CHAPTER 6

COLLECTING DATA IN MIXED METHODS RESEARCH

Researchers collect data in a mixed methods study to address the research questions or hypotheses. The data collection procedure needs to fit the type of mixed methods design in the study. This requires using procedures drawn from concurrent forms of data collection, in which both the quantitative and qualitative data are collected concurrently, or from the sequential forms of data collection, in which one type of data is collected and analyzed prior to a second data collection. Issues develop during both of these approaches that the investigator must address. However, before discussing the mixed methods data collection procedures, we will begin with a review of the basic elements of both quantitative and qualitative data collection within a process approach to research.

This chapter will address

- The procedures for quantitative and qualitative data collection in a research study
- Mixed methods data collection procedures for the mixed methods designs based on concurrent and sequential forms of data collection
When researchers think about data collection, they often turn to the specific types of data collection and the procedures for collecting that data. We believe that there are some phases to the process of data collection that, in combination, comprise the data collection step in research. As shown in Table 6.1, these phases are the sampling procedures, permissions, types of information collected, forms for recording the data, and the activities involved in administering the data collection. Each phase will be discussed individually for both qualitative and quantitative data collection as a review prior to discussing mixed methods data collection. The review is adapted from several chapters in Creswell (2005a).

**Table 6.1** Phases in the Data Collection Process for Qualitative and Quantitative Research

<table>
<thead>
<tr>
<th>Qualitative Data Collection</th>
<th>Phases in the Process of Research</th>
<th>Quantitative Data Collection</th>
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| • Purposeful sampling strategies  
  • Small number of participants and sites | Sampling | • Random sampling  
  • Adequate size to reduce sampling error and provide sufficient power |
| • From individuals providing access to sites  
  • Institutional review boards  
  • Individuals | Permissions | • From individuals providing access to sites  
  • Institutional review boards  
  • Individuals |
| • Open-ended interviews  
  • Open-ended observations  
  • Documents  
  • Audiovisual materials | Data sources | • Instruments  
  • Checklists  
  • Public documents |
| • Interview protocols  
  • Observational protocols | Recording the data | • Instruments with scores that are reliable and valid |
| • Attending to field issues  
  • Attending to ethical issues | Administering data collection | • Standardization of procedures  
  • Attending to ethical issues |
Sampling Procedures

To address a research question or hypothesis, the researcher decides which people and research sites can best provide information, puts a sampling procedure in place, and determines the number of individuals that will be needed to provide data.

In qualitative research, the inquirer purposefully selects individuals and sites that can provide the necessary information. Purposeful sampling means that researchers intentionally select participants who have experience with the central phenomenon or the key concept being explored. A number of purposeful sampling strategies are available, each with a different purpose. One of the more popular is maximal variation sampling, in which individuals are chosen who hold different perspectives on the central phenomenon. The criteria for maximizing differences depends on the study, but it might be race, gender, level of schooling, or any number of factors that would differentiate participants. The central idea is that if participants are purposefully chosen to be different in the first place, then their views will reflect this difference and provide a good qualitative study. Another approach is to use extreme case sampling of individuals who provide unusual, troublesome, or enlightened cases. In contrast, a researcher might use homogeneous sampling of individuals who have membership in a subgroup with distinctive characteristics.

In terms of numbers, rather than selecting a large number of people or sites, the qualitative researcher identifies a small number that will provide in-depth information about each person or site. The larger the number of people, the less the amount of detail typically emerging from any one individual—and a key idea of qualitative research is to provide detailed views of individuals and the specific contexts in which they hold these views. Many qualitative researchers do not like to constrain research by giving definitive sizes of samples, but the numbers may range from one or two people, as in a narrative study, to 50 or 60 in a grounded theory project. Typically, when cases are reported, a small number is used, such as 4 to 10. The number relates to the question or to the type of qualitative approach used, such as narrative, phenomenology, grounded theory, ethnography, or case study research (Creswell, 1998).

In quantitative research, the intent of sampling individuals is to choose individuals that are representative of a population so that the results can be generalized to a population. In this way, investigators first select their population and define it carefully. Then they choose a sample from this population. Although not always workable, random choice of individuals for the sample is attempted so that each person in the population has an equal chance of being
Selected. **Probabilistic sampling** involves randomly choosing individuals based on a systematic procedure, such as the use of a random numbers table. In addition, the investigator may want certain characteristics represented in the sample that may be out of proportion in the larger population. For example, more females than males may be in the population, and a random sampling procedure would, logically, oversample females. In this situation, the researcher first stratifies the population (e.g., females and males) and then randomly samples within each stratum. In this way, a proportional number of participants on the stratification characteristic will be represented in the final sample chosen for data collection.

The sample size needed for a rigorous study is more specified in quantitative research. The sample needs to be large enough for statistical procedures to be used that will make it possible for the researcher to draw inferences with some confidence that the sample reflects the characteristics of the entire population (if that entire population could be studied). We want to reduce the sampling error: the difference between the sample estimate and the true population score. To determine the adequate sample size, researchers turn to sample size formulas available in research methods textbooks. If the quantitative research design is an experiment, investigators turn to power analysis formulas (e.g., Lipsey, 1990); if the study is a survey, sampling error formulas can help identify the appropriate size for the sample (e.g., Fowler, 1988).

**Permissions Needed**

Researchers require permission to collect data from individuals and sites. This permission can be gained at three levels: from individuals who are in charge of sites; from people providing the data (and their representatives, such as parents); from campus-based institutional review boards (IRBs); and, as part of the IRB process, from individuals who will actually provide data.

Obtaining access to people and sites requires obtaining permissions from individuals in charge of sites. Sometimes this involves individuals at different levels, such as the hospital administrator, the medical director, and the staff participating in the study. These levels of permissions are required regardless of whether the study is qualitative or quantitative. However, because qualitative data collection involves spending time at sites, and the sites may be places not typically visited by the public (e.g., soup kitchens for the homeless), researchers need to find a gatekeeper, an individual in the organization supportive of the proposed research who will, essentially, “open up” the organization. Qualitative research is well known for the collaborative
stance of its researchers, who seek to involve participants in many aspects of research. The opening up of an organization may also be necessary for quantitative studies in hard-to-visit organizations, such as the FBI or other governmental agencies.

To conduct research sponsored by a university or college, researchers must seek and obtain permission from campus-based IRBs. These boards have been established to protect the rights of individuals participating in research studies and to assess the risk and potential harm of the research to these individuals. Researchers need to obtain the permission of the appropriate board and guarantee that the rights of participants will be protected. Failure to do so can have negative consequences for the university or college, such as withdrawal of federal funds. Typically, obtaining permission from an IRB involves filing an application, presenting information about the level of risk and harm, and guaranteeing that rights will be protected. The researcher guarantees protection of rights by stating them in writing and having the participants (or a responsible adult, if the participant is a minor) sign a form (i.e., a consent form) before they provide data. Researchers may not present or publish their findings if permissions were not obtained before the start of the data collection.

In qualitative research, procedures need to be stated in detail, because the research often involves asking personal questions and collecting data in places where individuals live or work. The information collected from observing families at home, for example, may place individuals at particular risk. When behaviors are videotaped, participants are at risk of having unwanted behaviors disclosed. In quantitative research, individuals need to provide the researcher with permission to complete instruments or have their behavior observed and checked off. Often this research does not take place in the individuals’ homes or workplaces, and it is less obtrusive and less likely to put individuals at risk of harm.

Information to Be Collected

Researchers need to consider the types of data that are possible and examine and weigh each option so they can determine what sources of data will best answer the research questions or hypotheses. In qualitative research, the types of data available are much more extensive than in quantitative research. Qualitative types of data might be categorized in terms of their sources: as open-ended interviews, open-ended observations, documents (private and public), and audiovisual materials (e.g., videotapes, photographs, sounds). These options represent data in the form of text or images, and the possibilities continue to expand into new forms, such as text
messaging, e-mails, and videotape elicitation. At least 25 different approaches exist (Creswell, 2005a).

In quantitative research, the forms of data have been reasonably stable over the years. Investigators collect quantitative data using instruments that measure individual performance (e.g., aptitude tests) or individual attitudes (e.g., attitudes toward self-esteem scales). They also gather structured interview and observational data in which the response categories are determined before the data collection in a closed-ended fashion. They collect factual information in the form of numbers from census data, attendance reports, and progress summaries. Again, as with the forms of qualitative data, researchers need to assess which options will best address their research questions or hypotheses.

Recording the Data

The approach we take to data collection involves systematically gathering information and recording it in such a way that it can be preserved and analyzed by a single researcher or a team of researchers. For qualitative data collection, forms for recording the information need to be developed. If interview data are collected, then an interview protocol is needed that not only lists the questions and provides space in which to record answers but also has a place for essential data about the time, day, and place of the interview. In many cases, the researcher audiotapes the qualitative interviews and later transcribes the interviews. Having an interview protocol helps keep the researcher organized, and it provides a record of information in the event that the recording devices do not work. An observational protocol also provides a useful way of organizing an observation. On this form, the researcher records a description of events and processes observed, as well as reflective notes about emerging codes, themes, and concerns that arise during the observation. Recording forms can also be developed for reviewing documents and for recording image data, such as photographs.

In quantitative research, the investigator selects an instrument to use or develops an instrument. This instrument may be an attitudinal scale, with scores of past use showing high reliability and validity. It might be a reliable and valid checklist based on past scores. For documents with numeric data, the researcher often composes a form that summarizes the data. In choosing an instrument or a checklist, the researcher is concerned about the validity and reliability of past scores, whether the questions fit the research questions and hypotheses in the study, and whether adequate scales are used to report the information.
Administering the Data Collection

Administering the data collecting involves the procedures for gathering the data. In qualitative research, much discussion in the literature is directed toward reviewing and anticipating the types of issues likely to arise “in the field” that will yield less-than-adequate data. Issues such as the time to recruit participants, the researcher’s role in observing, the adequate performance of recording equipment, the time to locate documents, and the details of the proper placement of videotaping equipment illustrate the types of concerns that need to be addressed. Also, the researcher needs to enter sites in a way that is respectful and does not disrupt the flow of activities. Ethical issues, such as providing reciprocity to participants for their willingness to provide data, handling sensitive information, and disclosing the purposes of the research, apply to both qualitative and quantitative research.

Administering the data collection in quantitative research involves attending to these ethical issues. In addition, the procedures of data collection need to be administered with as little variation as possible so that bias is not introduced into the process. Standardized procedures should exist for collecting data on instruments, on checklists, and from public documents. If more than one investigator is involved in data collection, training should be provided so that the procedure is administered in a standard way each time.

DATA COLLECTION IN MIXED METHODS DESIGNS

It is essential to know the general procedures of collecting data in qualitative and quantitative research because mixed methods research involves collecting both forms of data. Before we turn to specific designs, here are several general guidelines for collecting both forms of data in mixed methods research:

- The data collection procedures will vary depending on the type of mixed methods design. A helpful way to conceptualize data collection among the designs is to consider data collection as occurring concurrently or sequentially. In concurrent data collection, the quantitative and qualitative data are collected at roughly the same time (as in the Triangulation and Embedded Designs). In the sequential approach, the quantitative (or qualitative) data is collected first, and the results inform the second (quantitative or qualitative) form of data collection (as in the Explanatory, Exploratory, and Embedded Designs).
- When data are collected concurrently, the two forms (quantitative and qualitative) of data are independent of each other; when collected sequentially, the two forms of data are related or connected.
Regardless of the concurrent or sequential or independent or connected forms of data collection, use rigorous quantitative and qualitative procedures, as discussed earlier in this chapter.

IRB permissions are required for all research data collection. In the concurrent approaches, both forms of data collection can be described at the outset; in the sequential forms, only the initial phase of data collection can be identified with any certainty. Because IRB review boards require as full a disclosure of data collection procedures as possible, in the sequential forms of data collection, state the follow-up phase as tentative, recognizing that an addendum may need to be filed with the IRB when the follow-up data collection procedures are firmly established.

Concurrent Data Collection Issues

A concurrent form of data collection exists for the Triangulation Design (and its variants) and the Embedded Design with concurrent data collection (see Chapter 4).

Figure 6.1 shows the general process for data collection in which the two types of data are collected concurrently.

Not only are the data collected during the same timeframe and independent of each other, they may be collected from the same level in an organization or from different levels. In the multilevel variant of the Triangulation Design, the quantitative and qualitative data collection occur at different levels (or with different units of analysis). In a mixed methods study of the efficacy of using student cotherapy teams in marriage and family therapy programs, Hendrix, Fournier, and Briggs (2001) gathered quantitative data from clients on their outcomes (402 cases) and qualitative data from 12 therapists on their experiences.

In addition, quantitative and qualitative data collection can be given equal or unequal weight in a study. An Embedded Design incorporating qualitative data into an intervention trial in the health sciences illustrates a lesser priority for the qualitative data collection. An example of this design is found in a study of breath therapy for patients with chronic low-back pain (Meling, Hamel, Acree, Byl, & Hecht, 2005). In this randomized, controlled trial, the investigators examined the outcomes of reduced pain, physical and emotional roles, and vitality. The investigators were also curious about how the patients experienced the treatments from breath therapists, and they asked the patients to report qualitative data in diary entries about their treatment experiences.
In concurrent forms of data collection, the analysis is conducted for different purposes: to converge the findings (in the Triangulation Convergence Design); to validate one form of data (typically quantitative) through the other forms (typically qualitative data) (in the Triangulation Validating Quantitative Data Design); to transform the data for comparison (in the Triangulation Data Transformation Design); or to generate data that will address different types of questions (in the Embedded Experimental or Correlational Design). Procedures for analyzing the data will be examined further in Chapter 7.

Despite these general characteristics, specific issues arise in using a concurrent form of data collection.


**Participant Selection.** Should the same or different individuals be selected for the quantitative and qualitative samples? A clear consensus does not exist on this question, but a common practice among mixed methods researchers is to select the same individuals for both the quantitative and qualitative data collection, so the data can be more easily converged or compared. Selecting different individuals will introduce personal characteristics that might confound the comparison.

There are ample illustrations of the use of the same individuals or sites in the Triangulation and Embedded Designs. In a convergence study of teacher candidates’ multicultural attitudes and knowledge, Capella-Santana (2003) gathered quantitative questionnaire data from 90 undergraduate elementary education teacher candidates. She also invited all 90 participants to be interviewed “to corroborate the information obtained through the questionnaires” (p. 185). McVea et al. (1996) evaluated family practices that had adopted prevention materials in another Triangulation Convergence Design. They gathered both quantitative data (e.g., using a structured observation checklist) and qualitative data (e.g., through key informant interviews) from the same eight practices. In an Embedded Intervention Design, Whittemore, Rankin, Callahan, Leder, and Carroll (2000) studied how social support from peer advisors decreased complications following myocardial infarction. They conducted a randomized controlled trial and had peer advisors provide social support to the patients. Their qualitative data collection within this trial involved collecting data from the peer advisors during the trial.

**The Sample Size Question.** Should the same number of individuals be sampled for both the quantitative and the qualitative arms of the data collection? The standard answer to this question is that the size of the quantitative sample (preferably randomly selected) will not be the same size as the smaller (preferably purposefully selected) qualitative sample. This disparity, of course, raises the question of how to converge or compare the two databases in any meaningful way. In the Embedded Designs, it is assumed that the embedded data will play a secondary role and be supplemental to the primary dataset. Also, the embedded data typically answer a different question (e.g., what did the patients experience during the treatment?) than the primary data (e.g., did the treatment influence the outcomes?). For a Triangulation Design, the question of sample size is more relevant, despite the lack of attention to this issue in the mixed methods literature. A typical approach to this problem is to increase the qualitative list of participants and, in doing so, sacrifice some of the detail elicited from individuals. In Luzzo’s (1995) Triangulation Convergence Design, his quantitative sample consisted
of 401 students and his qualitative sample, 128 of that 401 students, a large number for interviews or for establishing any depth of detail from any single student. Another approach would be to weight the qualitative cases so that the information can be compared with the same number of quantitative cases. A final approach is to state that the comparison of the two databases is limited because of the discrepancy in size.

*When Contradictory Results Occur.* In the Triangulation Convergence Design, the results of the quantitative analysis and the qualitative findings may be contradictory. How does the researcher proceed? An approach suggested in the mixed methods literature (Creswell, 2003) is for the researcher to gather additional data to help resolve the contradiction.

Should the additional data be quantitative data or qualitative data? A clear answer does not exist to this question. However, the usual solution is to present the two findings in parallel and state that more research is needed (Padgett, 2004). Another approach is to collect more data to resolve the contradiction, an approach that may or may not be feasible and timely. Research could also view the problem as a springboard for new directions of inquiry (Bryman, 1988).

Padgett’s (2004) study recounts how a team of researchers returned to their initial database as a springboard for more insights. This emerged during the Harlem Mammogram Study, which was funded by the National Cancer Institute to examine factors that influenced delay in response to an abnormal mammogram among African American women living in New York City. The research team Padgett was on had collected both structured quantitative data and open-ended interview data. After data analyses, the team concluded that the women’s decisions to delay were not driven by factors in their quantitative model. The researchers then turned to their qualitative data, highlighted two qualitative themes, and reexamined their quantitative database for support for the themes. To their surprise, the quantitative data confirmed what the participants had said. This new information, in turn, led to a further exploration of the literature, in which they found some confirmation for the new findings.

*Introducing Potential Bias Through Data Collection.* If data are collected concurrently, will one form of data bias the other? In all of the concurrent data collection procedures, it is possible that one form of data might introduce bias that would confound the results from the other form of data if collected from the same participants. Researchers need to be alert to this possibility and openly discuss it. Steps should be taken to minimize this potential bias. Bias can be a problem in intervention trials in which the investigators introduce a
qualitative arm during the trial. One solution to this issue is to collect unobtrusive qualitative data. This was the approach used by Victor et al. (2004) in an intervention trial of individuals with osteoarthritis of the knee. They asked individuals in the intervention group to maintain diaries during the intervention to review their symptoms, use of medication, and goals for treatment during the trial. The investigators then collected these diaries after the intervention and reviewed them. Another approach is to equally distribute the qualitative data collection across all treatment and control groups. Finally, investigators might postpone the qualitative data collection until after the intervention and employ a sequential design of data collection.

Sequential Data Collection Issues

Sequential data collection involves different procedures than concurrent data collection. Several guidelines apply to the sequential approach to data collection:

- Sequential data collection involves collecting the data in stages: One data collection is followed by a second data collection. These procedures are included in the Explanatory and the Exploratory Designs, as well as the sequential forms of the Embedded Design.
- In this type of data collection, the quantitative and qualitative data collections are related to each other and not independent. One builds on the other.
- Either the first or second data collection may be weighted more heavily, and the top priority data collection may be either qualitative or quantitative. It depends on the research problem and the approach the investigator wants to emphasize.
- As shown in Figure 6.2, sequential data collection is conceptualized as having three stages. In the first stage, the data collection and analysis are either qualitative (for the Exploratory Design) or quantitative (for the Explanatory Design). Either approach could be used in an Embedded Design. Decisions are made in Stage 2 about how the results will be used to influence the Stage 3 data collection and analysis. Figure 6.2’s Stage 2 section shows how Stage 1 results are used differently in Explanatory, Exploratory, and Embedded Designs. Stage 3 then involves a second data collection and analysis of data. In this approach, the final Stage 3 data collection and results build on the initial Stage 1 results. Thus, Stage 2 is inserted into the process between the two data collections.
As in the concurrent procedures, sequential data collection involves several issues.

**Sampling the Same or Different Individuals.** Should the same individuals be sampled in Stage 1 and Stage 3? It depends on the choice of design. In an Explanatory Design or an Embedded Design with a follow-up, the same individuals should be included in both data collections. The intent of these designs is to use qualitative data to provide more detail about the quantitative results and to select participants that can best provide this detail. In the Explanatory Design study by Miller, McKenna, and McKenna (1998), the authors collected data from the same pairs of alternatively and traditionally prepared teachers in both the quantitative and qualitative phases of the study. In their study of depression and substance use in high schools, Way et al. (1994) followed up in the qualitative stage of their Explanatory Design

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**Figure 6.2** Sequential Forms of Mixed Methods Data Collection

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with a subset of students who had participated in the quantitative questionnaire used in the initial data collection stage of the study.

For Exploratory Designs, there is a different procedure. The individuals in the first stage of data collection are typically not the same participants as those in the third stage. Because the purpose of the quantitative Stage 3 is to generalize the results to a population, different and more participants are used in Stage 3. In their study on the information needs of terminally ill patients, Kutner et al. (1999) conducted interviews with 22 terminally ill patients in Stage 1 and administered a quantitative instrument to a second population of 56 patients in Stage 3.

Using the Same or Different Sample Sizes. Should the sample sizes be the same for Stage 1 and Stage 3? In this respect, the same advice we provided for the concurrent designs holds true: The qualitative data collection will be from a much smaller sample than the quantitative data collection. The intent is not to merge or compare the data, as in the concurrent procedures, so unequal sizes are not as much of an issue in the sequential designs.

Selecting Results for the Follow-up. What criteria should be used in an Explanatory Design in which quantitative data are analyzed in Stage 1 and need to be explained by a qualitative Stage 3? Researchers need to weigh the options and determine what approach is best to use. This first involves conducting the quantitative analysis and considering what results need to be explained in more detail through the second, qualitative stage of data collection. Some key results from Stage 1 to follow up on might be statistically significant results, statistically nonsignificant results, key significant predictors, variables that distinguish between groups, outlier or extreme cases, distinguishing demographic characteristics, or simply individuals that volunteer to participate in interviews. In an Explanatory Design study of adoptive fathers and birthfathers, Baumann (1999) simply asked the fathers completing the questionnaire whether they would be interested in being interviewed. Way et al. (1994) used a more systematic approach: The statistical results were used to direct the follow-up procedures. These researchers determined in Stage 1 that depression differed among suburban and urban high school students, and they decided to use this quantitative result as a basis for studying students in the top 10% of depression scores from different schools in qualitative follow-up interviews in Stage 3.

Designing an Instrument. In the Exploratory Design with an intent of developing and testing an instrument (or taxonomy), the issues arise as to what information is most useful in designing and developing an instrument and
what procedures should be used in this process. Two aspects need to be kept in mind. First, qualitative data analysis yields specific quotes from individuals, codes that the researcher generates, and themes that consist of groups of codes. Each of these aspects can play a role in the design of an instrument. The quotes from individuals can be turned into questionnaire items, the codes can be designated as variables measured by multiple items, and the themes can represent the larger scales of an instrument. Second, developing an instrument with sound psychometric properties takes time and is hard work. The best instruments are rigorously developed using good procedures of scale development. For example, see the scale development procedures (as adapted) provided by DeVellis (1991):

1. Determine what you want to measure and ground yourself in theory and in the constructs to be addressed (as well as in the qualitative findings).
2. Generate an item pool, using short items, an appropriate reading level, and questions that ask a single question.
3. Determine the scale of measurement for the items and the physical construction of the instrument.
4. Have the item pool reviewed by experts.
5. Consider the inclusion of validated items from other scales or instruments.
6. Administer the instrument to a sample for validation.
7. Evaluate the items (e.g., item-scale correlations, item variance, reliability).
8. Optimize scale length based on item performance and reliability checks.

Third, examine some published mixed methods studies that use an Exploratory Design with the intent to develop an instrument, to learn the procedures used in generating a survey instrument from qualitative data. Examples of these designs are an education study about the teaching of reading comprehension (Meijer, Verloop & Beijaard, 2001), a social work study of leaders and coalition building (Mizrahi & Rosenthal, 2001), an organizational study about creating a measure of organizational assimilation in diverse industries (Myers & Oetzel, 2003), the psychological study of the tendency to see oneself as significant to a romantic partner (Mak & Marshall, 2004), and a cross-cultural study of the lifestyle behaviors of Japanese college women (Tashiro, 2002). When this last example, by Tashiro (2002), is examined, it can be seen that the author began by collecting focus group data. She formed a
questionnaire using data from the focus groups, as well as from other unpublished sources. The focus group participants were then asked to evaluate the clarity of the questions, and the resulting questionnaire was used in a pilot test with participants similar to those in the study. The questionnaire’s content was validated by a number of research experts and checked for interitem reliability and test-retest reliability. These procedures closely follow those recommended by DeVellis (1991).

Finally, the phase of the design of the instrument can be incorporated into a visual of the overall procedures in a mixed methods study. Bulling (2005) designed an exploratory mixed methods study of how emergency personnel react to tornadoes. Figure 6.3 is a figure from her study. This figure indicates the instrument development stages and how they paralleled the qualitative and quantitative procedures in her study.

Summary

Qualitative and quantitative data collection involve the phases of sampling, permissions, selecting types of data, selecting forms for recording data, and administering the data collection. At each phase, the approaches differ for the two forms of data collection. In mixed methods research, it is helpful to conceptualize the data collection as either concurrent or sequential and to relate the data collection procedures to the specific types of mixed methods design. In concurrent designs (Triangulation, Embedded), the qualitative and quantitative data are collected during the same timeframe but independently. Issues that need to be addressed in the concurrent design relate to the question of whether the same or different individuals are selected for both forms of data collection, the size of the qualitative and quantitative samples, when contradictory results occur, and the potential for bias to be introduced through data collection. In sequential data collection (Explanatory, Exploratory, Embedded), the two forms of data (qualitative and quantitative or vice versa) are introduced in phases. In between these two phases resides a new phase of research in which the researcher decides how to use the results from the first phase and build on it in the second phase. Sequential data collection also raises some issues: whether the same individuals should be sampled in the qualitative and quantitative phases, whether the sample sizes should be the same, the criteria for selecting results to use in the follow-up phase, and how to design an instrument that will yield valid and reliable scores from initial qualitative data.
Figure 6.3  Procedures for an Exploratory Instrument Design Mixed Methods Study

Activities

1. Examine one qualitative and one quantitative journal article. The two studies should display the two forms of sampling: purposeful and random, or systematic, sampling. Discuss the different approaches used.

2. Find a Triangulation Mixed Methods Design study published in a journal. Draw a diagram of the data collection and analysis. Indicate in that drawing specifics about the samples selected, the sample sizes, and the extent to which the results of the two databases supported each other or were contradictory.

3. Find an Explanatory Mixed Methods Design study published in a journal. Examine the reason(s) the author gives for using a qualitative follow-up component to the study. Was the follow-up to (a) select cases, (b) explain the findings, or (c) for some other reason?

4. Find an Exploratory Mixed Methods Design study in which the intent was to develop an instrument. List the steps the authors used to develop the instrument from the qualitative database. Compare these steps with those in DeVellis (1991) mentioned in this chapter.

Additional Resources to Examine

For general procedures in qualitative and quantitative data collection, see

For a detailed overview of the steps involved in constructing an instrument and in scale development, see