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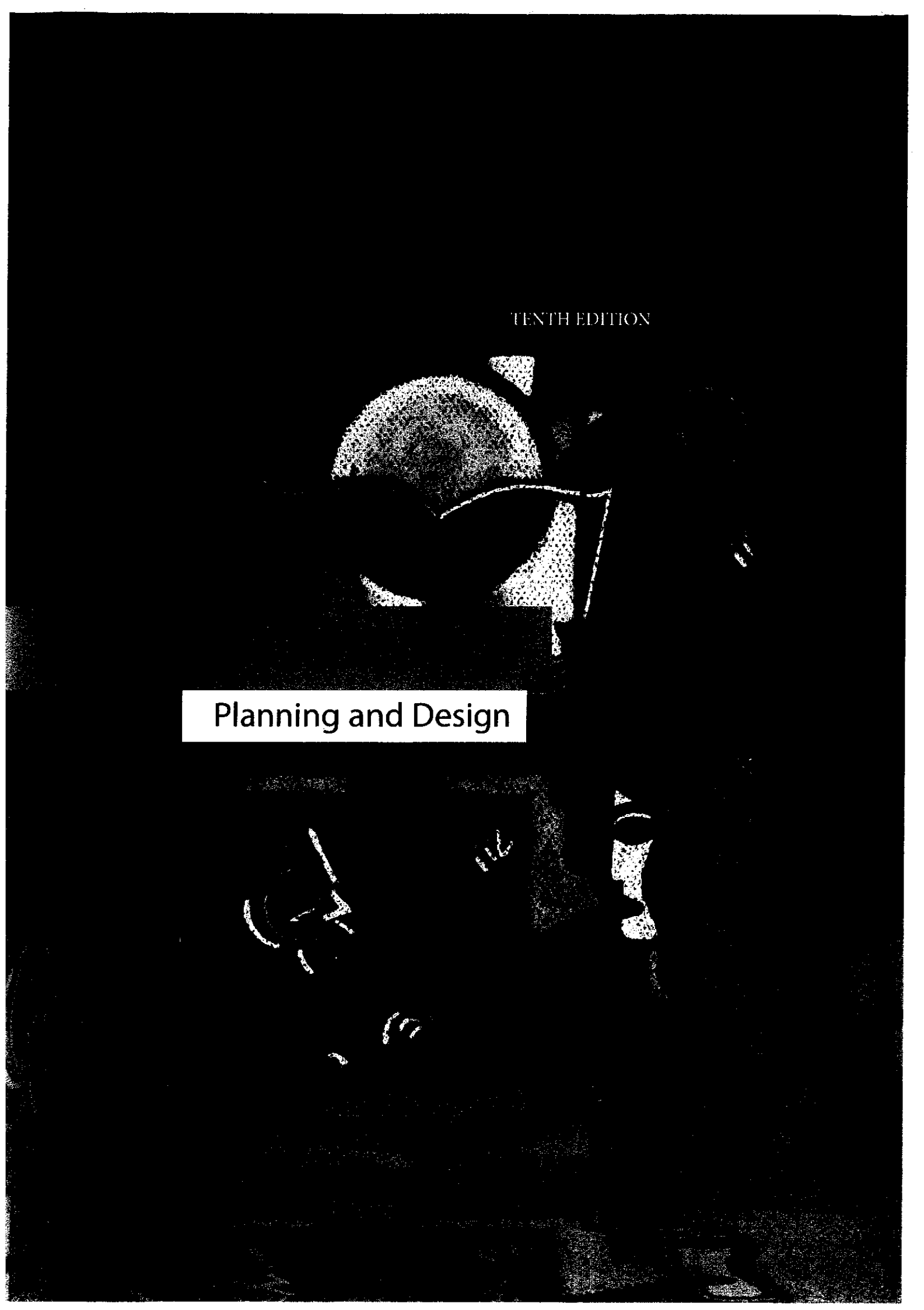
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10

Mixed-Methods Research

Many research problems have both qualitative and quantitative dimensions. To fully address them, then, the researcher must use both qualitative and quantitative techniques. Qualitative and quantitative methodologies are not necessarily a case of either-or, but rather a case of more-or-less.

Some research problems practically scream for both qualitative and quantitative data. These problems call for **mixed-methods research**. Such research involves not only collecting, analyzing, and interpreting both qualitative and quantitative data but also *integrating* conclusions from those data into a cohesive whole.

As you may have noticed, this chapter is a short one. It is short not because mixed-methods studies are quick and easy—they definitely are *not* quick and easy, not by a long shot—but because mixed-methods research draws largely on the qualitative and quantitative research strategies we have previously addressed in Chapters 6 through 9. The trickiest part of a mixed-methods study is in *combining* the two methodological traditions into a research endeavor in which all aspects substantially contribute to a single, greater whole. In other words, a good mixed-methods study is one that effectively and convincingly “hangs together.”

Other things being equal, a mixed-methods study is the most challenging study a researcher can undertake, because it requires both qualitative and quantitative research skills. In a typical mixed-methods investigation, the researcher must be well versed in most or all of the following skill sets (Creswell & Plano Clark, 2011):

- Identifying focused and useful research questions
- Formulating and strategically testing hypotheses
- Choosing one or more samples that enable appropriate inferences about a larger population
- Controlling for confounding variables
- Creating and using measurement instruments that have validity and reliability for their purposes
- Conducting structured, semistructured, and open-ended interviews
- Analyzing qualitative data (identifying units suitable for coding, applying the codes, discerning general themes, etc.)
- Drawing and persuasively arguing for reasonable conclusions from qualitative data (through triangulation, negative case analysis, thick description, etc.).
- Calculating and drawing inferences from descriptive and inferential statistics

Thus, if you are thinking about conducting a mixed-methods study, we urge you to do so only after you have had some experience with strictly qualitative studies *and* with strictly quantitative studies.

When Mixed-Methods Designs Are Most Useful and Appropriate

In some disciplines, mixed-methods research is becoming increasingly fashionable, trendy, “hip”—so much so that many universities now offer specific courses in mixed-methods techniques. But fashion and trendiness are hardly legitimate reasons to conduct a mixed-methods

study. Ultimately, decisions about research design must be driven by the research problem and its subproblems. Some problems and subproblems call for quantitative data, some call for qualitative data, and some—but only some—call for both.

On average, a mixed-methods research study requires more of the researcher's time and energy than a strictly qualitative or quantitative study. Why, then, would a researcher want to go to the trouble of collecting, analyzing, interpreting, and integrating both qualitative and quantitative data? Following are several good reasons (Bryman, 2006; Greene, Caracelli, & Graham, 1989):

- *Completeness*: A researcher can fully address a research problem and its subproblems only by collecting, analyzing, and interpreting both qualitative and quantitative data.
- *Complementarity*: Quantitative aspects of the study can compensate for weaknesses in qualitative research, and vice versa—for example, the results of unstructured interviews with only a small number of individuals (which might raise concerns about generalizability) can be replicated by administering a questionnaire to a larger, more representative sample.
- *Hypothesis generation and testing*: Qualitative data often provide insights that help a researcher form hypotheses about cause-and-effect relationships—hypotheses that the researcher can subsequently test through controlled, quantitative research.
- *Development of appropriate research tools and strategies*: One type of data can inform and guide subsequent collection of another type of data—for example, unstructured interviews (yielding qualitative data) can guide the construction of appropriate questions for a survey (which will yield quantitative data).
- *Triangulation*: A researcher can make a more convincing case for particular conclusions if both qualitative and quantitative data lead to those conclusions.
- *Resolution of puzzling findings*: In a quantitative study, various results can sometimes seem inconsistent or contradictory; qualitative data may reveal underlying nuances and meanings that can help the researcher make sense of the numbers.

In deciding whether to conduct mixed-methods research, the shrewd researcher also takes into account the philosophical orientations and research traditions of his or her discipline (Hesse-Biber, 2010). For example, if prominent scholars in a researcher's field agree that people's subjective "realities" and personal, idiosyncratic "truths" are legitimate topics of investigation, the researcher might reasonably incorporate phenomenological and/or grounded-theory (i.e., qualitative) elements into a research project. If, instead, the researcher's professional colleagues largely adhere to the notion that scientific inquiry should be an objective endeavor—one based solely on the "hard facts" that only numbers can reveal—the researcher might be better advised to stick with a solely quantitative methodology.

Common Mixed-Methods Designs

In previous chapters we have already touched on a few ways in which qualitative and quantitative methods might be combined into a single study. For example, historical researchers often make use of both qualitative and quantitative data in a single research inquiry (see Chapter 7). Interviews in a large-scale survey might include a few open-ended questions that yield complex responses requiring qualitative analysis (see Chapter 8). And the effectiveness of people's study strategies might be measured both quantitatively (e.g., by the number of facts they recall) and qualitatively (e.g., by the content of their think-aloud study sessions; see Chapter 9).

The ways in which a researcher might combine qualitative and quantitative methods are almost limitless, restricted only by the researcher's imagination and creativity and, of course, by the nature of the research problem. The following four general designs can help you envision some of the possibilities.¹

¹In describing these designs, we use labels suggested by Creswell and Plano Clark (2011). Other labels are possible, of course; for instance, Gay, Mills, and Airasian (2009) use the terms QUAN-QUAL, QUAL-Quan, and QUAN-Qual for convergent designs, exploratory designs, and explanatory designs, respectively, with the upper- and lowercase letters reflecting the relative emphasis the researcher might place on quantitative versus qualitative methods.

Convergent Designs. In a **convergent design**, a researcher collects both qualitative and quantitative data in parallel, usually at the same time and with respect to the same research question(s). The researcher gives equal weight to the two types of data and strives for triangulation, with the hope that analyses of both data sets lead to similar conclusions about the phenomenon under investigation.

Embedded Designs. An **embedded design** is similar to a convergent design, in that both qualitative and quantitative data are collected within the same general time frame. However, one general approach dominates—perhaps a qualitative approach, but more often a quantitative one—with the other approach serving in a secondary, supplementary role. In many cases the two data sets are collected to address somewhat different (although certainly related) research questions.

Exploratory Designs. An **exploratory design** typically encompasses two phases. In Phase 1, a researcher uses one or more qualitative methods to get a general sense of characteristics, phenomena, and/or issues related to the topic of study. The qualitative data—perhaps from observations, interviews, or both—provides a basis for a more systematic, quantitative study in Phase 2. For example, as mentioned earlier, qualitative observations of a phenomenon in the real world might help the researcher develop hypotheses to be systematically tested in an experimental study, or the results of a few unstructured interviews might help the researcher develop appropriate questions for a questionnaire administered to a much larger sample.

Explanatory Designs. Like an exploratory design, an **explanatory design** is usually a two-phase process, but in this case the quantitative phase comes first. More specifically, Phase 1 involves collecting considerable quantitative data, perhaps in an experiment, ex post facto study, or survey. However, this first phase yields only numbers, in the forms of percentages, averages, and so on. Collecting qualitative data in a Phase 2 follow-up—for instance, asking participants to describe what they were thinking or feeling during an experimental intervention or to elaborate on their answers to survey questions—can help the researcher give greater substance and meaning to the numbers.

When mixed-methods designs are lopsided in favor of one form of data over the other, they usually lean in the quantitative direction (Hesse-Biber, 2010). Unless there's a compelling reason to do otherwise, we urge novice mixed-methods researchers to lean in the quantitative direction as well. A more quantitatively oriented approach can provide a reasonable structure to guide the overall research project—a structure that can keep a researcher on task and consistently focused on addressing the research problem. As one mixed-methods expert has put it, "Undertaking a qualitative approach to mixed methods is like taking a journey without always being in control of your destination" (Hesse-Biber, 2010, p. 211).

Planning a Mixed-Methods Study

Some mixed-methods designs are, in advance, determined in precise detail from start to finish. Others have a more *emergent* quality to them, with data collected early in the process revealing other kinds of data that might also be useful (recall the concept of *emerging design* in Chapter 6). For example, early data might yield difficult-to-interpret inconsistencies or suggest potentially fruitful new avenues of investigation; in either case, a subsequent phase of data collection might be in order.

But regardless of whether a mixed-methods study has a fixed or emerging design, it requires considerable advance planning. We have discussed planning in great depth in earlier chapters (especially in Chapter 4), so here we alert you only to a few additional things to keep in mind as you plan a mixed-methods research project.

Identifying Research Questions and Hypotheses

Curious people tend to ask questions—*lots* of questions—and different questions can't necessarily all be addressed in the same way. Such multiple question-asking can give rise to mixed-methods research. Often, then, a mixed-methods study revolves around two or more research problems rather than just one.

Occasionally both quantitative and qualitative data might, on the surface, be relevant to a single research question. As an example, we return to a study described in Chapter 9, one in which three groups of college professors—geographers, sociologists, and educational psychologists—studied maps in an effort to remember the maps' contents (J. E. Ormrod, Ormrod, Wagner, & McCallin, 1988). The overarching research question was this:

Do geographers study and remember maps differently than nongeographers do?

Both quantitative data and qualitative data were potentially relevant to the question: Quantitative data could reveal whether geographers tend to remember *more* map content than nongeographers, and qualitative data could reveal whether geographers study and remember maps in distinctly different ways than nongeographers do. In a sense, then, the research question could be broken down into two subproblems:

Do geographers remember more details of a new map than nongeographers do? (This question calls for quantitative data.)

Do geographers think about a new map in different ways than nongeographers do? (This question calls for qualitative data.)

The answer to the first (quantitative) question was, yes, geographers remember more details of a new map *if* the map is consistent with well-established geographical principles of how various land forms and human constructions are arranged on the earth's surface. The answer to the second (qualitative) question was, yes, geographers think about a new map differently than nongeographers do—in particular, geographers try to make sense of the arrangement of features in the map, whereas nongeographers are more likely to engage in rote memorization. The answers to both subproblems, then, converged to answer the overall research question.

As you plan a mixed-methods study, we urge you to identify two or more separate problems—or at least two or more subproblems—to guide you in your investigation. Following are general frameworks you might consider in the *quantitative* questions you ask:

- To what extent do _____ [certain kinds of people, animals, plants, inanimate objects] exhibit _____ [certain kinds of behaviors or characteristics] _____?
- Do _____ have more/less of _____ than _____ do?
- Is there a predictable correlation between _____ and _____?
- Does _____ have an effect on _____?

Meanwhile, your *qualitative* questions might take forms such as these:

- What is the general nature of _____ [a certain group or phenomenon] _____?
- How do people think or feel about _____?
- How do participants in the sample explain _____?

We also recommend one or more questions that require an *integration* of the study's quantitative and qualitative elements—perhaps questions along these lines:

- Do the quantitative data and qualitative data converge to support the conclusion that _____?
- Can the qualitative data help to explain and elaborate on the quantitative findings?
- Do the qualitative data suggest hypotheses you might test with quantitative data?

Our last question brings up the issue of *hypotheses*. Mixed-methods studies may or may not involve the testing of certain hypotheses. In some cases, one or more hypotheses may be posed in advance, presumably as a result of a review of the related literature. In other cases—for instance, in the two-phase exploratory design previously described—qualitative data collected early in the study might yield hypotheses that the researcher subsequently tests more systematically by collecting quantitative data.

Conducting the Literature Review

As is true for strictly quantitative and strictly qualitative designs, a mixed-methods researcher should conduct much of his or her literature review at the very beginning of the project. (Grounded theory studies are occasionally exceptions to this rule; see Chapter 6.) A review of the related literature can help the researcher pin down appropriate questions and hypotheses, suggest possible research designs, and reveal potentially helpful measurement instruments.

Especially in studies with two or more phases, additional visits to the library or its online databases may be useful midway through the research project (Hesse-Biber, 2010). For example, in the first, qualitative phase of a two-phase exploratory study, you may unearth intriguing ideas about which you need to learn more so that you can better plan the second, quantitative phase. Or, in a two-phase explanatory study, your initial quantitative findings may necessitate a search for new literature that will assist you as you plan and conduct the subsequent, qualitative phase.

Addressing Validity Concerns

Whether conducting a qualitative, quantitative, or mixed-methods study, any researcher must ensure that its measurement techniques—in the most elementary sense of what *measurement* involves—are valid indicators of the variables under investigation (see Chapter 4). Here our focus is not on the validity of measurement instruments but rather on the validity of the overall research effort, including:

- ☛ Its *internal validity*—the extent to which the study enables defensible conclusions about cause-and-effect and other cross-variable relationships
- ☛ Its *external validity*—the extent to which the study's results can be generalized to a larger population or broader context
- ☛ Its general *credibility* and *trustworthiness*—the extent to which others perceive the study's findings to be convincing and worth taking seriously

All three of these ideas should look familiar, as we previously discussed each of them in Chapter 4.

Additional validity issues come up in mixed-methods research, especially in relation to how a study's quantitative and qualitative components come together—or in some cases *don't* come together. Drawing on Creswell and Plano Clark's list of potential threats to validity in mixed-methods research (2011, pp. 240–241), we urge you to consider and address questions such as the following whenever you conduct a mixed-methods study:

- ☛ Are the samples for the quantitative and qualitative aspects of the study the same or sufficiently similar to justify comparisons between the quantitative and qualitative data?
- ☛ Are the quantitative and qualitative data equally relevant to the same or related topics and research question(s)?
- ☛ Are the quantitative and qualitative data weighted equally in drawing conclusions? If not, what is your rationale for giving priority to one type of data over the other?
- ☛ Can specific statements or artifacts from the qualitative element of the study be used to support or illustrate some of the quantitative results?
- ☛ Can apparent discrepancies between the quantitative and qualitative data be reasonably resolved?

Special Ethical Considerations in Mixed-Methods Research

In conducting any mixed-methods research study, the usual ethical guidelines apply, including protection from harm, voluntary and informed consent, and participants' right to privacy regarding anything they might reveal about themselves. Furthermore, the researcher must obtain permission from the appropriate committee at his or her institution for any research involving human beings or nonhuman animals—from the internal review board (IRB) in the case of human participants, or otherwise from the institutional animal care and use committee (IACUC).

We alert you to two issues that can arise for mixed-methods studies in particular, and especially for two-phase studies. One issue comes into play in either an exploratory design or an explanatory design, in which the results of Phase 1 in some way guide the implementation of Phase 2. In this situation, the researcher may have to submit two separate proposals to the IRB or IACUC, one for each phase of the study. Alternatively, the researcher's first proposal might describe Phase 1 in detail and give a general overview of the intended procedure in Phase 2, followed by an updated, more specific (but perhaps briefer) proposal for Phase 2 (Creswell & Plano Clark, 2011). Either way, securing permission for the entire study will require more effort than would be the case for a one-shot research study. Don't let this fact discourage you: Your two-phase project may very well make a more significant contribution to your field than a shorter, more limited investigation could possibly do.

A second ethical issue arises in an explanatory design, especially if the researcher wants to use the results of the Phase 1 quantitative data to choose a subsample to interview in Phase 2 (Hesse-Biber, 2010). When participants respond in Phase 1—say, to a questionnaire about a potentially sensitive topic—they can reasonably expect that you won't be able to attach particular responses to particular people *unless you have explicitly told them otherwise during the informed consent process*. Yet in fact, you may very well want to use participants' responses in Phase 1 to identify an appropriate and informative subsample for your follow-up in Phase 2. You must plan for this eventuality before you implement Phase 1 and must, of course, describe your intentions in your IRB proposal and informed consent materials. One commonly used strategy is to give participants in Phase 1 data collection the option of participating—*voluntarily*—in a second, follow-up part of the study and providing a place to include their name and a telephone number or email address so that you can contact them.

PRACTICAL APPLICATION Deciding Whether to Use a Mixed-Methods Design

By its very nature, a mixed-methods study is more complex than either a solely qualitative or solely quantitative one. Other things being equal, it is likely to take more of the researcher's time and energy and may also require more resources. Is it, then, worth the trouble? The following checklist can help you answer this question.

CHECKLIST

Pinning Down the Logistics and Feasibility of a Mixed-Methods Study

1. Can your research problem(s) be better addressed with both quantitative and qualitative data than with only one form of data or the other? If so, explain how each kind of data will contribute to your inquiry.

- _____ 2. Does your proposed project reflect a convergent, embedded, exploratory, or explanatory design? If so, which one? If not, describe the general nature and structure of your design.
- _____ 3. What specific steps should you take to ensure that your proposed study has:
- Internal validity: _____
 - External validity: _____
 - Credibility and trustworthiness: _____
- _____ 4. Given your design, how much time is the study likely to take?
- _____ 5. What specific research skills do you need to collect the data? Do you currently have these skills? If not explain how you might reasonably acquire them.
- _____ 6. What specific research skills do you need to analyze and interpret the data? Do you currently have these skills? If not explain how you might reasonably acquire them.
- _____ 7. What special resources do you need to complete the study?
- _____ 8. Do you have the time, energy, skills, and resources to carry out the study as you have designed it? If not, how might you scale down your study so that you can still address your research problem? Alternatively, how might you revise your research problem so that you can reasonably address it, given the time, skills, and resources you have?

Analyzing and Interpreting Mixed-Methods Data

The final activity in any mixed-methods study is, of course, to analyze and then *interpret* the collected data. At this point in the book, this should hardly be news, but we do want to raise two points about data analysis and interpretation that are especially relevant to mixed-methods research.

First, you must make a decision—ideally, before you collect your data—about whether you will (a) give the qualitative data and quantitative data equal weight in drawing your conclusions, or (b) give higher importance to one form of data over the other. You certainly can't disregard one set of data simply because they displease you! But with an appropriate rationale, you might make one form of data secondary and subservient to the other form of data. For example, this might be the case if you were using people's qualitative responses in follow-up interviews to shed light on their earlier (quantitative) responses to questionnaire items.

Second, you must decide how you might most effectively integrate your quantitative and qualitative findings as you interpret and report them. Creswell (2012) has suggested a couple of

possibilities that can be helpful in this regard. When conducting both a survey (quantitative) and open-ended interviews (qualitative), you might count the number of times each theme appears in the interviews and then compare the frequency counts with the quantitative analysis of survey responses. Another option is to create a two-column table—one column for qualitative findings and another for quantitative findings—that can reveal parallels and any discrepancies between the two data sets.

We have only skimmed the surface of mixed-methods research, but we have, we hope, given you food for thought about the appropriateness of mixed-methods approaches for your own research problems and questions. If you wish to delve into these approaches in greater depth, we urge you to consult one or more of the resources in the “For Further Reading” list at the end of the chapter.

A Sample Dissertation

We conclude the chapter with an example of a mixed-methods study that used a two-phase, explanatory design. Laura Lara (who is now Laura Lara-Brady) conducted the study for her doctoral dissertation in educational psychology at the University of Northern Colorado (Lara, 2009). Her focus was on factors that might influence the college success of Latina/o students, especially those with Mexican American backgrounds. Phase 1 of her study involved the administration of three questionnaires; hence, it had a descriptive, quantitative nature. Phase 2 involved in-depth interviews with a small subsample of Phase 1 participants; it made use of methods common in qualitative phenomenological studies and content analysis.

In her dissertation, Lara expresses concern about “the relatively low numbers of Latina/os attending and graduating from higher education institutions” (p. 3). She then draws on related research literature to identify four potentially important factors in Latina/o students’ college success—family, religion, other people’s support, and motivation—and she ties these factors to theories of child development and ethnic identity. We pick up the dissertation at the beginning of Chapter III, in which she repeats the four research questions she first posed in Chapter I and then describes her methodology. Although most of the excerpts we present are from Chapter III, we also include a paragraph from Chapter IV to give you an idea of how Lara effectively integrates her quantitative and qualitative results in interpreting her data.



Chapter III

METHODOLOGY

The purpose of this mixed method study is to identify the perceptions of predominantly Mexican American college students regarding their academic successes and challenges, with special attention to the role of parents, views of education, meaning of success, and the importance of religion. This chapter describes the *quantitative* procedure used to answer the following questions:

1. How are parenting, education, meaning of success, and religion associated with the academic achievement of predominantly Mexican American college students with low and high GPAs?
2. How is ethnic identity associated with the academic achievement of predominantly Mexican American college students?

Comments

The word “associated” in Questions 1 and 2 implies that the author will compute correlation coefficients, which she indeed does in the quantitative phase of her study.

This chapter also describes the *qualitative* procedure used to answer the following questions:

3. How do predominantly Mexican American college students describe aspects of family, religion, meaning of success, and motivation in terms of being protective factors and risk factors in their academic achievement?
4. Are there any additional protective or risk factors related to the academic achievement of predominantly Mexican American college students?

Both quantitative and qualitative research methods were employed to study the academic achievement of predominantly Mexican American college students. Although there are numerous types of mixed-method designs, I selected the Sequential Explanatory Design (Creswell, 2003; Taskakori & Teddlie, 2003) due to its use of qualitative research to explain and interpret quantitative findings. The Sequential Explanatory Design is characterized by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data. In this design, qualitative data are used to expand and provide depth of meaning to the experiences of diverse populations (Merchant & Dupuy, 1996).

[In the pages that follow, the author gives an advance organizer for the chapter, describes the participants in her study, and provides details about the three questionnaires administered in the study's quantitative part and the general protocol used in conducting follow-up qualitative interviews. Then, in a "Design/Procedure" section, she presents a rationale for using a Sequential Explanatory Design. We pick up the chapter where she begins to describe data collection.]

Quantitative Data Collection

The first phase of the study involved understanding participants' backgrounds, influences on academic achievement, and their level of Latina/o ethnic identity (exploration, resolution, affirmation). Potential participants received a link to complete the questionnaires via e-mail. After giving consent to participate in this study, participants were directed to the demographic questionnaire (Appendix A), Academic Factors Questionnaire (Appendix B), and the Ethnic Identity Scale (EIS) (Umaña-Taylor, Yazedjian, & Bámaca-Gómez, 2004) (Appendix C) online. The completion of all three questionnaires took approximately 30–40 minutes. All participants were invited to share their academic achievement stories.

To protect participants' confidentiality, questionnaire responses were separated from qualitative interview responses, and a separate online form asked participants' age, place of birth, languages spoken, as well as five demographic questions (ethnicity, generation, gender, GPA, and socioeconomic status). Consent forms and questionnaires were encrypted online and accessed only through a secure password by me, the lead researcher.

[In two subsequent paragraphs, the author describes how she statistically analyzed responses to the questionnaires.]

Notice that the research questions are slightly different—but clearly related—for the quantitative and qualitative aspects of the study.

Protective factors and risk factors are sometimes seen as moderating variables in cause-and-effect relationships (see Chapter 2). In this case, however, the author recognizes that her design does not allow for hard-and-fast conclusions about cause and effect, and so she chooses her words carefully.

Notice the use of e-mail for the quantitative phase of the study. This is quite appropriate for the population being studied here, as students at virtually all four-year colleges and universities are quite accustomed to and comfortable with using e-mail for many school-related tasks. In earlier decades, however, such a procedure might have led to considerable bias in a researcher's sample.

Notice the precautions that the author takes to ensure confidentiality and participants' right to privacy.

Qualitative Data Collection

Participants who completed the questionnaires were asked to provide their contact information for a follow-up interview. Students who gave consent to participate in a follow-up interview were selected based on gender, ethnicity, and GPA. Interviews took approximately 40–60 minutes and explored issues of family life, views of success, motivation, and support given at home that impacted the academic achievement of predominantly Mexican American college students, as well as other factors related to participants' academic success. All participants were allowed to select a pseudonym of their own name during the interview. However, none chose a pseudonym.

Epoché. In order to understand the phenomenon exactly as participants experience it, the concept of epoché became central. Epoché evolves from the Greek word "check," coined by Husserl, the epoché is the separation or "bracketing" of the researcher's biases, prejudices, and any preconceived ideas about the phenomenon being studied (Gold & Morse, 1985; Stanghellini, 2005). The epoché allowed for each participant's experience to be considered as a single entity in and of itself. This perception of the phenomenon thus calls for looking, watching, and becoming aware without importing the researcher's judgment (Moustakas, 1994). As suggested by Moustakas (1994), researchers should engage in the epoché process before conducting each interview to minimize any biases. In this study, every attempt was made to bracket any prejudices and biases of the researcher, by noting them in a journal along with any expectations prior to and subsequent to each interview. For example, before each interview I would briefly describe my expectations and other ideas I had on my mind, such as having an expectation for students in the high GPA group to be more strongly supported by their families than were students in the low GPA group. By confronting my expectations, I tried to minimize their influences as I listened to and interpreted what the participants said.

Selecting interview participants. The goal of purposeful sampling is to understand a specific phenomenon, not to represent a population, by selecting information-rich cases for research (Creswell, 2003). Studying information-rich cases yields in-depth understanding of the phenomenon that gives insight into questions under study (Patton, 2002). One strategy of purposeful sampling that captures variations between cases studied is stratified purposeful sampling. Stratified purposeful sampling illustrates characteristics of specific subgroups to facilitate comparisons by selecting participants based on key dimensions (Patton, 1990). Potential cases are then divided into "strata" containing variations of the phenomenon. In this study, "strata" to be researched were participants' GPA. Ten participants (five students in each group) were chosen for follow-up interviews based on purposeful sampling [using participants'] GPAs.

[In the next three paragraphs, under the subhead "Phenomenology," the author describes using a phenomenological approach to focus on the "lived experiences of the participants" and to "find meaning in participants' actual experiences." [See Chapter 6 of this book for a more in-depth description of the phenomenological approach to qualitative research.]

Data analysis. Interview questions were aimed at expanding the responses gathered in the quantitative portion of the study, specifically responses gathered from

Here the author briefly alludes to the sampling procedure she uses in her study's qualitative phase. Details follow a bit later, as you will see.

Epoché is an important strategy for maximizing a researcher's objectivity in a phenomenological study (see Chapter 6).

The author uses what we have, in this book, called purposeful sampling; she also engages in stratified sampling (see Chapter 8 for discussions of both purposeful sampling and stratified sampling). In particular, the author intentionally selects students of Mexican American heritage (both genders), including some with high GPAs and some with low GPAs.

the Academic Factor Questionnaire. Interview questions were refined after the quantitative results were gathered (for a copy of the final interview questions, please refer to Appendix D.) Interviews took approximately 40–60 minutes at a coffee shop across the street from the university. All interviews were recorded using a voice recorder and an external microphone and were later uploaded to the researcher's computer. Views of success, family life, motivation, and support given at home were explored as a basis for the interview. The focus of the interviews was to understand the contextual factors surrounding participants' academic success, as well as the differences between academically successful and non-academically successful students. All of the questions were open-ended, and I probed participants for clarification and detail. For consistency, all participants were given the same interview questions. Interviews were administered in English (although a Spanish version was available).

Qualitative data were transcribed in a personal computer using the software HyperTRANSCRIBE. This software allowed for easy transcription of MP3 audio files into a Microsoft Word document. After all interviews were collected, they were stored in the researcher's computer and transferred into HyperTRANSCRIBE for transcription into a Word document. Another researcher with expertise in educational psychology and I later conducted a content analysis of the interviews for triangulation (Campbell & Fiske, 1959; Creswell, 1998. . .). The content analysis included both coding and theme analysis (Moustakas, 1994). Coding of the data consisted of looking at the content of the responses elicited by participants and arranging them with a color scheme in terms of frequency/repetition and theme. A thematic analysis followed, and it analyzed all components in participants' interviews to form a comprehensive picture of a collective experience. As a continuation of the content analysis, the second educational psychology researcher and I separately conducted a thematic exploration to ensure uniformity and validity of the results. Once patterns were established, we compared results and developed all patterns into themes to finally compare them with the quantitative analysis.

[In the remaining two paragraphs of the chapter, the author continues the discussion of triangulating the results and then describes strategies used to maintain participants' confidentiality and right to privacy.]

[We now jump way ahead to a section called "Interpretation of Final Analysis" in Chapter IV ("Results") in the author's dissertation. We include this paragraph to give you a flavor of how she pulled the quantitative and qualitative results into a single, integrated discussion.]

[S]tudents in the low and high GPA groups showed distinct views of success, family, religion, and motivation. Three of the strongest differences were view of education, view of religion, and academic preparation. Students in the high GPA group viewed education as a privilege, and as something that had to be earned. One student in the high GPA group mentioned, "I don't get grades, I earn grades. I mean you just don't . . . you know what I mean? Teachers don't just hand things out. You get what you deserve." Students in the high GPA group also saw college as the next step in their lives: "I think

Notice the informal setting for the qualitative interviews. Such a setting might be more comfortable for participants, setting them at ease and enabling them to be more candid and expansive in their responses.

Notice the Spanish option here—presumably another strategy for making participants feel comfortable and at ease.

The author makes good use of technology to facilitate interview transcription and content analysis.

it's just one of the next steps as far as being able to do something that I'm passionate about." One student in the low GPA group indicated, "Well I'm . . . I know it's cocky, and whatever, but I'm smarter than the good chunk of the students in my class, but because I don't put any effort into it, no one ever sees it." Students in the high GPA group viewed grades as the result of personal effort, while students in the low GPA group described seeing themselves as being already smart and not needing to work hard to prove it.

NOTE: Excerpt is from *A Mixed Method Study of Factors Associated with the Academic Achievement of Latino College Students from Predominantly Mexican American Backgrounds: A Strengths-Based Approach* (pp. 73–74, 86–89, 91–93, 145) by L. G. Lara, 2009, doctoral dissertation, University of Northern Colorado, Greeley. (available through the online database ProQuest Dissertations & Theses: Full text; publication number 3397099). Reprinted with permission.

Notice how participants' qualitative responses give depth and meaning to the more abstract idea that perception of personal effort might be an important factor in high-GPA students' academic success.

For Further Reading

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