with matching participants in the experimental and control groups:
  1. Administer measures of the dependent variable or a variable closely correlated with the dependent variable to the research participants.
2. Assign participants to matched pairs on the basis of their scores on the measures described in Step 1.

3. Randomly assign one member of each pair to the experimental group and the other member to the control group.

4. Expose the experimental group to the experimental treatment and administer no treatment or an alternative treatment to the control group.

5. Administer measures of the dependent variables to the experimental and control groups.

6. Compare the performance of the experimental and control groups on the post-test(s) using tests of statistical significance.

**Data Analysis**

Tell the reader about the types of statistical analysis that will be used during the experiment.

- Report the descriptive statistics calculated for observations and measures at the pre-test or post-test stage of experimental designs. These statistics are means, standard deviations, and ranges.

- Indicate the inferential statistical tests used to examine the hypotheses in the study. For experimental designs with categorical information (groups) on the independent variable and continuous information on the dependent variable, researchers use t tests or univariate analysis of variance (ANOVA), analysis of covariance (ANCOVA), or multivariate analysis of variance (MANOVA—multiple dependent measures). (Several of these tests are mentioned in Table 8.3, presented earlier.) In factorial designs, both interaction and main effects of ANOVA are used. When data on a pre-test or post-test show marked deviation from a normal distribution, use nonparametric statistical tests.

- For single-subject research designs, use line graphs for baseline and treatment observations for abscissa (horizontal axis) units of time and the ordinate (vertical axis) target behavior. Each data point is plotted separately on the graph, and the data points are connected by lines (e.g., see Neuman & McCormick, 1995). Occasionally, tests of statistical significance, such as t tests, are used to compare the pooled mean of the baseline and the treatment phases, although such procedures may violate the assumption of independent measures (Borg & Gall, 1989).

- With increasing frequency, experimental researchers report both statistical results of hypothesis testing and confidence intervals and effect size as indicators of practical significance of the findings. A confidence interval is an interval estimate of the range of upper and lower statistical values that are consistent with the observed data and are likely to contain the actual population mean. An effect size identifies the strength of the conclusions about group differences or the relationships among variables in quantitative studies. The calculation of effect size varies for different statistical tests.

**Interpreting Results**

The final step in an experiment is to interpret the findings in light of the hypotheses or research questions set forth in the beginning. In this interpretation, address whether the hypotheses or questions were supported or whether they were refuted. Consider whether the treatment that was implemented actually made a difference for the participants who experienced them. Suggest why or why not the results were significant, drawing on past literature that you reviewed (Chapter 2), the theory used in the study (Chapter 3), or persuasive logic that might explain the results. Address whether the results might have occurred because of inadequate experimental procedures, such as threats to internal validity, and indicate how the results might be generalized to certain people, settings, and times. Finally, indicate the implications of the results for the population studied or for future research.

**Example 8.6 An Experimental Method Section**

The following is a selected passage from a quasi-experimental study by Enns and Hackett (1990) that demonstrates many of the components in an experimental design. Their study addressed the general issue of matching client and counselor interests along the dimensions of attitudes toward feminism. They hypothesized that feminist participants would be more receptive to a radical feminist counselor than would nonfeminist participants and that nonfeminist participants would be more receptive to a nonsexist and liberal feminist counselor. Except for a limited discussion about data analysis and an interpretation section found in the discussion of their article, their approach contains the elements of a good method section for an experimental study.

**Method**

**Participants**

The participants were 150 undergraduate women enrolled in both lower- and upper-division courses in sociology, psychology, and communications at a midsize university and a community college both on the west coast. (The authors described the participants in this study.)
Design and Experimental Manipulation

This study used a 3 X 2 X 2 factorial design: Orientation of Counselor (nonsexist-humanistic, liberal feminist, or radical feminist) X Statement of Values (implicit or explicit) X Participants' Identification with Feminism (feminist or nonfeminist). Occasional missing data on particular items were handled by a pairwise deletion procedure. (Authors identified the overall design.)

The three counseling conditions, nonsexist-humanistic, liberal, and radical feminist, were depicted by 10 min videotape vignettes of a second counseling session between a female counselor and a female client. . . . The implicit statement of values condition used the sample interview only; the counselor's values were therefore implicit in her responses. The explicit statement of values condition was created by adding to each of the three counseling conditions a 2-min leader that portrayed the counselor describing to the client her counseling approach and associated values including for the two feminist conditions a description of her feminist philosophical orientation, liberal or radical . . . . Three counseling scripts were initially developed on the basis of distinctions between nonsexist-humanistic, liberal, and radical feminist philosophies and attendant counseling implications. Client statements and the outcome of each interview were held constant, whereas counselor responses differed by approach. (Authors described the three treatment conditions variables manipulated in the study.)

Manipulation checks. As a check on participants' perception of the experimental manipulation and as an assessment of participants' perceived similarity to the three counselors, two subscales of Berryman-Fink and Verderber's (1985) Attributions of the Term Feminist Scale were revised and used in this study as the Counselor Description Questionnaire (CDQ) and the Personal Description Questionnaire (PDQ). . . . Berryman-Fink and Verderber (1985) reported internal consistency reliabilities of .86 and .89 for the original versions of these two subscales. (Authors discussed the instruments and the reliability of the scales for the dependent variable in the study.)

Procedure

All experimental sessions were conducted individually. The experimenter, an advanced doctoral student in counseling psychology, greeted each subject, explained the purpose of the study as assessing students' reactions to counseling, and administered the ATF. The ATF was then collected and scored while each subject completed a demographic data form and reviewed a set of instructions for viewing the videotape. The first half of the sample was randomly assigned to one of the twelve videotapes (3 Approaches X 2 Statements X 2 Counselors), and a median was obtained on the ATF. The median for the first half of the sample was then used to categorize the second half of the group as feminist or nonfeminist, and the remainder of the participants was randomly assigned to conditions separately from each feminist orientation group to ensure nearly equal cell sizes. The median on the final sample was checked and a few participants recategorized by the final median split, which resulted in 12 or 13 participants per cell.

After viewing the videotape that corresponded to their experimental assignment, participants completed the dependent measures and were debriefed. (pp. 35-36; Authors described the procedure used in the experiment.)


SUMMARY

This chapter identified essential components in designing a method procedure for a survey or experimental study. The outline of steps for a survey study began with a discussion about the purpose, the identification of the population and sample, the survey instruments to be used, the relationship between the variables, the research questions, specific items on the survey, and steps to be taken in the analysis and the interpretation of the data from the survey. In the design of an experiment, the researcher identifies participants in the study, the variables—the treatment conditions and the outcome variables—and the instruments used for pre-tests and post-tests and the materials to be used in the treatments. The design also includes the specific type of experiment, such as a pre-experimental, quasi-experimental, true experiment, or single-subject design. Then the researcher draws a figure to illustrate the design, using appropriate notation. This is followed by comments about potential threats to internal and external validity (and possibly statistical and construct validity) that relate to the experiment, the statistical analysis used to test the hypotheses or research questions, and the interpretation of the results.

Writing Exercises

1. Design a plan for the procedures to be used in a survey study. Review the checklist in Table 8.1 after you write the section to determine if all components have been addressed.

2. Design a plan for procedures for an experimental study. Refer to Table 8.4 after you complete your plan to determine if all questions have been addressed adequately.
ADDITIONAL READINGS


Earl Babbie provides a thorough, detailed text about all aspects of survey design. He reviews the types of designs, the logic of sampling, and examples of designs. He also discusses the conceptualization of a survey instrument and its scales. He then provides useful ideas about administering a questionnaire and processing the results. Also included is a discussion about data analysis with attention to constructing and understanding tables and writing a survey report. This book is detailed, informative, and technically oriented toward students at the intermediate or advanced level of survey research.


This chapter in the Gage Handbook is the classical statement about experimental designs. Campbell and Stanley designed a notation system for experiments that is still used today; they also advanced the types of experimental designs, beginning with factors that jeopardize internal and external validity, the pre-experimental design types, true experiments, quasi-experimental designs, and correlational and ex post facto designs. The chapter presents an excellent summary of types of designs, their threats to validity, and statistical procedures to test the designs. This is an essential chapter for students beginning their study of experimental studies.


"The Survey Kit," is composed of multiple books and edited by Arlene Fink. An overview of the books in this series is provided in the first volume. As an introduction to the volumes, Fink discusses all aspects of survey research, including how to ask questions, how to conduct surveys, how to engage in telephone interviews, how to sample, and how to measure validity and reliability. Much of the discussion is oriented toward the beginning survey researcher, and the numerous examples and excellent illustrations make it a useful tool to learn the basics of survey research.


Floyd Fowler provides a useful text about the decisions that go into the design of a survey research project. He addresses use of alternative sampling procedures, ways of reducing nonresponse rates, data collection, design of good questions, employing sound interviewing techniques, preparation of surveys for analysis, and ethical issues in survey designs.


Geoffrey Keppel provides a detailed, thorough treatment of the design of experiments from the principles of design to the statistical analysis of experimental data. Overall, this book is for the mid-level to advanced statistics student who seeks to understand the design and statistical analysis of experiments. The introductory chapter presents an informative overview of the components of experimental designs.


Mark Lipsey has authored a major book on the topics of experimental designs and statistical power of those designs. Its basic premise is that an experiment needs to have sufficient sensitivity to detect those effects it purports to investigate. The book explores statistical power and includes a table to help researchers identify the appropriate size of groups in an experiment.


Susan Neuman and Sandra McCormick have edited a useful, practical guide to the design of single-subject research. They present many examples of different types of designs, such as reversal designs and multiple-baseline designs, and they enumerate the statistical procedures that might be involved in analyzing the single-subject data. One chapter, for example, illustrates the conventions for displaying data on line graphs. Although this book cites many applications in literacy, it has broad application in the social and human sciences.
Qualitative Procedures

Qualitative procedures demonstrate a different approach to scholarly inquiry than methods of quantitative research. Qualitative inquiry employs different philosophical assumptions; strategies of inquiry; and methods of data collection, analysis, and interpretation. Although the processes are similar, qualitative procedures rely on text and image data, have unique steps in data analysis, and draw on diverse strategies of inquiry.

In fact, the strategies of inquiry chosen in a qualitative project have a dramatic influence on the procedures, which, even within strategies, are anything but uniform. Looking over the landscape of qualitative procedures shows diverse perspectives ranging from social justice thinking (Denzin & Lincoln, 2005), to ideological perspectives (Lather, 1991), to philosophical stances (Schwandt, 2000), to systematic procedural guidelines (Creswell, 2007; Corbin & Strauss, 2007). All perspectives vie for center stage in this unfolding model of inquiry called qualitative research.

This chapter attempts to combine many perspectives, provide general procedures, and use examples liberally to illustrate variations in strategies. This discussion draws on thoughts provided by several authors writing about qualitative proposal design (e.g., see Berg, 2001; Marshall & Rossmann, 2006; Maxwell, 2005; Rossman & Rallis, 1998). The topics in a proposal section on procedures are characteristics of qualitative research, the research strategy, the role of the researcher, steps in data collection and analysis, strategies for validity, the accuracy of findings, and narrative structure. Table 9.1 shows a checklist of questions for designing qualitative procedures.

THE CHARACTERISTICS OF QUALITATIVE RESEARCH

For many years, proposal writers had to discuss the characteristics of qualitative research and convince faculty and audiences as to their legitimacy. Now these discussions are less frequently found in the literature and there is some consensus as to what constitutes qualitative inquiry. Thus, my suggestions about this section of a proposal are as follows:
Table 9.1 A Checklist of Questions for Designing a Qualitative Procedure

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the basic characteristics of qualitative studies mentioned?</td>
<td></td>
</tr>
<tr>
<td>Is the specific type of qualitative strategy of inquiry to be used in the study mentioned?</td>
<td></td>
</tr>
<tr>
<td>Does the reader gain an understanding of the researcher’s role in the study (past historical, social, cultural experiences, personal connections to sites and people, steps in gaining entry, and sensitive ethical issues)?</td>
<td></td>
</tr>
<tr>
<td>Is the purposeful sampling strategy for sites and individuals identified?</td>
<td></td>
</tr>
<tr>
<td>Are the specific forms of data collection mentioned and a rationale given for their use?</td>
<td></td>
</tr>
<tr>
<td>Are the procedures for recording information during the data collection procedure mentioned (such as protocols)?</td>
<td></td>
</tr>
<tr>
<td>Are the data analysis steps identified?</td>
<td></td>
</tr>
<tr>
<td>Is there evidence that the researcher has organized the data for analysis?</td>
<td></td>
</tr>
<tr>
<td>Has the researcher reviewed the data generally to obtain a sense of the information?</td>
<td></td>
</tr>
<tr>
<td>Has coding been used with the data?</td>
<td></td>
</tr>
<tr>
<td>Have the codes been developed to form a description or to identify themes?</td>
<td></td>
</tr>
<tr>
<td>Are the themes interrelated to show a higher level of analysis and abstraction?</td>
<td></td>
</tr>
<tr>
<td>Are the ways that the data will be represented mentioned—such as in tables, graphs, and figures?</td>
<td></td>
</tr>
<tr>
<td>Have the bases for interpreting the analysis been specified (personal experiences, the literature, questions, action agenda)?</td>
<td></td>
</tr>
<tr>
<td>Has the researcher mentioned the outcome of the study (developed a theory, provided a complex picture of themes)?</td>
<td></td>
</tr>
<tr>
<td>Have multiple strategies been cited for validating the findings?</td>
<td></td>
</tr>
</tbody>
</table>

- Review the needs of potential audiences for the proposal. Decide whether audience members are knowledgeable enough about the characteristics of qualitative research that this section is not necessary.

- If there is some question about their knowledge, present the basic characteristics of qualitative research in the proposal and possibly discuss a recent qualitative research journal article (or study) to use as an example to illustrate the characteristics.

- Several lists of characteristics might be used (e.g., Bogdan & Biklen, 1992; Eisner, 1991; Hatch, 2002; LeCompte & Schensul, 1999; Marshall & Rossman, 2006), but I will rely on a composite analysis of several of these writers that I incorporated into my book on qualitative inquiry (Creswell, 2007). My list captures both traditional perspectives and the newer advocacy, participatory, and self-reflexive perspectives of qualitative inquiry. Here are the characteristics of qualitative research, presented in no specific order of importance:

  - Natural setting—Qualitative researchers tend to collect data in the field at the site where participants experience the issue or problem under study. They do not bring individuals into a lab (a contrived situation), nor do they typically send out instruments for individuals to complete. This up close information gathered by actually talking directly to people and seeing them behave and act within their context is a major characteristic of qualitative research. In the natural setting, the researchers have face-to-face interaction over time.

  - Researcher as key instrument—Qualitative researchers collect data themselves through examining documents, observing behavior, or interviewing participants. They may use a protocol—an instrument for collecting data—but the researchers are the ones who actually gather the information. They do not tend to use or rely on questionnaires or instruments developed by other researchers.

  - Multiple sources of data—Qualitative researchers typically gather multiple forms of data, such as interviews, observations, and documents, rather than rely on a single data source. Then the researchers review all of the data, make sense of it, and organize it into categories or themes that cut across all of the data sources.

  - Inductive data analysis—Qualitative researchers build their patterns, categories, and themes from the bottom up, by organizing the data into increasingly more abstract units of information. This inductive process illustrates working back and forth between the themes and the database until the researchers have established a comprehensive set of themes. It may also involve collaborating with the participants interactively, so that participants have a chance to shape the themes or abstractions that emerge from the process.

  - Participants’ meanings—In the entire qualitative research process, the researcher keeps a focus on learning the meaning that the participants hold about the problem or issue, not the meaning that the researchers bring to the research or writers express in the literature.

  - Emergent design—The research process for qualitative researchers is emergent. This means that the initial plan for research cannot be
tightlly prescribed, and all phases of the process may change or shift after the researcher enters the field and begins to collect data. For example, the questions may change, the forms of data collection may shift, and the individuals studied and the sites visited may be modified. The key idea behind qualitative research is to learn about the problem or issue from participants and to address the research to obtain that information.

- Theoretical lens—Qualitative researchers often use lens to view their studies, such as the concept of culture, central to ethnography, or gendered, racial, or class differences from the theoretical orientations discussed in Chapter 3. Sometimes the study may be organized around identifying the social, political, or historical context of the problem under study.

- Interpretive—Qualitative research is a form of interpretive inquiry in which researchers make an interpretation of what they see, hear, and understand. Their interpretations cannot be separated from their own backgrounds, history, contexts, and prior understandings. After a research report is issued, the readers make an interpretation as well as the participants, offering yet other interpretations of the study. With the readers, the participants, and the researchers all making interpretations, it is apparent how multiple views of the problem can emerge.

- Holistic account—Qualitative researchers try to develop a complex picture of the problem or issue under study. This involves reporting multiple perspectives, identifying the many factors involved in a situation, and generally sketching the larger picture that emerges. A visual model of many facets of a process or a central phenomenon aid in establishing this holistic picture (see, for example, Creswell & Brown, 1992).

**STRATEGIES OF INQUIRY**

Beyond these general characteristics are more specific strategies of inquiry. These strategies focus on data collection, analysis, and writing, but they originate out of disciplines and flow throughout the process of research (e.g., types of problems, ethical issues of importance; Creswell, 2007b). Many strategies exist, such as the 28 approaches identified by Tesch (1990), the 19 types in Wolcott's (2001) tree, and the 5 approaches to qualitative inquiry by Creswell (2007). As discussed in Chapter 1, I recommend that qualitative researchers choose from among the possibilities, such as narrative, phenomenology, ethnography, case study, and grounded theory. I selected these five because they are popular across the social and health sciences today. Others exist that have been addressed adequately in qualitative books, such as participatory action research (Kemmis & Wilkinson, 1998) or discourse analysis (Cheek, 2004). For the five approaches, researchers might study individuals (narrative, phenomenology); explore processes, activities, and events (case study, grounded theory); or learn about broad culture-sharing behavior of individuals or groups (ethnography).

In writing a procedure for a qualitative proposal, consider the following research tips:

- Identify the specific approach to inquiry that you will be using.
- Provide some background information about the strategy, such as the discipline origin, the applications of it, and a brief definition of it (see Chapter 1 for the five strategies of inquiry).
- Discuss why it is an appropriate strategy to use in the proposed study.
- Identify how the use of the strategy will shape the types of questions asked (see Morse, 1994, for questions that relate to strategies), the form of data collection, the steps of data analysis, and the final narrative.

**THE RESEARCHER'S ROLE**

As mentioned in the list of characteristics, qualitative research is interpretative research, with the inquirer typically involved in a sustained and intensive experience with participants. This introduces a range of strategic, ethical, and personal issues into the qualitative research process (Locke et al., 2007). With these concerns in mind, inquirers explicitly identify reflexively their biases, values, and personal background, such as gender, history, culture, and socioeconomic status, that may shape their interpretations formed during a study. In addition, gaining entry to a research site and the ethical issues that might arise are also elements of the researcher's role.

- Include statements about past experiences that provide background data through which the audience can better understand the topic, the setting, or the participants and the researcher's interpretation of the phenomenon.
- Comment on connections between the researcher and the participants and on the research sites. "Backyard" research (Glesne & Peshkin, 1992) involves studying the researcher's own organization, or friends, or immediate work setting. This often leads to compromises in the researcher's ability to disclose information and raises difficult power issues. Although data collection may be convenient and easy, the problems of reporting data that are biased, incomplete, or compromised are legion. If studying the backyard is necessary, employ multiple strategies of validity (as discussed later) to create reader confidence in the accuracy of the findings.
- Indicate steps taken to obtain permission from the Institutional Review Board (see Chapter 4) to protect the rights of human participants. Attach, as an appendix, the approval letter from the IRB and discuss the process involved in securing permission.
Discuss steps taken to gain entry to the setting and to secure permission to study the participants or situation (Marshall & Rossman, 2006). It is important to gain access to research or archival sites by seeking the approval of gatekeepers, individuals at the research site that provide access to the site and allow or permit the research to be done. A brief proposal might need to be developed and submitted for review by gatekeepers. Bogdan and Biklen (1992) advance topics that could be addressed in such a proposal:

- Why was the site chosen for study?
- What activities will occur at the site during the research study?
- Will the study be disruptive?
- How will the results be reported?
- What will the gatekeeper gain from the study?

Comment about sensitive ethical issues that may arise (see Chapter 3, and Berg, 2001). For each issue raised, discuss how the research study will address it. For example, when studying a sensitive topic, it is necessary to mask names of people, places, and activities. In this situation, the process for masking information requires discussion in the proposal.

DATA COLLECTION PROCEDURES

Comments about the role of the researcher set the stage for discussion of issues involved in collecting data. The data collection steps include setting the boundaries for the study, collecting information through unstructured or semistructured observations and interviews, documents, and visual materials, as well as establishing the protocol for recording information.

Identify the purposefully selected sites or individuals for the proposed study. The idea behind qualitative research is to purposefully select participants or sites (or documents or visual material) that will best help the researcher understand the problem and the research question. This does not necessarily suggest random sampling or selection of a large number of participants and sites, as typically found in quantitative research. A discussion about participants and site might include four aspects identified by Miles and Huberman (1994): the setting (where the research will take place), the actors (who will be observed or interviewed), the events (what the actors will be observed or interviewed doing), and the process (the evolving nature of events undertaken by the actors within the setting).

Indicate the type or types of data to be collected. In many qualitative studies, inquirers collect multiple forms of data and spend a considerable time in the natural setting gathering information. The collection procedures in qualitative research involve four basic types, as shown in Table 9.2.

<table>
<thead>
<tr>
<th>Data Collection Types</th>
<th>Options Within Types</th>
<th>Advantages of the Type</th>
<th>Limitations of the Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations</td>
<td>Complete participant—researcher conceals role</td>
<td>Researcher has a first-hand experience with participant.</td>
<td>Researcher may be seen as intrusive. Private information may be observed that researcher cannot report. Researcher may not have good affinity and observing skills. Certain participants (e.g., children) may present special problems in gaining rapport.</td>
</tr>
<tr>
<td>Interviews</td>
<td>Face-to-face—on-one-on-one, in-person interview</td>
<td>Useful when participants cannot be directly observed. Participants can provide historical information. Allows researcher control over the line of questioning.</td>
<td>Provides indirect information filtered through the views of interviewees. Provides information in a designated place rather than the natural field setting. Researcher’s presence may bias responses. Not all people are equally articulate and perceptive.</td>
</tr>
</tbody>
</table>
Qualitative observations are those in which the researcher takes field notes on the behavior and activities of individuals at the research site. In these field notes, the researcher records, in an unstructured or semistructured way (using some prior questions that the inquirer wants to know), activities at the research site. Qualitative observers may also engage in roles varying from a non-participant to a complete participant.

In qualitative interviews, the researcher conducts face-to-face interviews with participants, interviews participants by telephone, or engages in focus group interviews, with six to eight interviewees in each group. These interviews involve unstructured and generally open-ended questions that are few in number and intended to elicit views and opinions from the participants.

During the process of research, the investigator may collect qualitative documents. These may be public documents (e.g., newspapers, minutes of meetings, official reports) or private documents (e.g., personal journals and diaries, letters, e-mails).

A final category of qualitative data consists of qualitative audio and visual materials. This data may take the form of photographs, art objects, videotapes, or any forms of sound.

- In a discussion about data collection forms, be specific about the types and include arguments concerning the strengths and weaknesses of each type, as discussed in Table 9.2.
- Include data collection types that go beyond typical observations and interviews. These unusual forms create reader interest in a proposal and can capture useful information that observations and interviews may miss. For example, examine the compendium of types of data in Table 9.3 that can be used, to stretch the imagination about possibilities, such as gathering sounds or tastes, or using cherished items to elicit comments during an interview.

### DATA RECORDING PROCEDURES

Before entering the field, qualitative researchers plan their approach to data recording. The proposal should identify what data the researcher will record and the procedures for recording data.

- Use a protocol for recording observational data. Researchers often engage in multiple observations during the course of a qualitative study and use an observational protocol for recording information while observing. This may be a single page with a dividing line down the middle to separate descriptive notes (portraits of the participants, a reconstruction of dialogue, a description of the physical setting, accounts of particular

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**Table 9.2 (Continued)**

<table>
<thead>
<tr>
<th>Data Collection Types</th>
<th>Options Within Types</th>
<th>Advantages of the Type</th>
<th>Limitations of the Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Documents</strong></td>
<td>Public documents, such as minutes of meetings, or newspapers</td>
<td>Enables a researcher to obtain the language and words of participants.</td>
<td>Not all people are equally articulate and perceptive.</td>
</tr>
<tr>
<td></td>
<td>Private documents, such as journals, diaries, or letters</td>
<td>Can be accessed at a time convenient to researcher—an unobtrusive source of information.</td>
<td>May be protected information unavailable to public or private access.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Represents data which are thoughtful in that participants have given attention to compiling them.</td>
<td>Requires the researcher to search out the information in hard-to-find places.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>As written evidence, it saves a researcher the time and expense of transcribing.</td>
<td>Requires transcribing or optically scanning for computer entry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The documents may not be authentic or accurate.</td>
<td>Materials may be incomplete.</td>
</tr>
<tr>
<td><strong>Audio-Visual Materials</strong></td>
<td>Photographs</td>
<td>May be an unobtrusive method of collecting data.</td>
<td>May be difficult to interpret.</td>
</tr>
<tr>
<td></td>
<td>Videotapes</td>
<td>Provides an opportunity for participants to directly share their reality.</td>
<td>May not be accessible publicly or privately.</td>
</tr>
<tr>
<td></td>
<td>Art objects</td>
<td>It is creative in that it captures attention visually.</td>
<td>The presence of an observer (e.g., photographer) may be disruptive and affect responses.</td>
</tr>
<tr>
<td></td>
<td>Computer software</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Film</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: This table includes material taken from Merriam (1998), Bogdan & Biklen (1992), and Creswell (2007).
Table 9.3: A List of Qualitative Data Collection Approaches

<table>
<thead>
<tr>
<th>Observations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gather field notes by conducting an observation as a participant.</td>
<td></td>
</tr>
<tr>
<td>• Gather field notes by conducting an observation as an observer.</td>
<td></td>
</tr>
<tr>
<td>• Gather field notes by spending more time as a participant than as an observer.</td>
<td></td>
</tr>
<tr>
<td>• Gather field notes by spending more time as an observer than as a participant.</td>
<td></td>
</tr>
<tr>
<td>• Gather field notes first by observing as an outsider and then moving into the setting and observing as an insider.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviews</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Conduct an unstructured, open-ended interview and take interview notes.</td>
<td></td>
</tr>
<tr>
<td>• Conduct an unstructured, open-ended interview, audiotape the interview, and transcribe it.</td>
<td></td>
</tr>
<tr>
<td>• Conduct a semistructured interview, audiotape the interview, and transcribe the interview.</td>
<td></td>
</tr>
<tr>
<td>• Conduct a focus group interview, audiotape the interview, and transcribe it.</td>
<td></td>
</tr>
<tr>
<td>• Conduct different types of interviews: email, face-to-face, focus group, online focus group, telephone interviews</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Documents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Keep a journal during the research study.</td>
<td></td>
</tr>
<tr>
<td>• Have a participant keep a journal or diary during the research study.</td>
<td></td>
</tr>
<tr>
<td>• Collect personal letters from participants.</td>
<td></td>
</tr>
<tr>
<td>• Analyze public documents (e.g., official memos, minutes, records, archival material).</td>
<td></td>
</tr>
<tr>
<td>• Examine autobiographies and biographies.</td>
<td></td>
</tr>
<tr>
<td>• Have participants take photographs or videotapes (i.e., photo elicitation).</td>
<td></td>
</tr>
<tr>
<td>• Chart audits</td>
<td></td>
</tr>
<tr>
<td>• Medical records</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Audio-visual Materials</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Examine physical trace evidence (e.g., footprints in the snow).</td>
<td></td>
</tr>
<tr>
<td>• Videotape or film a social situation or an individual or group.</td>
<td></td>
</tr>
<tr>
<td>• Examine photographs or videotapes.</td>
<td></td>
</tr>
<tr>
<td>• Collect sounds (e.g., musical sounds, a child's laughter, car horns honking).</td>
<td></td>
</tr>
<tr>
<td>• Collect e-mail messages.</td>
<td></td>
</tr>
<tr>
<td>• Collect cell phone text messages.</td>
<td></td>
</tr>
<tr>
<td>• Examine possessions or ritual objects.</td>
<td></td>
</tr>
<tr>
<td>• Collect sounds, smells, tastes, or any stimuli of the senses.</td>
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</tr>
</tbody>
</table>

SOURCE: Adapted from Creswell (2007).

- Use an **interview protocol** for asking questions and recording answers during a qualitative interview. This protocol includes the following components:
  - A heading (date, place, interviewer, interviewee)
  - Instructions for the interviewer to follow so that standard procedures are used from one interview to another
  - The questions (typically an ice-breaker question at the beginning followed by 4–5 questions that are often the subquestions in a qualitative research plan, followed by some concluding statement or a question, such as, "Who should I visit with to learn more about my questions?"
  - Probes for the 4–5 questions, to follow up and ask individuals to explain their ideas in more detail or to elaborate on what they have said
  - Space between the questions to record responses
  - A final thank-you statement to acknowledge the time the interviewee spent during the interview (see Creswell, 2007)

- Researchers record information from interviews by making handwritten notes, by audiotaping, or by videotaping. Even if an interview is taped, I recommend that researchers take notes, in the event that recording equipment fails. If audiotaping is used, researchers need to plan in advance for the transcription of the tape.

- The recording of documents and visual materials can be based on the researcher's structure for taking notes. Typically, notes reflect information about the document or other material as well as key ideas in the documents. It is helpful to note whether the information represents primary material (i.e., information directly from the people or situation under study) or secondary material (i.e., secondhand accounts of the people or situation written by others). It is also helpful to comment on the reliability and value of the data source.

**DATA ANALYSIS AND INTERPRETATION**

Discussion of the plan for analyzing the data might have several components. The process of data analysis involves making sense out of text and image data. It involves preparing the data for analysis, conducting different analyses, moving deeper and deeper into understanding the data (some qualitative researchers like to think of this as peeling back the layers of an onion), representing the data, and making an interpretation of the larger meaning of the data. Several generic processes might be stated...
in the proposal that convey a sense of the overall activities of qualitative data analysis, such as the following drawn from my own thoughts (Creswell, 2007) and those of Rossman and Rallis (1998):

- It is an ongoing process involving continual reflection about the data, asking analytic questions, and writing memos throughout the study. I say that qualitative data analysis is conducted concurrently with gathering data, making interpretations, and writing reports. While interviews are going on, for example, the researcher may be analyzing an interview collected earlier, writing memos that may ultimately be included as a narrative in the final report, and organizing the structure of the final report.

- Data analysis involves collecting open-ended data, based on asking general questions and developing an analysis from the information supplied by participants.

- Often we see qualitative data analysis reported in journal articles and books that is a generic form of analysis. In this approach, the researcher collects qualitative data, analyzes it for themes or perspectives, and reports 4–5 themes. I consider this approach to be basic qualitative analysis; today many qualitative researchers go beyond this generic analysis to add a procedure within one of the qualitative strategies of inquiry. For example, grounded theory has systematic steps (Corbin & Strauss, 2007; Strauss & Corbin, 1990, 1998). These involve generating categories of information (open coding), selecting one of the categories and positioning it within a theoretical model (axial coding), and then explicating a story from the interconnection of these categories (selective coding). Case study and ethnographic research involve a detailed description of the setting or individuals, followed by analysis of the data for themes or issues (see Stake, 1995; Wolcott, 1994). Phenomenological research uses the analysis of significant statements, the generation of meaning units, and the development of what Moustakas (1994) calls an essence description. Narrative research employs restorying the participants' stories using structural devices, such as plot, setting, activities, climax, and denouement (Clandinin & Connelly, 2000). As these examples illustrate, the processes as well as the terms differ from one analytic strategy to another.

- Despite these analytic differences depending on the type of strategy used, qualitative inquirers often use a general procedure and convey in the proposal the steps in data analysis. An ideal situation is to blend the general steps with the specific research strategy steps. An overview of the data analysis process is seen in Figure 9.1. As a research tip, I urge researchers to look at qualitative data analysis as following steps from the specific to the general and as involving multiple levels of analysis.

![Figure 9.1 Data Analysis in Qualitative Research](image)

This figure suggests a linear, hierarchical approach building from the bottom to the top, but I see it as more interactive in practice; the various stages are interrelated and not always visited in the order presented. These levels are emphasized in the following steps:

Step 1. Organize and prepare the data for analysis. This involves transcribing interviews, optically scanning material, typing up field notes, or sorting and arranging the data into different types depending on the sources of information.

Step 2. Read through all the data. A first step is to obtain a general sense of the information and to reflect on its overall meaning. What general ideas are participants saying? What is the tone of the ideas? What is the impression of the overall depth, credibility, and use of the information? Sometimes qualitative researchers write notes in margins or start recording general thoughts about the data at this stage.
Step 3. Begin detailed analysis with a coding process. **Coding** is the process of organizing the material into chunks or segments of text before bringing meaning to information (Rossman & Rallis, 1998, p. 171). It involves taking text data or pictures gathered during data collection, segmenting sentences (or paragraphs) or images into categories, and labeling those categories with a term, often a term based in the actual language of the participant (called an *in vivo* term).

Before proceeding to Step 4, consider some remarks that will provide detailed guidance for the coding process. Tesch (1990, pp. 142-145) provides a useful analysis of the process in eight steps:

1. **Get a sense of the whole.** Read all the transcriptions carefully. Perhaps jot down some ideas as they come to mind.
2. **Pick one document** (i.e., one interview)—the most interesting one, the shortest, the one on the top of the pile. Go through it, asking yourself, “What is this about?” Do not think about the substance of the information but its underlying meaning. Write thoughts in the margin.
3. **When you have completed this task for several participants,** make a list of all topics. Cluster together similar topics. Form these topics into columns, perhaps arrayed as major topics, unique topics, and leftovers.
4. **Now take this list and go back to your data.** Abbreviate the topics as codes and write the codes next to the appropriate segments of the text. Try this preliminary organizing scheme to see if new categories and codes emerge.
5. **Find the most descriptive wording for your topics and turn them into categories.** Look for ways of reducing your total list of categories by grouping topics that relate to each other. Perhaps draw lines between your categories to show interrelationships.
6. **Make a final decision on the abbreviation for each category and alphabetize these codes.**
7. **Assemble the data material belonging to each category in one place and perform a preliminary analysis.**
8. **If necessary, recode your existing data.**

These eight steps engage a researcher in a systematic process of analyzing textual data. Variations exist in this process. As a **research tip,** I encourage qualitative researchers to analyze their data for material that can address the following:

- Codes on topics that readers would expect to find, based on the past literature and common sense
- Codes that are surprising and that were not anticipated at the beginning of the study
- Codes that are unusual, and that are, in and of themselves, of conceptual interest to readers (e.g., in Asmussen and Creswell, 1995, we identified *retriggering* as one of the codes/themes in the analysis that suggested a new dimension for us to a gunman incident on campus and that seemed to connect with experiences of others on campus)
- Codes that address a larger theoretical perspective in the research

As an alternative conceptualization, consider the list by Bogdan and Biklen (1992, pp. 166-172) of the types of codes that they look for in a qualitative database:

- Setting and context codes
- Perspectives held by subjects
- Subjects' ways of thinking about people and objects
- Process codes
- Activity codes
- Strategy codes
- Relationship and social structure codes
- Preassigned coding schemes

One further issue about coding is whether the researcher should (a) develop codes only on the basis of the emerging information collected from participants, (b) use predetermined codes and then fit the data to them, or (c) use some combination of predetermined and emerging codes. The traditional approach in the social sciences is to allow the codes to emerge during the data analysis. In the health sciences, a popular approach is to use predetermined codes based on the theory being examined. In this case, the researchers might develop a *qualitative codebook*, a table or record that contains a list of predetermined codes that researchers use for coding the data. This codebook might be composed with the names of codes in one column, a definition of codes in another column, and then specific instances (e.g., line numbers) in which the code was found in the transcripts. Having such a codebook is invaluable when multiple researchers are coding the data from different transcripts. This codebook can evolve and change during a study based on close analysis of the data, even when the researcher is not starting from an emerging code perspective. For researchers who have a distinct theory they want to test in their projects, I would recommend that a preliminary codebook be developed for coding the data and permit the codebook to develop and change based on
the information learned during the data analysis. The use of a codebook is especially helpful for fields in which quantitative research dominates and a more systematic approach to qualitative research is needed.

Returning to the general coding process, some researchers have found it useful to hand code qualitative transcripts or information, sometimes using color code schemes and to cut and paste text segments onto note cards. This is a laborious and time-consuming approach. Others tend to use qualitative computer software programs to help code, organize, and sort information that will be useful in writing the qualitative study. Several excellent computer software programs are available, and they have similar features: good tutorials and demonstration CDs, ability to incorporate both text and image (e.g., photographs) data, the feature of storing and organizing data, the search capacity of locating all text associated with specific codes, interrelated codes for making queries of the relationship among codes, and the import and export of qualitative data to quantitative programs, such as spreadsheets or data analysis programs.

The basic idea behind these programs is that using the computer is an efficient means for storing and locating qualitative data. Although the researcher still needs to go through each line of text (as in transcriptions) and assign codes, this process may be faster and more efficient than hand coding. Also, in large databases, the researcher can quickly locate all passages (or text segments) coded the same and determine whether participants are responding to a code idea in similar or different ways. Beyond this, the computer program can facilitate comparing different codes (e.g., How do males and females—the first code of gender—differ in terms of their attitudes to smoking—a second code)? These are just a few features of the software programs that make them a logical choice for qualitative data analysis over hand coding. As with any software program, qualitative software programs require time and skill to learn and employ effectively, although books for learning the programs are widely available (e.g., Weitzman & Miles, 1995).

Most of the programs are available only on the PC platform. The computer software programs that my staff and I use in my research office are these:

- MAXqda (http://www.maxqda.com/). This is an excellent PC-based program from Germany that helps researchers systematically evaluate and interpret qualitative texts. It has all of the features mentioned earlier.
- Atlas.ti (http://www.atlasti.com). This is another PC-based program from Germany that enables a researcher to organize text, graphic, audio, and visual data files, along with coding, memos and findings, into a project.
- QSR NVivo (http://www.qsrinternational.com/) This program, from Australia, features the popular software program N6 (or Nud.iSt) and NVivo concept mapping in combination. It is available only for Windows PC.

- HyperRESEARCH (http://www.researchware.com/). This is a program available for either the MAC or PC. It is an easy-to-use qualitative software package enabling users to code, retrieve, build theories, and conduct analyses of the data.

Step 4. Use the coding process to generate a description of the setting or people as well as categories or themes for analysis. Description involves a detailed rendering of information about people, places, or events in a setting. Researchers can generate codes for this description. This analysis is useful in designing detailed descriptions for case studies, ethnographies, and narrative research projects. Then use the coding to generate a small number of themes or categories, perhaps five to seven categories for a research study. These themes are the ones that appear as major findings in qualitative studies and are often used to create headings in the findings sections of studies. They should display multiple perspectives from individuals and be supported by diverse quotations and specific evidence.

Beyond identifying the themes during the coding process, qualitative researchers can do much with themes to build additional layers of complex analysis. For example, researchers interconnect themes into a story line (as in narratives) or develop them into a theoretical model (as in grounded theory). Themes are analyzed for each individual case and across different cases (as in case studies) or shaped into a general description (as in phenomenology). Sophisticated qualitative studies go beyond description and theme identification and into complex theme connections.

Step 5. Advance how the description and themes will be represented in the qualitative narrative. The most popular approach is to use a narrative passage to convey the findings of the analysis. This might be a discussion that mentions a chronology of events, the detailed discussion of several themes (complete with subthemes, specific illustrations, multiple perspectives from individuals, and quotations) or a discussion with interconnecting themes. Many qualitative researchers also use visuals, figures, or tables as adjuncts to the discussions. They present a process model (as in grounded theory), advance a drawing of the specific research site (as in ethnography), or convey descriptive information about each participant in a table (as in case studies and ethnographies).

Step 6. A final step in data analysis involves making an interpretation or meaning of the data. Asking, “What were the lessons learned?” captures the essence of this idea (Lincoln & Guba, 1985). These lessons could be the researcher’s personal interpretation, couched in the understanding that the inquirer brings to the study from her or his own culture, history, and experiences. It could also be a meaning derived from a comparison of the findings with information gleaned from the literature or theories. In this way, authors suggest that the findings confirm past information or diverge from it. It can also suggest new questions that need to be asked—questions
raised by the data and analysis that the inquirer had not foreseen earlier in the study. One way ethnographers can end a study, says Wolcott (1994), is to ask further questions. The questioning approach is also used in advocacy and participatory approaches to qualitative research. Moreover, when qualitative researchers use a theoretical lens, they can form interpretations that call for action agendas for reform and change. Thus, interpretation in qualitative research can take many forms, be adapted for different types of designs, and be flexible to convey personal, research-based, and action meanings.

RELIABILITY, VALIDITY, AND GENERALIZABILITY

Although validation of findings occurs throughout the steps in the process of research (as shown in Figure 9.1), this discussion focuses on it to enable a researcher to write a passage into a proposal on the procedures for validating the findings that will be undertaken in a study. Proposal developers need to convey the steps they will take in their studies to check for the accuracy and credibility of their findings.

Validity does not carry the same connotations in qualitative research as it does in quantitative research, nor is it a companion of reliability (examining stability or consistency of responses) or generalizability (the external validity of applying results to new settings, people, or samples; both are discussed in Chapter 8). Qualitative validity means that the researcher checks for the accuracy of the findings by employing certain procedures, while qualitative reliability indicates that the researcher’s approach is consistent across different researchers and different projects (Gibbs, 2007).

How do qualitative researchers check to determine if their approaches are consistent or reliable? Yin (2003) suggests that qualitative researchers need to document the procedures of their case studies and to document as many of the steps of the procedures as possible. He also recommends setting up a detailed case study protocol and database. Gibbs (2007) suggests several reliability procedures:

- Check transcripts to make sure that they do not contain obvious mistakes made during transcription.
- Make sure that there is not a drift in the definition of codes, a shift in the meaning of the codes during the process of coding. This can be accomplished by constantly comparing data with the codes and by writing memos about the codes and their definitions (see the discussion on a qualitative codebook).
- For team research, coordinate the communication among the coders by regular documented meetings and by sharing the analysis.
- Cross-check codes developed by different researchers by comparing results that are independently derived.

Proposal writers need to include several of these procedures as evidence that they will have consistent results in their proposed study. I recommend that several procedures be mentioned in a proposal and that single researchers find another person who can cross-check their codes, for what I call intercoder agreement (or cross-checking). Such an agreement might be based on whether two or more coders agree on codes used for the same passages in the text (it is not that they code the same passage of text, but whether another coder would code it with the same or a similar code). Statistical procedures or reliability subprograms in qualitative computer software packages can then be used to determine the level of consistency of coding. Miles and Huberman (1994) recommend that the consistency of the coding be in agreement at least 80% of the time for good qualitative reliability.

Validity, on the other hand, is one of the strengths of qualitative research, and it is based on determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers of an account (Creswell & Miller, 2000). Terms abound in the qualitative literature that speak to this idea, such as trustworthiness, authenticity, and credibility (Creswell & Miller, 2000), and it is a much-discussed topic (Lincoln & Guba, 2000).

A procedural perspective that I recommend for research proposals is to identify and discuss one or more strategies available to check the accuracy of the findings. The researcher actively incorporates validity strategies into their proposal. I recommend the use of multiple strategies, and these should enhance the researcher’s ability to assess the accuracy of findings as well as convince readers of that accuracy. There are eight primary strategies, organized from those most frequently used and easy to implement to those occasionally used and more difficult to implement:

- **Triangulate** different data sources of information by examining evidence from the sources and using it to build a coherent justification for themes. If themes are established based on converging several sources of data or perspectives from participants, then this process can be claimed as adding to the validity of the study.
- **Use member checking** to determine the accuracy of the qualitative findings through taking the final report or specific descriptions or themes back to participants and determining whether these participants feel that they are accurate. This does not mean taking back the raw transcripts to check for accuracy; instead, the researcher takes back parts of the polished product, such as the themes, the case analysis, the grounded theory, the cultural description, and so forth. This procedure can involve conducting a follow-up interview with participants in the study and providing an opportunity for them to comment on the findings.
- **Use rich, thick description** to convey the findings. This description may transport readers to the setting and give the discussion an element of cultural description, and so forth. This procedure can involve conducting a follow-up interview with participants in the study and providing an opportunity for them to comment on the findings.
shared experiences. When qualitative researchers provide detailed descriptions of the setting, for example, or provide many perspectives about a theme, the results become more realistic and richer. This procedure can add to the validity of the findings.

- Clarify the bias the researcher brings to the study. This self-reflection creates an open and honest narrative that will resonate well with readers. Reflectivity has been mentioned as a core characteristic of qualitative research. Good qualitative research contains comments by the researchers about how their interpretation of the findings is shaped by their background, such as their gender, culture, history, and socioeconomic origin.

- Also present negative or discrepant information that runs counter to the themes. Because real life is composed of different perspectives that do not always coalesce, discussing contrary information adds to the credibility of an account. A researcher can accomplish this in discussing evidence about a theme. Most evidence will build a case for the theme; researchers can also present information that contradicts the general perspective of the theme. By presenting this contradictory evidence, the account becomes more realistic and hence valid.

- Spend prolonged time in the field. In this way, the researcher develops an in-depth understanding of the phenomenon under study and can convey detail about the site and the people that lends credibility to the narrative account. The more experience that a researcher has with participants in their actual setting, the more accurate or valid will be the findings.

- Use peer debriefing to enhance the accuracy of the account. This process involves locating a person (a peer debriefer) who reviews and asks questions about the qualitative study so that the account will resonate with people other than the researcher. This strategy—involving an interpretation beyond the researcher and invested in another person—adds validity to an account.

- Use an external auditor to review the entire project. As distinct from a peer debriefer, this auditor is not familiar with the researcher or the project and can provide an objective assessment of the project throughout the process of research or at the conclusion of the study. The role is similar to that of a fiscal auditor, and specific questions exist that auditors might ask (Lincoln & Guba, 1985). The procedure of having an independent investigator look over many aspects of the project (e.g., accuracy of transcription, the relationship between the research questions and the data, the level of data analysis from the raw data through interpretation) enhances the overall validity of a qualitative study.

**Qualitative generalization** is a term that is used in a limited way in qualitative research, since the intent of this form of inquiry is not to generalize findings to individuals, sites, or places outside of those under study (see Gibbs, 2007, for his cautionary note about qualitative generalizability). In fact, the value of qualitative research lies in the particular description and themes developed in context of a specific site. **Particularity** rather than **generalizability** (Greene & Caracelli, 1997) is the hallmark of qualitative research. However, there are a few discussions in the qualitative literature about generalizability, especially as applied to case study research in which the inquirer studies several cases. Yin (2003), for example, feels that qualitative case study results can be generalized to some broader theory. The generalization occurs when qualitative researchers study additional cases and generalize findings to the new cases. It is the same as the replication logic used in experimental research. However, to repeat a case study's findings in a new case setting requires good documentation of qualitative procedures, such as a protocol for documenting the problem in detail and the development of a thorough case study database (Yin, 2003).

### THE QUALITATIVE WRITE-UP

A plan for a qualitative procedure should end with some comments about the narrative that emerges from the data analysis. Numerous varieties of narratives exist, and examples from scholarly journals illustrate models. In a plan for a study, consider advancing several points about the narrative.

The basic procedure in reporting the results of a qualitative study are to develop descriptions and themes from the data (see Figure 9.1), to present these descriptions and themes that convey multiple perspectives from participants and detailed descriptions of the setting or individuals. Using a qualitative strategy of inquiry, these results may also provide a chronological narrative of an individual's life (narrative research), a detailed description of their experiences (phenomenology), a theory generated from the data (grounded theory), a detailed portrait of a culture-sharing group (ethnography), or an in-depth analysis of one or more cases (case study).

Given these different strategies, the findings and interpretation sections of a plan for a study might discuss how the sections will be presented: as objective accounts, fieldwork experiences (Van Maanen, 1988), a chronology, a process model, an extended story, an analysis by cases or across cases, or a detailed descriptive portrait (Creswell, 2007).

At the specific level, some **writing strategies** might be as follows:

- Use quotes and vary their length from short to long embedded passages.
- Script conversation and report the conversation in different languages to reflect cultural sensitivity.
Scholars contend that qualitative research can be distinguished from quantitative methodology by numerous unique characteristics that are inherent in the design. The following is a synthesis of commonly articulated assumptions regarding characteristics presented by various researchers.

1. Qualitative research occurs in natural settings, where human behavior and events occur.

2. Qualitative research is based on assumptions that are very different from quantitative designs. Theory or hypotheses are not established a priori.

3. The researcher is the primary instrument in data collection rather than some inanimate mechanism (Eisner, 1991; Frankel & Wallen, 1990;Uncoln & Guba, 1985; Merriam, 1988).

4. The data that emerge from a qualitative study are descriptive. That is, data are reported in words (primarily the participant’s words) or pictures, rather than in numbers (Fraenkel & Wallen, 1990; Locke et al., 1987; Marshall & Rossman, 1989; Merriam, 1988).

5. The focus of qualitative research is on participants’ perceptions and experiences, and the way they make sense of their lives (Fraenkel & Wallen, 1990; Locke et al., 1987; Marshall & Rossman, 1989; Merriam, 1988).

6. Qualitative research focuses on the process that is occurring as well as the product or outcome. Researchers are particularly interested in understanding how things occur (Fraenkel & Wallen, 1990; Merriam, 1988). The attempt is therefore to understand not one, but multiple realities (Lincoln & Guba, 1985).

7. Idiographic interpretation is utilized. In other words, attention is paid to particulars; and data is interpreted in regard to the particulars of a case rather than generalizations.

8. Qualitative research is an emergent design in its negotiated outcomes. Meanings and interpretations are negotiated with human data sources because it is the subjects’ realities that the researcher attempts to reconstruct (Lincoln & Guba, 1985; Merriam, 1988).

9. This research tradition relies on the utilization of tacit knowledge (intuitive and felt knowledge) because often the nuances of the multiple realities can be appreciated most in this way (Lincoln & Guba, 1985). Therefore, data are not quantifiable in the traditional sense of the word.

Example 9.1 Qualitative Procedures
The following is an example of a qualitative procedure written as part of a doctoral proposal (Miller, 1992). Miller’s project was an ethnographic study of first-year experiences of the president of a 4-year college. As I present this discussion, I refer back to the sections addressed in this chapter and highlight them in boldfaced type. Also, I have maintained Miller’s use of the term informant, although today, the more appropriate term, participant, should be used.

The Qualitative Research Paradigm
The qualitative research paradigm has its roots in cultural anthropology and American sociology (Kirk & Miller, 1986). It has only recently been adopted by educational researchers (Borg & Gall, 1989). The intent of qualitative research is to understand a particular social situation, event, role, group, or interaction (Locke, Spirduso, & Silverman, 1987). It is largely an investigative process where the researcher gradually makes sense of a social phenomenon by contrasting, comparing, replicating, cataloging, and classifying the object of study (Miles & Huberman, 1984). Marshall and Rosman (1989) suggest that this entails immersion in the everyday life of the setting chosen for the study; the researcher enters the informants’ world and through ongoing interaction, seeks the informants’ perspectives and meanings. (Qualitative assumptions are mentioned.)

(Continued)
4. Peer examination—a doctoral student and graduate assistant in the Educational Psychology Department will serve as a peer examiner;

5. Participatory modes of research—The informant will be involved in most phases of this study, from the design of the project to checking interpretations and conclusions; and

6. Clarification of researcher bias—At the outset of this study researcher bias will be articulated in writing in the dissertation proposal under the heading, "The Researcher's Role."

The primary strategy utilized in this project to ensure external validity will be the provision of rich, thick, detailed descriptions so that anyone interested in transferability will have a solid framework for comparison (Merriam, 1988). Three techniques to ensure reliability will be employed in this study. First, the researcher will provide a detailed account of the focus of the study, the researcher's role, the informant's position and basis for selection, and the context from which data will be gathered (LeCompte & Goetz, 1984). Second, triangulation or multiple methods of data collection and analysis will be used, which strengthens reliability as well as internal validity (Merriam, 1988). Finally, data collection and analysis strategies will be reported in detail in order to provide a clear and accurate picture of the methods used in this study. All phases of this project will be subject to scrutiny by an external auditor who is experienced in qualitative research methods. (Author identified strategies of validity to be used in the study.)

Reporting the Findings

Lofland (1974) suggests that although data collection and analysis strategies are similar across qualitative methods, the way the findings are reported is diverse. Miles and Huberman (1984) address the importance of creating a data display and suggest that narrative text has been the most frequent form of display for qualitative data. This is a naturalistic study. Therefore, the results will be presented in descriptive, narrative form rather than as a scientific report. Thick description will be the vehicle for communicating a holistic picture of the experiences of a new college president. The final project will be a construction of the informant's experiences and the meanings he attaches to them. This will allow readers to vicariously experience the challenges he encounters and provide a lens through which readers can view the subject's world. (Outcomes of the study were mentioned.)

SUMMARY

This chapter explored the steps that go into developing and writing a qualitative procedure. Recognizing the variation that exists in qualitative studies, the chapter advances a general guideline for procedures. This guideline includes a discussion about the general characteristics of qualitative research if audiences are not familiar with this approach to research. These characteristics are that the research takes place in the natural setting, relies on the researcher as the instrument for data collection, employs multiple methods of data collection, is inductive, is based on participants' meanings, is emergent, often involves the use of a theoretical lens, is interpretive, and is holistic. The guideline recommends mentioning a strategy of inquiry, such as the study of individuals (narrative, phenomenology), the exploration of processes, activities and events (case study, grounded theory), or the examination of broad culture-sharing behavior of individuals or groups (ethnography). The choice of strategy needs to be presented and defended. Further, the proposal needs to address the role of the researcher: past experiences, personal connections to the site, steps to gain entry, and sensitive ethical issues. Discussion of data collection should include the purposeful sampling approach and the forms of data to be collected (i.e., observations, interviews, documents, audiovisual materials). It is useful to also indicate the types of data recording protocols that will be used. Data analysis is an ongoing process during research. It involves analyzing participant information, and researchers typically employ general analysis steps as well as those steps found within a specific strategy of inquiry. More general steps include organizing and preparing the data, an initial reading through the information, coding the data, developing from the codes a description and thematic analysis, using computer programs, representing the findings in tables, graphs, and figures, and interpreting the findings. These interpretations involve stating lessons learned, comparing the findings with past literature and theory, raising questions, and/or advancing an agenda for reform. The proposal should also contain a section on the expected outcomes for the study. Finally, an additional important step in planning a proposal is to mention the strategies that will be used to validate the accuracy of the findings, demonstrate the reliability of procedures, and discuss the role of generalizability.
Writing Exercises

1. Write a plan for the procedure to be used in your qualitative study. After writing the plan, use Table 9.1 as a checklist to determine the comprehensiveness of your plan.

2. Develop a table that lists, in a column on the left, the steps you plan to take to analyze your data. In a column on the right, indicate the steps as they apply directly to your project, the research strategy you plan to use, and data that you have collected.

ADDITIONAL READINGS


Catherine Marshall and Gretchen Rossman introduce the procedures for designing a qualitative study and a qualitative proposal. The topics covered are comprehensive. They include building a conceptual framework around a study; the logic and assumptions of the overall design and methods; methods of data collection and procedures for managing, recording, and analyzing qualitative data; and the resources needed for a study, such as time, personnel, and funding. This is a comprehensive and insightful text from which both beginners and more experienced qualitative researchers can learn.


This is an eight-volume kit edited by Uwe Flick that is authored by different world-class qualitative researchers and was created to collectively address the core issues that arise when researchers actually do qualitative research. It addresses how to plan and design a qualitative study, the collection and production of qualitative data, the analysis of qualitative data (e.g., visual data, discourse analysis), and the issues of quality in qualitative research. Overall, it presents a recent, up-to-date window into the field of qualitative research.


Sometimes those who write about qualitative research take a philosophical stance toward the topic and readers are left without an understanding of the procedures and practices actually used in designing and conducting a qualitative study. My book takes five approaches to qualitative inquiry—narrative research, phenomenology, grounded theory, ethnography, and case study—and discusses how the procedures for conducting these forms of inquiry are both similar and different. In the end, readers can more easily choose which of the five would best suit their research problems as well as their personal styles of research.