

MIXED METHODS RESEARCH

A Guide to the Field

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3 MIXED METHODS RESEARCH SERIES

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WHY A GUIDE TO THE FIELD OF MIXED METHODS RESEARCH?

INTRODUCING A CONCEPTUAL FRAMEWORK OF THE FIELD

What is mixed methods research? You have probably heard or seen these words when reading research studies or scanning conference abstracts in your area of interest. It is not surprising as mixed methods research is becoming more popular and accepted across disciplines and countries. However, the expansion and growth of mixed methods research has also triggered the emergence of different views and perspectives about mixed methods, which makes the field of mixed methods more complex and difficult to navigate for researchers who are new to this approach. Being able to understand the issues, controversies, and debates about mixed methods and how they influence the different ways scholars apply mixed methods in their research practice is essential to successfully apply mixed methods to your research interests. Therefore, in this opening chapter, we provide an overview of the field of mixed methods research and introduce our socio-ecological framework that can serve as a guide to understanding the field in a practical and applied way. This conceptual framework also foreshadows our discussion of mixed methods research in the rest of the chapters in this book.

LEARNING OBJECTIVES

This chapter aims to provide a brief overview of the field of mixed methods research and introduce the socio-ecological framework for mixed methods research so you are able to do the following:

- Describe the essence of the mixed methods approach to research and its fundamental principle.

- Understand the expansion of the field of mixed methods research and its related controversies and issues.
- Consider the socio-ecological framework for mixed methods research as a guide to the field.

CHAPTER 1 KEY CONCEPTS

The following key concepts will help you navigate through the main considerations related to understanding the field of mixed methods research as they are introduced in the chapter:

- **Mixed methods research:** A process of research in which researchers integrate quantitative and qualitative methods of data collection and analysis to best understand a research purpose. The way this process unfolds in a given study is shaped by mixed methods research content considerations and researchers' personal, interpersonal, and social contexts.
- **Fundamental principle of mixed methods research:** The belief that research methods should be integrated or mixed building on their complementary strengths and nonoverlapping weaknesses.
- **Integration or mixing:** An explicit interrelating of the quantitative and qualitative components within a study.
- **Quantitative research:** A research approach that examines the relationships between variables by collecting and analyzing numeric data expressed in numbers or scores.
- **Qualitative research:** A research approach that focuses on exploring individuals' experiences with a phenomenon by collecting and analyzing narrative or text data expressed in words and images.
- **Field of mixed methods research:** The body of literature and community of scholars that discusses and applies all aspects of mixed methods research.
- **Mixed methods research practice:** Any application of mixed methods research in advocating for, planning, conducting, disseminating, and evaluating the mixed methods research approach by researchers, scholars, and other stakeholders.
- **Socio-ecological model:** A conceptual framework that explains the dynamic interrelations that exist among various individual and

environmental factors and forms the basis for our conceptual framework for the field of mixed methods research.

- **Mixed methods research process:** A process of research that underlies a mixed methods research practice and that consists of a research purpose and questions, methods, and inferences.
- **Mixed methods research content:** Methodological considerations that directly inform the mixed methods research process such as how mixed methods is defined, the rationales for its use, the logic of mixed methods designs, how it combines with other methodological approaches and frameworks, and how quality of a mixed methods study is assessed.
- **Mixed methods research contexts:** The circumstances, including beliefs, background, environment, framework, setting, relationships, and research communities, that shape the practice of mixed methods research and in terms of which it can be fully understood and assessed.

THE ESSENCE OF MIXED METHODS RESEARCH

We begin with the discussion of the essence of mixed methods research to help you understand how it differs from other research approaches with which you may be familiar, such as quantitative research and qualitative research. We use two research scenarios to support this discussion and to illustrate the application of mixed methods research. Suppose you want to explore the experiences of learning science for African American girls from low socioeconomic status (SES) communities, or suppose you want to know how people make choices about what colorectal cancer screening method to use. To address these two scenarios, you could employ quantitative research methods such as surveys and identify the relationship between the key variables (e.g., low SES and girls' attitudes to science, or the relationship between a person's gender and race and the preferred method of screening). Alternatively, you could apply qualitative research methods and conduct individual interviews with a few low SES girls to learn about their experiences and needs with learning science or have focus group discussions with groups of individuals to explore the role of different factors in influencing people's decisions in choosing a colorectal cancer screening method. In each of these scenarios, you could consider conducting either a quantitative or a qualitative study to address specific research questions.

Instead of addressing these scenarios separately using a single research approach, you could instead apply the **mixed methods research** approach and integrate or mix quantitative and qualitative methods of data collection and analysis to address the research problem more fully and to obtain the answers to both quantitative and qualitative questions within a single study. Moreover, integrating quantitative and qualitative methods may help you reach more justifiable and more complete study conclusions than using quantitative or qualitative methods alone (Greene & Caracelli, 1997b). To better illustrate this point, we next consider two studies that used mixed methods research to address the discussed research situations.

Box 1.1 presents the abstract of Buck, Cook, Quigley, Eastwood, and Lucas's (2009) mixed methods study that explored the attitudes about learning science of African American girls from low SES communities. The researchers first collected quantitative data from the Modified Attitudes toward Science Inventory to create the attitudes-toward-science profiles of 89 girls based on their attitudes-toward-science scores. The profile information gleaned from this first quantitative phase was explored further in a second qualitative phase during which the researchers interviewed 30 girls from different profiles "to better understand and explain the reasons for the differences in profiles" (p. 391). Thus, addressing the problem in a sequential manner helped the researchers use "qualitative results to assist in explaining and interpreting quantitative findings" (p. 392).

Box 1.1

Abstract of Buck et al.'s (2009) Mixed Methods Study of Low Socioeconomic Status African American Girls' Attitudes to Learning Science

Abstract

The purpose of this study was to increase the science education community's understanding of the experiences and needs of girls who cross the traditional categorical boundaries of gender, race and socioeconomic status in a manner that has left their needs and experience largely invisible. A first of several in a series, this study

sought to explore how African American girls from low SES communities position themselves in science learning. We followed a mixed methods sequential explanatory strategy, in which two data collection phases, qualitative following the quantitative, were employed to investigate 89 African-American girls' personal orientations towards science learning. By using quantitative data from the Modified Attitudes toward Science Inventory to organize students into attitude profiles and then sequentially integrating the profile scores with year-long interview data, we found that the girls' orientations towards science were best described in terms of definitions of science, importance of science, experiences with science, and success in science. Therefore, our mixed method analysis provided four personality orientations which linked success in school and experiences with science to confidence and importance of science and definitions of science to value/desire. In our efforts to decrease the achievement gap, we concluded there should be more emphasis on conceptual understanding and problem-solving skills, while still being cognizant of the danger of losing the connection between science and society which so often plagues achievement focused efforts. Our continued efforts with this group of girls will center on these instructional techniques with the goal of addressing the needs of all science learners.

Source: Buck, G., Cook, K., Quigley, C., Eastwood, J., & Lucas, Y. (2009). Profiles of urban, low SES, African American girls' attitudes toward science: A sequential explanatory mixed methods study. *Journal of Mixed Methods Research*, 3(4), 386–410.

Now consider the abstract of a mixed methods study of factors influencing choices for colorectal cancer screening conducted by Ruffin, Creswell, Jimbo, and Fetters (2009) and presented in Box 1.2. In this study, the researchers simultaneously collected and analyzed quantitative survey data and qualitative focus group data from 93 individuals who were 50 years of age or older and reported not having been screened for colorectal cancer in the past 10 years. The researchers interpreted the two sets of quantitative and qualitative results together because by integrating the results “a more robust and complete understanding is possible [rather] than the use of either data source alone” (p. 80).

Box 1.2**Abstract of Ruffin et al.'s (2009) Mixed Methods Study of Factors Influencing Choices for Colorectal Cancer Screening****Abstract**

We investigated factors that influence choice of colorectal cancer (CRC) screening test and assessed the most- and least-preferred options among fecal occult blood testing (FOBT), flexible sigmoidoscopy, colonoscopy, and double contrast barium enema among adults with varied race, gender, and geographic region demographics. Mixed methods data collection consisted of 10 focus group interviews and a survey of the 93 focus group participants.

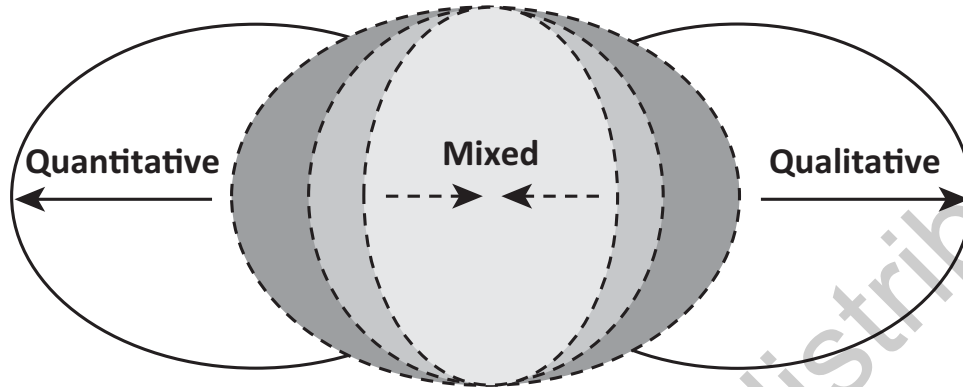
Participants were ≥ 50 years of age and reported not having been screened for colorectal cancer in the last ten years. Analyses examined differences by race, gender, and geographic location. Participants had modest knowledge about CRC and there were fewer correct answers to knowledge questions by African Americans. Participants recognized value of early detection, and identified health symptoms and their doctor's recommendation as influential for obtaining CRC screening. They chose colonoscopy and FOBT as the most preferred tests, while barium enema was least preferred. The analysis revealed intra-group variations in preference, though there were no significant differences by race, gender, or location. Openness of discussing this sensitive topic, lack of knowledge about colorectal cancer and screening costs, and diversity of preferences expressed within study groups suggest the importance of patient-physician dialogue about colorectal cancer screening options. New approaches to promoting colorectal cancer screening need to explore methods to facilitate patients establishing and expressing preferences among the screening options.

Source: Ruffin, M.T., IV, Creswell, J.W., Jimbo, M., & Fetters, M.D. (2009). Factors influencing choices for colorectal cancer screening among previously unscreened African and Caucasian Americans: Findings from a triangulation mixed methods investigation. *Journal of Community Health, 34*(2), 79–89.

As you can see from these two examples of mixed methods studies, by capitalizing on the strengths of each quantitative and qualitative method, researchers can produce stronger and more credible studies that can yield both complementary and corroborating evidence about the research problem of interest. Additionally, integrating quantitative and qualitative methods within one study can help researchers exclude or minimize potential alternative explanations of the results, while at the same time provide enough information to explain the divergent aspects of the studied phenomenon. Johnson and Turner (2003) referred to this advantage of mixed methods as a **fundamental principle of mixed methods research**. In their words, “Methods should be mixed in a way that has complementary strengths and nonoverlapping weaknesses” (p. 299).

Therefore, understanding this fundamental principle of mixed methods research is important for you to understand the essence of the mixed methods approach. As it is clear from Johnson and Turner’s (2003) explanation of this principle, the idea of the integration or mixing of quantitative and qualitative methods is central to mixed methods research. **Integration or mixing** is an explicit interrelating of the quantitative and qualitative components within a study. Figure 1.1 presents our conceptual view of mixed methods research that highlights this integration aspect.

Three overlapping spheres symbolize three approaches to research: quantitative, qualitative, and mixed. **Quantitative research** examines the relationships among variables by collecting and analyzing numeric data expressed in numbers or scores using standardized measurement instruments. **Qualitative research** focuses on exploring individuals’ experiences with a phenomenon of interest by collecting and analyzing narrative or text data expressed in words and images using broad open-ended questions. Mixed methods research is depicted by several nested, dashed, shaded spheres of different tones and is positioned in the center to capture where the quantitative and qualitative spheres connect or merge with each other. Different dashed shaded spheres represent different degrees of integration of the qualitative and quantitative methods in a mixed methods study, which may vary from study to study depending on the specific research purpose—for example, ranging from a more complete integration shown by the larger, dark shaded sphere to a limited integration reflected by the small, light shaded sphere. The direction of the arrows indicates whether the study is a *mono-method study*—that is, straight quantitative or qualitative (solid horizontal arrows in quantitative and

Figure 1.1 Conceptualization of Mixed Methods Research

SOURCE: Adapted from Ivankova, N. V. (2015). *Mixed methods applications in action research: From methods to community action* with permission of SAGE Publications, Inc.

qualitative spheres point in opposite directions) or whether the study is a mixed methods study (dashed horizontal arrows point to each other indicating connecting or merging of the quantitative and qualitative spheres).

THE FIELD OF MIXED METHODS RESEARCH

The advantages of mixed methods research for addressing complex study purposes within the boundaries of a single study has led to its acceptance and application across disciplines and countries (Alise & Teddlie, 2010; Creswell, 2010; Ivankova & Kawamura, 2010; Plano Clark, 2010). Building from early writings in the 1970s and 1980s (e.g., Greene, Caracelli, & Graham, 1989; Reichardt & Cook, 1979), the mixed methods approach is now extensively applied in the social, behavioral, and health sciences. The utility, strength, and acceptance of mixed methods is emphasized by its recognition as the third research paradigm (Johnson & Onwuegbuzie, 2004), the third methodological movement (Teddlie & Tashakkori, 2003), the third research community (Teddlie & Tashakkori, 2009), and the third research approach (Creswell, 2014).

The expansion in the use and acceptance of mixed methods has occurred hand in hand with the growth of the **field of mixed methods research**. This field encompasses the body of literature and community of scholars that discusses and applies all aspects of mixed methods research. Signs of the field's growth abound with mixed methods textbooks and reference books, including