CHAPTER ELEVEN

Mixed Methods Procedures

With the development and perceived legitimacy of both qualitative and quantitative research in the social and human sciences, mixed methods research, employing the data collection associated with both forms of data, is expanding. A new Handbook of Mixed Methods in the Social and Behavioral Sciences (Tashakkori & Teddlie, 2003) and journals reporting and promoting mixed methods research (e.g., Field Methods) exist as outlets for discussions about mixed methods research. With increasing frequency, published articles are appearing in social and human science journals in such diverse fields as occupational therapy (Lusk & Krefting, 1994), interpersonal communication (Bonsen, Kraut, & Fröhlich, 2001), AIDS prevention (Janz et al., 1996), dementia caregiving (Weitzman & Levkoff, 2000), and middle school science (Houtz, 1995). Entire books now exist about procedures for conducting mixed methods studies—similar books were not available a decade ago (Greene & Caracelli, 1997; Newman & Benz, 1995; Reichardt & Reilly, 1974; Tashakkori & Teddlie, 1998).

These procedures developed in response to a need to clarify the intent of mixing quantitative and qualitative data in a single study (or a program of study). With the inclusion of multiple methods of data and multiple forms of analysis, the complexity of these designs calls for more explicit procedures. These procedures also developed in part to meet the need to help researchers create understandable designs out of complex data and analyses.

This chapter extends the prior discussion about the pragmatic knowledge claims, the strategies of inquiry, and the use of multiple methods introduced in Chapter 1. It also extends the discussion about a research problem that incorporates the need both to explore and to explain (Chapter 4). It follows a purpose statement and research questions focused on understanding a problem using both qualitative and quantitative methods and the rationale for using multiple forms of data collection and analysis (Chapters 5 and 6).

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<th>TABLE 11.1</th>
<th>A Checklist of Questions for Designing a Mixed Methods Procedure</th>
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<td>Is a basic definition of mixed methods research provided?</td>
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<td>Does the reader have a sense for the potential use of a mixed methods strategy?</td>
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<td>Are the criteria identified for choosing a mixed methods strategy?</td>
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<td>Is the strategy identified, and are its criteria for selection given?</td>
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<td>Is a visual model presented that illustrates the research strategy?</td>
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<td>Is the proper notation used in presenting the visual model?</td>
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<td>Are procedures of data collection and analysis mentioned as they relate to the model?</td>
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<td>Are the sampling strategies for both quantitative and qualitative data collection mentioned? Do they relate to the strategy?</td>
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<td>Are specific data analysis procedures indicated? Do they relate to the strategy?</td>
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<td>Are the procedures for validating both the quantitative and qualitative data discussed?</td>
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<td>Is the narrative structure mentioned, and does it relate to the type of mixed methods strategy being used?</td>
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COMPONENTS OF MIXED METHODS PROCEDURES

A checklist of questions for researchers to ask themselves when they design a mixed methods study appears in Table 11.1. These components call for advancing the nature of mixed methods research and the type of strategy being proposed for the study. They also include the need for a visual model of this approach, the specific procedures of data collection and analysis, the researcher's role, and the structure for presenting the final report. Following the discussion of each of these components, an example of a procedures section from a mixed methods study will be presented to apply the ideas.

THE NATURE OF MIXED METHODS RESEARCH

Because mixed methods research is relatively new in the social and human sciences as a distinct research approach, it is useful to convey, in
a proposal, a basic definition and description of the approach. This might include the following:

- Trace a brief history of its evolution. Several sources identify its evolution in psychology and in the multitrait-multimethod matrix of Campbell and Fiske (1959) to interest in converging or triangulating different quantitative and qualitative data sources (Jick, 1979) and on to the expanded reasons and procedures for mixing methods (see Creswell, 2002; Tashakkori & Teddlie, 1998).

- Define mixed methods research by incorporating the definition in Chapter 1 that focuses on collecting and analyzing both quantitative and qualitative data in a single study. Highlight the reasons why researchers employ a mixed methods design (e.g., to expand an understanding from one method to another, to converge or confirm findings from different data sources). Also note that “mixing” might be within one study or among several studies in a program of inquiry. Recognize that many different terms are used for this approach, such as integrating, synthesis, quantitative and qualitative methods, multimethod, and multimethodology, but that recent writings use the term “mixed methods” (Tashakkori & Teddlie, 2003).

- Briefly discuss the growth of interest in mixed methods research as expressed in books, journal articles, diverse disciplines, and funded projects.

- Note the challenges this form of research poses for the inquirer. These include the need for extensive data collection, the time-intensive nature of analyzing both text and numeric data, and the requirement for the researcher to be familiar with both quantitative and qualitative forms of research.

**TYPES OF MIXED METHODS STRATEGIES**

**Criteria for Choosing a Strategy**

Proposal developers need to convey the specific strategy for data collection they plan to use. They also need to identify the criteria they employ for choosing this strategy. Recent authors have elaborated on the criteria that go into choosing a mixed methods approach from the many available to use. Several criteria were identified by Morgan (1998), but others have added important standards that need to be considered (Greene & Caracelli, 1997; Tashakkori & Teddlie, 1998). A matrix, as shown in Figure 11.1, illustrates that four decisions go into selecting a mixed methods strategy of inquiry (see Creswell et al., 2003):

1. What is the implementation sequence of the quantitative and qualitative data collection in the proposed study?
2. What priority will be given to the quantitative and qualitative data collection and analysis?
3. At what stage in the research project will the quantitative and qualitative data and findings be integrated?
4. Will an overall theoretical perspective (e.g., gender, race/ethnicity, lifestyle, class) be used in the study?

**Implementation**

Implementation means either that the researchers collect both the quantitative and qualitative data in phases (sequentially) or that they gather it at the same time (concurrently). When the data are collected in phases, either the qualitative or the quantitative data can come first.
It depends on the initial intent of the researcher. When qualitative data are collected first, the intent is to explore the topic with participants at sites. Then the researcher, in the second phase, expands the understanding through a second phase in which data are collected from a large number of people (typically representative). When data are collected concurrently, both quantitative and qualitative data are gathered at the same time in the project and the implementation is simultaneous.

**Priority**

A second factor that goes into the choice of a strategy is whether greater priority or weight is given to the quantitative or the qualitative approach, especially the use of quantitative data and analysis. The priority might be equal, or it might be skewed toward either qualitative or quantitative data. A priority for one type of data or the other depends on the interests of the researcher, the audience for the study (e.g., faculty committee, professional association), and what the investigator seeks to emphasize in the study. In practical terms, priority occurs in a mixed methods study through such strategies as whether quantitative or qualitative information is emphasized first in the study, the extent of treatment of one type of data or the other, and the use of a theory as an inductive or deductive framework for the study. In the first edition of this book, the terms “dominant” and “less-dominant” were used to express priority. Having a major form of data collection and analysis and a minor form is well suited for studies undertaken by graduate students.

**Integration**

Integration of the two types of data might occur at several stages in the process of research: the data collection, the data analysis, interpretation, or some combination of places. Integration means that the researcher “mixes” the data. For example, in data collection, this “mixing” might involve combining open-ended questions on a survey with closed-ended questions on the survey. Mixing at the stage of data analysis and interpretation might involve transforming qualitative themes or codes into quantitative numbers and comparing that information with quantitative results in an “interpretation” section of a study. The place in the process for integration seems related to whether phases (a sequence) or a single phase (concurrent) of data collection occurs.

**Sequential Exploratory Design (11.2a)**

![Diagram](image1)

**Sequential Exploratory Design (11.2b)**

![Diagram](image2)

**Sequential Transformative Design (11.2c)**

![Diagram](image3)

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**A Theoretical Perspective**

A final factor to consider is whether a larger, theoretical perspective guides the entire design. This perspective may be one from the social sciences or from an advocacy/participatory lens (e.g., gender, race, class). Although all designs have implicit theories (see Chapter 7), mixed methods researchers can make the theory explicit as a guiding framework for the study. This framework would operate regardless of the implementation, priority, and integrative features of the strategy of inquiry.

**ALTERNATIVE STRATEGIES AND VISUAL MODELS**

Mixed methods researchers can make decisions about these four factors to select a particular research strategy. Although the following discussion does not exhaust all the possibilities, the six major strategies identified below are choices for inquirers in a research proposal, adapted from the discussion by Creswell et al. (2003). A proposal would contain a description of the strategy and a visual model of it, as well as including...
Sequential Explanatory Strategy

The sequential explanatory strategy is the most straightforward of the six major mixed methods approaches. It is characterized by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data. The priority typically is given to the quantitative data, and the two methods are integrated during the interpretation phase of the study. The steps of this strategy are pictured in Figure 11.2a. This strategy may or may not have a specific theoretical perspective. The purpose of the sequential explanatory design typically is to use qualitative results to assist in explaining and interpreting the findings of a primarily quantitative study. It can be especially useful when unexpected results arise from a quantitative study (Morse, 1991). In this case, the qualitative data collection that follows can be used to examine these surprising results in more detail. The straightforward nature of this design is one of its main strengths. It is easy to implement because the steps fall into clear, separate stages. In addition, this design feature makes it easy to describe and to report. The main weakness of this design is the length of time involved in data collection, with the two separate phases. This is especially a drawback if the two phases are given equal priority.

Sequential Exploratory Strategy

The sequential exploratory strategy has many features similar to the sequential explanatory strategy. It is conducted in two phases, with the priority generally given to the first phase, and it may or may not be implemented within a prescribed theoretical perspective (see Figure 11.2b). In contrast to the sequential explanatory approach, this model is characterized by an initial phase of qualitative data collection and analysis, which is followed by a phase of quantitative data collection and analysis. Therefore, the priority is given to the qualitative aspect of the study. The findings of these two phases are then integrated during the interpretation phase.

At the most basic level, the purpose of this strategy is to use quantitative data and results to assist in the interpretation of qualitative findings. Unlike the sequential explanatory approach, which is better suited to explaining and interpreting relationships, the primary focus of this model is to explore a phenomenon. Morgan (1998) suggested that this design is appropriate to use when testing elements of an emergent theory resulting from the qualitative phase and that it can also be used to generalize qualitative findings to different samples. Similarly, Morse (1991) cited one
purpose for selecting this approach: to determine the distribution of a phenomenon within a chosen population. Finally, the sequential exploratory strategy is often discussed as the model used when a researcher develops and tests an instrument (e.g., see Creswell, 1999).

The sequential exploratory strategy has many of the same advantages as the sequential explanatory model. Its two-phase approach makes it easy to implement and straightforward to describe and report. It is useful to a researcher who wants to explore a phenomenon but also wants to expand on the qualitative findings. This model is especially advantageous when a researcher is building a new instrument. In addition, this model could make a largely qualitative study more palatable to a quantitative adviser, committee, or research community that may be unfamiliar with the naturalistic tradition. As with the sequential explanatory approach, the sequential exploratory model requires a substantial length of time to complete both data collection phases, which can be a drawback for some research situations. In addition, the researcher may find it difficult to build from the qualitative analysis to the subsequent quantitative data collection.

Sequential Transformative Strategy

As did the previously described sequential model, the transformative sequential strategy has two distinct data collection phases, one following the other (see Figure 11.2c). However, in this design either method may be used first, and the priority can be given to either the quantitative or the qualitative phase, or even to both if sufficient resources are available. In addition, the results of the two phases are integrated during the interpretation phase. Unlike the sequential exploratory and explanatory approaches, the sequential transformative model has a theoretical perspective to guide the study. The aim of this theoretical perspective, whether it be a conceptual framework, a specific ideology, or advocacy, is more important in guiding the study than the use of methods alone.

The purpose of a sequential transformative strategy is to employ the methods that will best serve the theoretical perspective of the researcher. By using two phases, a sequential transformative researcher may be able to give voice to diverse perspectives, to better advocate for participants, or to better understand a phenomenon or process that is changing as a result of being studied.

The sequential transformative model shares the methodological strengths and weaknesses of the other two sequential mixed methods approaches. Its use of distinct phases facilitates its implementation, description, and sharing of results, although it also requires the time to complete two data collection phases. More important, this design places mixed methods research within a transformative framework. Therefore, this strategy may be more appealing and acceptable to those researchers already using a transformative framework within one distinct methodology, such as qualitative research. Unfortunately, because little has been written to date on this approach, one weakness is that there is little guidance on how to use the transformative vision to guide the methods. Likewise, it may be unclear how to move between the analysis of the first phase into the data collection of the second phase.

Concurrent Triangulation Strategy

The concurrent triangulation approach is probably the most familiar of the six major mixed methods models (see Figure 11.3a). It is selected as the model when a researcher uses two different methods in an attempt to confirm, cross-validate, or corroborate findings within a single study (Greene et al., 1989; Morgan, 1998; Steckler, McLeroy, Goodman, Bird, & McCormick, 1992). This model generally uses separate quantitative and qualitative methods as a means to offset the weaknesses inherent within one method with the strengths of the other method. In this case, the quantitative and qualitative data collection is concurrent, happening in one phase of the research study. Ideally, the priority would be equal between the two methods, but in practical application the priority may be given to either the quantitative or the qualitative approach. This strategy usually integrates the results of the two methods during the interpretation phase. This interpretation can either note the convergence of the findings as a way to strengthen the knowledge claims of the study or explain any lack of convergence that may result.

This traditional mixed methods model is advantageous because it is familiar to most researchers and can result in well-validated and substantiated findings. In addition, the concurrent data collection results in a shorter data collection time period as compared to one of the sequential approaches.

This model also has a number of limitations. It requires great effort and expertise to adequately study a phenomenon with two separate methods. It also can be difficult to compare the results of two analyses using data of different forms. In addition, a researcher may be unclear how to resolve discrepancies that arise in the results.
Concurrent Nested Strategy

Like the concurrent triangulation approach, the concurrent nested model can be identified by its use of one data collection phase, during which both quantitative and qualitative data are collected simultaneously (see Figure 11.3b). Unlike the traditional triangulation model, a nested approach has a predominant method that guides the project. Given less priority, the method (quantitative or qualitative) is embedded, or nested, within the predominant method (qualitative or quantitative). This nesting may mean that the embedded method addresses a different question than the dominant method or seeks information from different levels (the analogy to hierarchical analysis in quantitative research is helpful in conceptualizing these levels—see Tashakkori and Teddlie, 1998). The data collected from the two methods are mixed during the analysis phase of the project. This strategy may or may not have a guiding theoretical perspective.

The concurrent nested model may be used to serve a variety of purposes. Often, this model is used so that a researcher can gain broader perspectives as a result of using the different methods as opposed to using the predominant method alone. For example, Morse (1991) noted that a primarily qualitative design could embed some quantitative data to enrich the description of the sample participants. Likewise, she described how qualitative data could be used to describe an aspect of a quantitative study that cannot be quantified. In addition, a concurrent nested model may be employed when a researcher chooses to utilize different methods to study different groups or levels. For example, if an organization is being studied, then employees could be studied quantitatively, managers could be interviewed qualitatively, entire divisions could be analyzed with quantitative data, and so forth. Tashakkori and Teddlie (1998) described this approach as a multilevel design. Finally, one method could be used within a framework of the other method, such as if a researcher designed and conducted an experiment but used case study methodology to study each of the treatment conditions.

This mixed methods model has many strengths. A researcher is able to collect the two types of data simultaneously, during a single data collection phase. It provides a study with the advantages of both quantitative and qualitative data. In addition, by using the two different methods in this fashion, a researcher can gain perspectives from the different types of data or from different levels within the study.

There are also limitations to consider when choosing this approach. The data need to be transformed in some way so that they can be integrated within the analysis phase of the research. There is little written at this time to guide a researcher through this process. In addition, there is little advice to be found for how a researcher should resolve discrepancies that occur between the two types of data. Because the two methods are unequal in their priority, this approach also results in unequal evidence within a study, which may be a disadvantage when interpreting the final results.

Concurrent Transformative Strategy

As with the sequential transformative model, the concurrent transformative approach is guided by the researcher’s use of a specific theoretical perspective (see Figure 11.3c). This perspective can be based on ideologies such as critical theory, advocacy, participatory research, or a conceptual or theoretical framework. This perspective is reflected in the purpose or research questions of the study. It is the driving force behind all methodological choices, such as defining the problem, identifying the design and data sources, analyzing, interpreting, and reporting results throughout the research process. The choice of a concurrent model (whether it is triangulation or nested design) is made to facilitate this perspective. For example, the design may be nested so that diverse participants are given a voice in the change process of an organization that is studied primarily quantitatively. It may involve a triangulation of quantitative and qualitative data to best converge information to provide evidence for an inequality of policies in an organization.

Thus, the concurrent transformative model may take on the design features of either a triangulation or a nested approach. That is, the two types of data are collected at the same time during one data collection phase and may have equal or unequal priority. The integration of these different data would most often occur during the analysis phase, although integration during the interpretation phase is a possible variation. Because the concurrent transformative model shares features with the triangulation and nested approaches, it also shares their specific strengths and weaknesses. However, this model has the added advantage of positioning mixed methods research within a transformative framework, which may make it especially appealing to those qualitative or quantitative researchers already using a transformative framework to guide their inquiry.

DATA COLLECTION PROCEDURES

Although the visual model and the discussion about the specific strategies provide a picture of the procedures, it is helpful in a proposal to discuss the specific types of data to be collected. It is also important to
identify the sampling strategies and the approaches used to establish validity of the data.

- Identify and be specific about the type of data—both quantitative and qualitative—that will be collected during the proposed study. Refer to Table 1.3, which shows both quantitative and qualitative data. They differ in terms of open-ended versus closed-ended responses. Some forms of data, such as interviews and observations, can be either quantitative or qualitative. Although reducing information to numbers is the approach used in quantitative research, it is also used in qualitative research.

- Recognize that quantitative data often involve random sampling, so that each individual has an equal probability of being selected and the sample can be generalized to the larger population. In qualitative data collection, purposeful sampling is used so that individuals are selected because they have experienced the central phenomenon.

- Relate the procedures specifically to the visual model. For example, as shown in Figure 11.2a, in a sequential explanatory model, the general procedures below the figure can be detailed even further. For example, a discussion of this approach might include describing the use of survey data collection followed by both descriptive and inferential data analysis in the first phase. Then qualitative observations and coding and thematic analysis within an ethnographic design might be mentioned for the second phase.

DATA ANALYSIS AND VALIDATION PROCEDURES

Data analysis in mixed methods research relates to the type of research strategy chosen for the procedures. Thus, in a proposal, the procedures need to be identified within the design. However, analysis occurs both within the quantitative (descriptive and inferential numeric analysis) approach and the qualitative (description and thematic text or image analysis) approach, and often between the two approaches. For example, some of the more popular approaches are the following (see Caracelli & Greene, 1993; Tashakkori & Teddlie, 1998):

- Data transformation: In the concurrent strategies, a researcher may quantify the qualitative data. This involves creating codes and themes qualitatively, then counting the number of times they occur in the text data (or possibly the extent of talk about a code or theme by counting lines or sentences). This quantification of qualitative data then enables a researcher to compare quantitative results with the qualitative data. Alternatively, an inquirer may quantify qualitative data. For instance, in a factor analysis of data from a scale on an instrument, the researcher may create factors or themes that then can be compared with themes from the qualitative database.

- Explore outliers: In a sequential model, an analysis of quantitative data in the first phase can yield extreme or outlier cases. Follow-up qualitative interviews with these outlier cases can provide insight about why they diverged from the quantitative sample.

- Instrument development: In a sequential approach, obtain themes and specific statements from participants in an initial qualitative data collection. In the next phase, use these statements as specific items and the themes for scales to create a survey instrument that is grounded in the views of the participants. A third, final phase might be to validate the instrument with a large sample representative of a population.

- Examine multiple levels: In a concurrent nested model, conduct a survey at one level (e.g., with families) to gather quantitative results about a sample. At the same time, collect qualitative interviews (e.g., with individuals) to explore the phenomenon with specific individuals in families.

Another aspect of data analysis in mixed methods research to describe in a proposal is the series of steps taken to check the validity of both the quantitative data and the accuracy of the qualitative findings. Writers on mixed methods advocate for the use of validity procedures for both the quantitative and qualitative phases of the study (Tashakkori & Teddlie, 1998). The proposal writer discusses the validity and reliability of the scores from past uses of instruments employed in the study. In addition, potential threats to internal validity (see Chapter 9) for experiments and surveys are noted. For the qualitative data, the strategies that will be used to check the accuracy of the findings need to be mentioned. These may include triangulating data sources, member-checking, detailed description, or other approaches as noted in Chapter 10.
REPORT PRESENTATION STRUCTURE

The structure for the report, like the data analysis, follows the type of strategy chosen for the proposed study. Because mixed methods studies may not be familiar to audiences, it is helpful to provide some guidance as to how the final report will be structured.

- For a sequential study, mixed methods researchers typically organize the report of procedures into quantitative data collection and quantitative data analysis followed by qualitative data and collection and analysis. Then, in the conclusions or interpretation phase of the study, the researcher comments on how the qualitative findings helped to elaborate on or extend the quantitative results. Alternatively, the qualitative data collection and analysis could come first followed by the quantitative data collection and analysis. In either structure, the writer typically will present the project as two distinct phases, with separate headings for each phase.

- In a concurrent study, the quantitative and qualitative data collection may be presented in separate sections, but the analysis and interpretation combines the two forms of data to seek convergence among the results. The structure of this type of mixed methods study does not as clearly make a distinction between the quantitative and qualitative phases.

- In a transformative study, the structure typically involves advancing the advocacy issue in the beginning of the study and then using either the sequential or concurrent structure as a means of organizing the content of the study. In the end of the study, a separate section may advance an agenda for change or reform that has developed as a result of the research.

EXAMPLES OF MIXED METHODS PROCEDURES

The following are illustrations of mixed methods studies that use both the sequential and concurrent strategies and procedures.

Example 11.1 A Sequential Strategy of Inquiry
Kushman (1992) studied two types of teacher workplace commitment—organizational commitment and commitment to student learning—in 63 urban elementary and middle schools. He posed a two-phase mixed methods study, as presented in the purpose statement:

The central premise of this study was that organizational commitment and commitment to student learning address distinct but equally important teacher attitudes for an organizationally effective school, an idea that has some support in the literature but requires further empirical validation. . . . Phase 1 was a quantitative study that looked at statistical relationships between teacher commitment and organizational antecedents and outcomes in elementary and middle schools. Following this macrolevel analysis, Phase 2 looked within specific schools, using qualitative/case study methods to better understand the dynamics of teacher commitment. (Kushman, 1992, p. 13)

This purpose statement illustrates the combination of a purpose with the rationale for mixing ("to better understand") as well as the specific types of data collected during the study. The introduction focused on the need to examine organizational commitment and commitment to student learning leading to a priority for the quantitative approach. This priority was further illustrated in sections defining organizational commitment and commitment to student learning and the use of extensive literature to document these two concepts. A conceptual framework then followed (complete with a visual model), and research questions were posed to explore relationships. This provided a theoretical lead for the quantitative phase of the study (Morse, 1991). The implementation was QUAN → qual in this two-phase study. The author presented results in two phases, with the first—the quantitative results—displaying and discussing correlations, regressions, and two-way ANOVAs. Then the case study results were presented in terms of themes and subthemes supported by quotations. The integration of the quantitative results and qualitative findings occurred in the final discussion, in which the researcher highlighted the quantitative results and the complexities that surfaced from the qualitative results. In addition, the author did not use a theoretical perspective as a lens in the study.
Example 11.2 A Concurrent Strategy of Inquiry

In 1993, Hossler and Vesper conducted a study examining the factors associated with parental savings for children attending higher education campuses. Using longitudinal data collected from students and parents over a 3-year period, the authors examined factors most strongly associated with parental savings for postsecondary education. Their results found that parental support, educational expectations, and knowledge of college costs were important factors. Most important, for our purposes, the authors collected information from parents and students on 182 surveys and from 56 interviews. Their purpose indicated an interest in triangulating the findings:

In an effort to shed light on parental saving, this article examines parental saving behavior. Using student and parent data from a longitudinal study employing multiple surveys over a three-year period, logistic regression was used to identify the factors most strongly associated with parental saving for postsecondary education. In addition, insights gained from the interviews of a small subsample of students and parents who were interviewed five times during the three-year period are used to further examine parental savings. (p. 141)

The actual data collected was from 182 student and parent participants from surveys over a 4-year period of time and from 56 students and their parents in interviews. From the purpose statement, we can see that they collected data concurrently as an implementation strategy. Further, they provide extensive discussion of the quantitative analysis of the survey data, including a discussion about the measurement of variables and the details of the logistic regression data analysis. They also mention the limitations of the quantitative analysis and specific t-test and regression results. In contrast, they devote one page to the qualitative data analysis and note briefly the themes that occurred in the discussion. The priority in this mixed methods study was assigned to quantitative data collection and analysis, and the notation for the study would be: QUAN + qual. The Integration of the two data sources occurred in a section titled "Discussion of Survey and Interview Results" (p. 155), at the interpretation stage of the research process. In this section, they compared the importance of the factors explaining parental savings for

the quantitative results, on one hand, with the findings from the interview data on the other. Similar to Example 11.1, no theoretical lens guided the study, although the article began with the literature on econometric studies and research on college choice and ended with an "Augmented Model of Parental Savings." Thus, we might characterize the use of theory in this mixed methods study as inductive (as in qualitative inquiry), drawn from the literature (as in quantitative research), and ultimately as generated during the process of research.

SUMMARY

In designing the procedures for a mixed methods study, begin by conveying the nature of mixed methods research. This includes tracing its history, defining it, and mentioning its applications in many fields of research. Then, state and employ four criteria to select an appropriate mixed methods strategy. Indicate the implementation strategy for data collection (concurrent or sequential). Also state the priority or weight given to the quantitative or qualitative approach in the study, such as equal weight, or a priority to quantitative or qualitative data. Mention the phase of research (e.g., data collection, analysis, interpretation) in which integration of the approaches will occur. Finally, identify whether a theoretical lens or framework will guide the study, such as a theory from the social sciences or a lens from an advocacy perspective (e.g., feminism, racial perspective). These four factors help in choosing the strategy to use.

Six strategies are organized around whether the data are collected sequentially (explanatory and exploratory), concurrently (triangulation and nested), or with a transformative lens (sequential or concurrent). Each model has strengths and weaknesses, although the sequential approach is the easiest to implement. A choice of strategy also can be presented in a figure in the research proposal. Then, specific procedures can be related to the figure to help the reader understand the flow of activities in a project. These procedures will include the types of quantitative and qualitative data to be collected as well as the procedures for data analysis. Typically, data analysis involves data transformation, exploring outliers, and examining multiple levels. Validity procedures also need to be explicitly described. The final written report, because it may be unfamiliar to audiences, can also be described in a proposal. Each of the three types of strategies—sequential, concurrent, and transformative—has a different structural approach to writing a mixed methods study.
Writing Exercises

1. Design a combined qualitative and quantitative study that employs two phases sequentially. Discuss and provide a rationale for why the phases are ordered in the sequence you propose.

2. Design a combined qualitative and quantitative study that gives priority to qualitative data collection and less priority to quantitative data collection. Discuss the approach to be taken in writing the introduction, the purpose statement, the research questions, and the specific forms of data collection.

3. Develop a visual figure and specific procedures that illustrate the use of a theoretical lens such as a feminist perspective in the research. Use the procedures of either a sequential or concurrent model for conducting the study. Use appropriate notation in the figure.

ADDITIONAL READINGS


In this chapter, I present an overview of discussions about mixed methods research. This includes reviewing the terms for this type of research, including a brief history of mixed methods research, and advancing nine steps in the design of a study. As an aid to designing a mixed methods proposal, I present an early version of the format for design that was introduced in Chapter 3 of this book. I also include an example of a mixed methods study and illustrate how the authors engaged in the steps of mixed methods research.


Jennifer Greene and associates undertook a study of 57 mixed-methods evaluation studies reported from 1980 to 1988. From this analysis, they developed five different mixed methods purposes and seven design characteristics. They found the purposes of mixed methods studies to be based on seeking convergence (triangulation), on examining different facets of a phenomenon (complementarity), on using the methods sequentially (development), on discovering paradox and fresh perspectives (initiation), and on adding breadth and scope to a project (expansion). They also found that the studies varied in terms of the assumptions, strengths, and limitations of the method; whether they addressed different phenomena or the same phenomena; were implemented within the same or different paradigms; were given equal or different weight in the study; and were implemented independently, concurrently, or sequentially. Using the purposes and the design characteristics, the authors recommended several mixed methods designs.


Janice Morse suggests that using qualitative and quantitative methods to address the same research problem leads to issues of weighing each method and their sequence in a study. Based on these ideas, she then advances two forms of methodological triangulation: simultaneous, using both methods at the same time; and sequential, using the results of one method for planning the next method. Further, these two forms are described using a notation of capital and lowercase letters that signify the relative weight given to a method as well as sequence. The different approaches to triangulation are then discussed in the light of their purpose, limitations, and approaches.


This new Handbook, edited by Abbas Tashakkori and Charles Teddlie, represents the most substantial effort to date to bring together the leading writers about mixed methods research. In 27 chapters, the Handbook introduces the reader to mixed methods, illustrates methodological and analytic issues in its use, identifies applications in the social and human sciences, and plots future directions. Separate chapters, for example, illustrate the use of mixed methods research in evaluation, management and organization, health sciences, nursing, psychology, sociology, and education.