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### **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 research 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 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 fo 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 one data collection phase and may have equal or unequal priority. The integration of these different data would most often occur ding 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 quantities 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. I qualitative data collection, purposeful sampling is used so that individuals are selected because they have experienced the central phenomenon.
- Rate 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 neigh 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 Caraelli & 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 qualify quantitative 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 level: in a concurrent nested model, conduct a survey at one level ( eg 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.

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 in to quantitative data collection and quantitative data analysis followed by qualitative data collection and analysis could come first followed by 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**

Kusman (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 schools an idea that has some support in the literature but requires further empirical validation . . . phases 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 macro level analysis, phase 2 looked with in specific schools, using qualitative / case study methods to beter understand the dynamics of teacher commitment. ( Kushman 1992 , p 13)

This purpose statement illustrates the combination of a purpose with the relational 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 WUAN quell in this two phases 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 sub themes 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 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 behaviors. 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 posts secondary education. In addition, insights gained from the interviews of a small sub sample of students and parents who were interviewed five times during the three – year period are used to further examine parental savings.

The actual data collected was from 182 students 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 and, including a discussion about the measurement of

variables and the details of the logistic regression data 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 collections and analysis, and the notation for the study would: QUAN+ qual. The integration of the two data sources occurred in a section titled “ Discussion of survey and interviews 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 or 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 method 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 strength 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.



