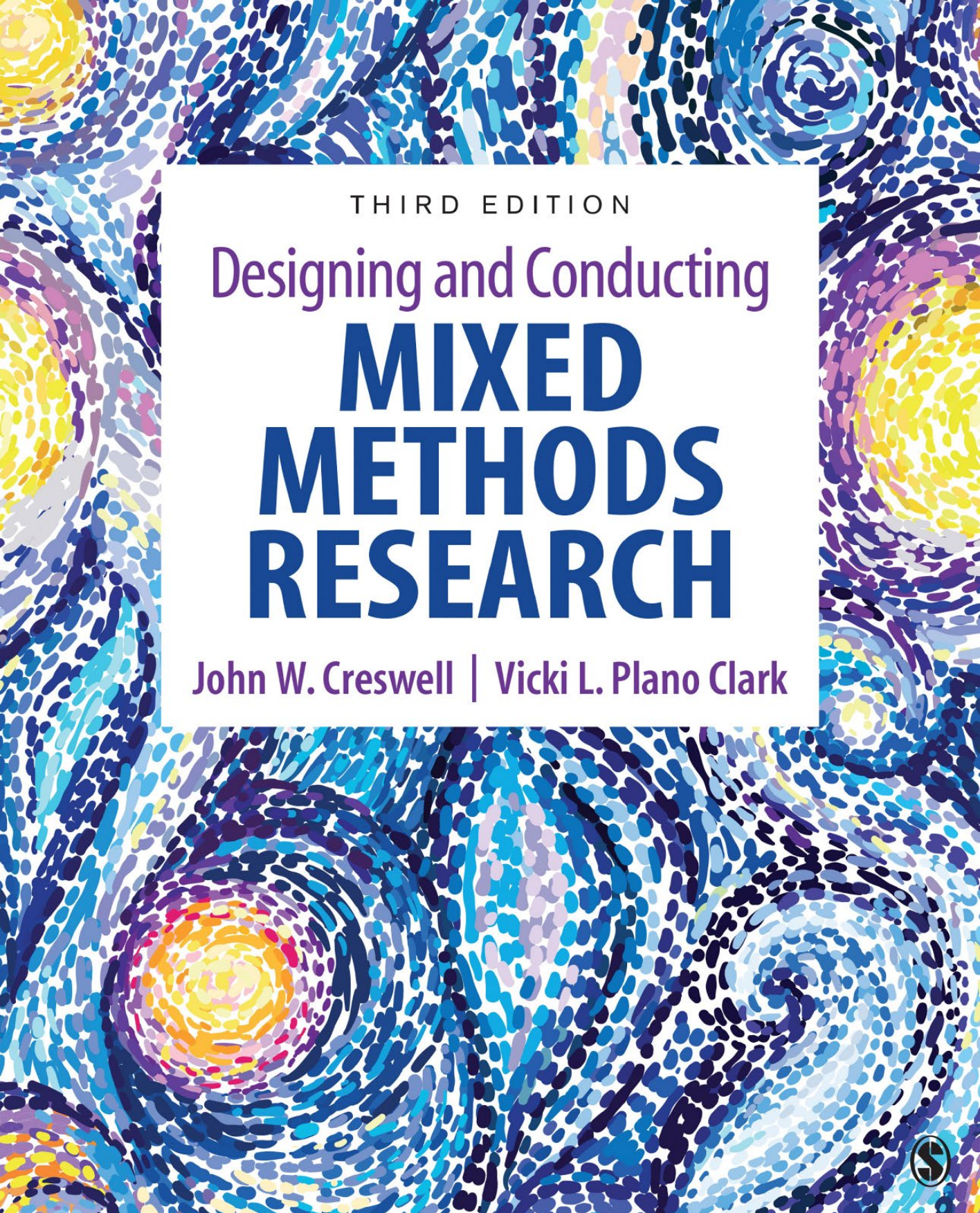
THIRD EDITION
Designing and Conducting
MIXED METHODS RESEARCH
John W. Creswell | Vicki L. Plano Clark

PRAISE FOR THE THIRD EDITION

"This updated edition provides thoughtful consideration to how the field of mixed methods research has changed, including how the authors' own definitions and typologies have refined. It also provides a discussion of a diverse array of empirical studies from prominent and emerging mixed methods scholars, highlighting the strength and potential of this field for social and behavioral sciences."—**Peggy Shannon-Baker**, Bryn Mawr College

"The authors compellingly described the evolution or adjustment of their thinking about mixed methods design. They achieved their goal of advancing the typology of mixed methods core designs in both a parsimonious and pragmatic manner. Teaching and learning about mixed methods designs will be enhanced by the extraordinary work of these authors!"—**Susan Sweat Gunby**, Mercer University

"This is a powerful volume that assists doctoral students facing the writing of a dissertation and other professionals in the field of research. I would not undertake a major evaluation without first reviewing the steps laid out so clearly in this book."—**Joseph Drew**, Morgan State University

"This is one of the most complete and comprehensive textbooks available on mixed methods research. A must-have for novice to expert researchers."—**Regardt J Ferreira**, Tulane University

"Creswell and Plano Clark do excellent work in showing the evolution of mixed methods research. One of the highlights of this edition is the addition of scaffolds that guide writing sections of a mixed methods study."—**Senay Purzer**, Purdue University

Designing and Conducting Mixed Methods Research

Third Edition

This book is dedicated to all of my students and audience members who have participated in my classes and in my workshops on mixed methods. Thanks for your advice.

—John

This book is dedicated to Mark for all of his support, encouragement, friendship, and love. I thank him to the moon and back.

—Vicki

Designing and Conducting Mixed Methods Research

Third Edition

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PREFACE

PURPOSE OF THE BOOK

The basic idea of this book is to provide an introduction to the design and conduct of mixed methods research. In the past 15 years, we have seen a significant increase in interest in this approach to research. Although mixed methods has been employed in some disciplines and fields of study since the 1990s, its use has expanded rapidly to many social, behavioral, and health science fields and arenas for research across several countries. This is in distinct contrast to the state of affairs when we wrote the first edition, which was published in 2007. In earlier times, researchers had little knowledge about this developing approach called *mixed methods*. Today, from our workshops, presentations, and classes, we know that people no longer wonder what this approach is and question whether it is a legitimate model of inquiry. Their interests now have shifted toward the procedures of research—how to conduct a mixed methods study—and to the value mixed methods adds to their knowledge about complex problems. To this end, we have maintained our original premise for this book: Those reading about mixed methods need to know the steps in the process of designing and conducting a study, and they are often curious about the actual procedures involved and the many new techniques and strategies that have unfolded in the mixed methods field.

This book is an introduction as well as a detailed examination of how to conduct a mixed methods study. We fold into our discussion many examples of recently published mixed methods empirical articles as well as methodological discussions. We attempt to highlight the most important steps in mixed methods research through the ample use of bullet points, and we introduce the reader to some of the latest writings in the field. Since the 2007 inception of the *Journal of Mixed Methods Research* (*JMMR*), which we helped to cofound and coedit, we have reviewed hundreds of manuscripts for publication from diverse disciplines, from different parts of the world, and from varied perspectives about this form of inquiry. From these articles and from our personal experiences in mixed methods research teams, classes, and presentations, we present a detailed rendering of how to design and conduct a mixed methods study. We hope that the beginning mixed methods researcher will find useful techniques for designing his or her own study and that the experienced researcher will see applicable summaries of the latest thinking about mixed methods.

AUDIENCE FOR THE BOOK

The primary audience for this book is those who seek to conduct rigorous, systematic mixed methods studies. These individuals may be established researchers or graduate students who have some experience with both qualitative and quantitative research. They may also be writers in the field of mixed methods who hopefully will see this book as including state-of-the-art ideas. Policymakers and practitioners also will find this book a useful introduction to mixed methods as they review published studies or establish their own mixed methods projects. With the discipline expansion of mixed methods application, this text should be applicable across many social, behavioral, and health science fields, and we have attempted to incorporate examples from such diverse areas as sociology, psychology, education, management, marketing, social work, family studies, communication studies, leadership, family medicine, mental health, and nursing. Finally, we see this book as core reading in a mixed methods research course—a type of course that is increasingly being found on college and university campuses. We will use many of the tables and figures in this book in our future workshops on mixed methods both in the United States and abroad.

BOOK FEATURES

We have maintained many of the book features found in the second edition. The general layout of the book follows the process of conducting a study; it begins with the initial assessment as to whether mixed methods is the best approach to study a research problem, moves to the philosophical assumptions and theoretical stances that guide research, and continues on to developing an introduction, collecting and analyzing data, and writing the proposal and final report for a study. To augment this process approach, we highlight seven popular designs in mixed methods research and provide examples of good illustrations of published studies that portray each of the designs. Each step in the process is considered from the perspective of the different mixed methods designs. This is an approach that we use in our workshops and teaching.

In this work we do not favor either quantitative or qualitative research but instead see a balance between these two approaches. Accordingly, we offer examples of both quantitatively oriented mixed methods studies and qualitatively oriented mixed methods projects throughout the text. We also balance the two approaches by intentionally discussing quantitative approaches first in some chapters and qualitative approaches first in others. We conclude each chapter by providing a summary of the chapter's content as well

as suggestions for practical activities to make concrete the major points of the chapter. One activity in particular threads throughout the book: We ask the reader to incorporate the ideas from the chapter into the active development of a mixed methods study. At the end of each chapter, we provide suggested readings so the ideas presented in the chapter might be further studied. We have attempted to define key terms throughout the text and provide a glossary of these terms at the end of the book to help readers understand the unique language of mixed methods research.

We have maintained an emphasis on using examples from the literature to augment our discussion of the steps in the design process. From our experience of reading and reviewing many hundreds of mixed methods studies, we have found great value in examining the practice of other researchers as they implement and report on the mixed methods designs they used in their research studies. It is also helpful for researchers planning to use mixed methods to locate applicable studies published within their discipline in order to identify the language and designs that are common in that discipline. Researchers can also cite these studies as examples of the design in the methods section of their own proposals and reports. In addition, researchers who examine examples of mixed methods designs learn about different procedures used when conducting mixed methods research and are better able to anticipate challenges that can occur with a specific design. Published studies also provide models for how to write up and report the results of a specific mixed methods design.

In this third edition we have updated and expanded the references to include more websites and resources that readers should find helpful. A new companion website will also be available at https://study.sagepub.com/creswell3e.

The open-access **Student Study Site** includes the following:

- Full-text **SAGE journal articles** that have been carefully selected to expand upon each chapter.
- Exclusive content curated specifically for this text from the **SAGE Research Methods platform**, including case studies and premium video, allows for further exploration into important topics.

Password-protected **Instructor Resources** include the following:

- A sample syllabus assists in planning a course using *Designing and Conducting Mixed Methods Research*, Third Edition.
- Editable, chapter-specific **Microsoft® PowerPoint® slides** offer you complete flexibility in easily creating a multimedia presentation for your course.

NEW FEATURES ADDED TO THE THIRD EDITION

Since the writing of the second edition to this book, we have both authored other mixed methods books that summarize the latest thinking on mixed methods research (Creswell, 2014; Plano Clark & Ivankova, 2016). Thus, we drew on our ever-expanding knowledge of mixed methods as we made revisions in this book.

Specifically, here are the changes you will find in this third edition:

- We updated references to books. Authors in the field of research methods and mixed methods are continually updating editions of their books. We wanted to include the latest versions so the reader can see current thinking from authors writing about research methods today.
- We have included new examples from recent journal articles published since we issued the second edition of this book. These examples have been drawn from diverse disciplines and fields so they will be useful to a broad audience of scholars. New articles are cited throughout the text, and we include four as new appendices.
- A major shift in this book from previous editions involves how we treat mixed methods designs. We now find it most useful to focus on three core designs—the convergent design, the explanatory sequential design, and the exploratory sequential design—that represent the basic forms of mixed methods designs, as discussed in Chapter 3. These core designs have been applied in many fields and methodological approaches. So we have created a new chapter—Chapter 4—that takes these core designs and applies them to additional approaches and frameworks, such as intervention trials, case studies, participatory-social justice studies, and program evaluations. These four approaches certainly do not exhaust the potential applications of mixed methods, but they represent many uses of the core designs apparent in published mixed methods studies today. The research decisions related to these seven designs are now delineated throughout the discussions of the research process (Chapters 5–8).
- Integration, or the bringing together of the quantitative and qualitative data and results, is the centerpiece of mixed methods research. Now, in retrospect, we realize that this aspect of mixed methods is the most confusing and troubling to researchers. Accordingly, we emphasize integration throughout the book. Specifically, we added a passage about integration to the discussion of each type of design in order to make this step in the research as explicit and practical as possible. We also

expanded the discussion of integration considerably within the treatment of data analysis in Chapter 7.

- Another topic we give more attention to in this edition is the use of theory and conceptual frameworks in mixed methods research. To us, the use of a theoretical model or framework can differ depending on the type of design. When we discuss each design, we now reflect on how theory or framework might be used in the design to make the study more useful and practical.
- Mixed methods procedures have expanded considerably in the last ten years, and new ideas continue to emerge. Some scholars may not be aware they are using some of the latest techniques. Other scholars may not know that specific procedures are available that, if used, will add to the rigor and systematic presentation of their mixed methods study. Accordingly, we have deleted the summary and recommendations passage found in the last chapter of the second edition. In its place we have inserted a specific discussion about the current advances within mixed methods research and suggested techniques and strategies that might make a mixed methods study more sophisticated and state of the art.
- We also felt that the last chapter might best conclude by pulling together the key elements and decisions involved in the core designs by incorporating all of the steps in the process of research (from the title to the interpretation). In this way, the reader will be able to see the entire process from beginning to end for each core design. Many chapters provide the segments of the process; the final chapter now summarizes the entire process in one table.

ACKNOWLEDGMENTS

Our work and this book have benefited greatly from the contributions of many. We begin by thanking our acquisitions editors at SAGE Publishing, Vicki Knight (first and second editions) and Helen Salmon (third edition), for their encouragement, coordination, and support throughout the project. We are grateful to Chelsea Neve, Kelly DeRosa, and Shannon Kelly for their careful attention to details throughout the production process of this edition. We also thank the entire staff at SAGE for their encouragement of the field of mixed methods research. As the reader can see in our many references, both of us have collaborated extensively with staff and colleagues who worked with our Office of Qualitative and Mixed Methods Research (OQMMR) at the University of Nebraska–Lincoln and who work at our new institutions, the University of Michigan Mixed Methods Research and Scholarship Program in Family Medicine and at the University of Cincinnati. We want to highlight the importance of

our collaboration with Ron Shope, Manijeh Badiee, Amanda Garrett, Sherry Wang, Dr. Michael Fetters, Nataliya Ivankova, and Lori Foote. We are also fortunate to have the input of the many individuals whom we have collaborated with in family medicine at the University of Michigan; at the Health Services Research Center of the Department of Veterans Affairs, Ann Arbor, Michigan; and at the University of Nebraska Medical Center. We are also indebted to the many workshop participants and students over the years who have provided useful ideas and questions about mixed methods. These individuals are located in many fields and in many parts of the United States as well as the United Kingdom, South Africa, Australia, Canada, and other countries across the globe.

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This is an exciting time in the evolution of the field that has become mixed methods research. We hope this book is a useful tool for researchers to use in learning about this approach to research and in conducting their own mixed methods studies.

ABOUT THE AUTHORS

John W. Creswell, PhD, is codirector of the Michigan Mixed Methods Research and Scholarship Program and an adjunct professor of family medicine at the University of Michigan. He has authored numerous articles and 28 books (including new editions) on mixed methods research, qualitative research, and research design. While at the University of Nebraska–Lincoln, he held the Clifton Endowed Professor Chair; served as director of a mixed methods research office; founded the SAGE journal, the *Journal of Mixed Methods Research*; and was a consultant to the Veterans Administration health services research center in Ann Arbor, Michigan. He was a senior Fulbright scholar to South Africa in 2008 and to Thailand in 2012. He co-led a national working group on mixed methods practices at the National Institute of Health in 2011, served as a visiting professor at Harvard's School of Public Health in 2013, and received an honorary doctorate from the University of Pretoria, South Africa, in 2014. In 2014 he also served as president of the Mixed Methods International Research Association (MMIRA).

Vicki L. Plano Clark, PhD, is an associate professor in the research methodologies unit of the University of Cincinnati's School of Education. Her scholarship aims to delineate useful designs for conducting mixed methods research, examine procedural issues associated with achieving meaningful integration within these designs, and consider larger questions about the personal, interpersonal, and social contexts for the adoption and use of mixed methods. She has coauthored several books including most recently the book *Mixed Methods Research: A Guide to the Field* (2016; Sage) with Nataliya V. Ivankova. She is a founding coeditor of the Mixed Methods Research Series for SAGE Publishing. She also currently serves as an associate editor for the *Journal of Mixed Methods Research* (*JMMR*) and as 2017–2019 chair for the Mixed Methods Research Special Interest Group of the American Educational Research Association. In 2011 she co-led the development of *Best Practices for Mixed Methods in the Health Sciences* for the National Institutes of Health Office of Behavioral and Social Sciences Research. She engages in research and evaluation projects on a wide array of topics, such as the management of cancer pain, the effectiveness of school reform initiatives, and the quality of communication between attorneys and their clients.

AUTHORS' NOTE: We selected the cover image to illustrate the artistry involved in mixed methods research. The many colors represent different methods and the many points represent different data and results. The different colors and points come together to create a powerful artistic picture just as the different methods and results are combined to create new insights and understandings in a mixed methods study.

1

THE NATURE OF MIXED METHODS RESEARCH

What is it about the nature of mixed methods that draws researchers to its use? Its popularity can be easily documented through journal articles, conference proceedings, books, and the formation of a professional association, a journal, and special interest groups (Creswell, 2011b, 2014; Plano Clark, 2010). It has been called the "third methodological movement" following the developments of first quantitative and then qualitative research (Tashakkori & Teddlie, 2003a, p. 5), the "third research paradigm" (Johnson & Onwuegbuzie, 2004, p. 15), and "a new star in the social science sky" (Mayring, 2007, p. 1). Why does it merit such superlatives? One answer is that mixing methods is an intuitive way of doing research that is constantly being displayed throughout our everyday lives.

Consider for a moment how many professionals go about their practice. Physicians consider quantitative lab results along with a patient's qualitative life history and symptoms when making a diagnosis and treatment plan. Financial consultants analyze market trends along with stories of individual decision making when offering advice. Politicians use both statistical trends from their districts and the personal stories of their constituents when choosing a course of action. Examples of combining quantitative and qualitative information pervade many aspects of professional life. Listen closely to television broadcasters report about hurricanes or about the votes cast in elections. The trends are again supported by individual stories. Or listen to commentators at sporting events. There is often a play-by-play commentator who describes the somewhat linear unfolding of the game (a quantitative perspective) and then the additional commentary by the "color" announcer, who tells us about the individual stories and highlights of the personnel on the playing field (a qualitative perspective). Again, both quantitative and qualitative data come together in these broadcasts.

In these instances, we see mixed methods thinking in ways that Greene (2007) called the "multiple ways of seeing and hearing" (p. 20). Multiple ways are visible in everyday

life, and mixed methods research provides multiple ways to address a research problem. Other factors also contribute to this interest in mixed methods. Researchers recognize it as an accessible approach to inquiry. They have research questions (or problems) that can best be answered using mixed methods, and they see the value of using it—as well as the challenges it poses.

Building on one's intuition for mixing quantitative and qualitative information, the first step to using mixed methods in research is to understand the nature of mixed methods research. This chapter reviews several preliminary considerations necessary before a researcher designs a mixed methods study. These considerations include

- defining the nature of mixed methods research,
- examining examples of mixed methods studies,
- recognizing what types of research problems call for a mixed methods study,
- knowing the advantages of using mixed methods, and
- acknowledging the challenges of using mixed methods.

DEFINING MIXED METHODS RESEARCH

Several definitions for mixed methods have emerged over the years that incorporate various elements of methods, research processes, research purpose, and philosophy. These different stances are summarized in Table 1.1.

An early definition of mixed methods came from writers in the field of evaluation. Greene, Caracelli, and Graham (1989) emphasized the mixing of methods and the disentanglement of methods and philosophy (i.e., paradigms) when they said,

> In this study, we defined mixed-method designs as those that include at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words), where neither type of method is inherently linked to any particular inquiry paradigm. (p. 256)

Ten years later, the definition shifted from mixing two methods to combining all phases of the research process—a methodological orientation (Tashakkori & Teddlie, 1998). Included within this orientation would be philosophical (i.e., worldview) positions, methods, and the inferences or interpretations of results. Thus, Tashakkori and Teddlie (1998) defined mixed methods as the combination of "qualitative and quantitative approaches in the methodology of a study" (p. ix). These authors reinforced this methodological orientation in their preface to the *SAGE Handbook of Mixed Methods in*

TABLE 1.1 ■ Authors and the Focus or Orientation of Their Definition of Mixed Methods

Author(s) and Year	Focus of the Definition
Greene, Caracelli, and Graham (1989)	Methods
Tashakkori and Teddlie (1998; 2003a)	Methodology (the process of research)
Johnson, Onwuegbuzie, and Turner (2007)	Viewpoints (philosophy), methods, and research purpose
Tashakkori & Creswell (2007b)	Methodology and methods
Greene (2007)	Multiple ways of seeing, hearing, and making sense of the social world
Creswell and Plano Clark (2007)	Methods, methodology, and philosophy
Creswell (2014)	Methods and core characteristics
Hesse-Biber (2015)	Methods and contested terrain

Source: Adapted from Creswell & Plano Clark (2011).

Social & Behavioral Research by writing, "Mixed methods research has evolved to the point where it is a separate methodological orientation with its own worldview, vocabulary, and techniques" (Tashakkori & Teddlie, 2003a, p. x).

In a highly cited *Journal of Mixed Methods Research* (*JMMR*) article, Johnson, Onwuegbuzie, and Turner (2007) sought consensus on a definition by suggesting a composite understanding based on 19 different definitions provided by 21 highly published mixed methods researchers. The authors commented about the definitions, citing the variations in them, from what was being mixed (e.g., methods, methodologies, or types of research); the place in the research process in which mixing occurred (e.g., data collection, data analysis); the scope of the mixing (e.g., from data to worldviews); the purpose or rationale for mixing (e.g., breadth, corroboration); and the elements driving the research (e.g., bottom-up, top-down, a core component). Incorporating these diverse perspectives, Johnson et al. (2007) ended with their composite definition:

> Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration. (p. 123)

In this definition, the authors did not view mixed methods simply as methods but more as a methodology that spanned viewpoints to inferences and that included the combination of qualitative and quantitative research. They incorporated diverse viewpoints but did not specifically mention paradigms or philosophy. Their purposes for mixed methods—breadth and depth of understanding and corroboration—meant they related the definition of mixed methods to a rationale for conducting it. Most importantly, perhaps, they suggested that there is a common definition that should be used.

When the call for paper submissions to the *JMMR* was first issued, we, as editors, felt that a general definition of mixed methods should be provided. Our approach incorporated both a general qualitative and quantitative research methodological orientation as well as a methods orientation. Our intent was also to cast our definition within accepted approaches to mixed methods, to encourage submissions as broad as possible, and to "keep the discussion open about the definition of mixed methods" (Tashakkori & Creswell, 2007b, p. 3). Hence, the definition announced in the first issue of the journal was as follows:

> [Mixed methods research is defined] as research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry. (Tashakkori & Creswell, 2007b, p. 4)

Then, Greene (2007) provided a definition of mixed methods that conceptualized this form of inquiry differently as a way of looking at the social world

> that actively invites [us] to participate in dialogue . . . multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished. (p. 20)

Defining mixed methods as "multiple ways of seeing" opens up broad applications beyond using it as only a research method. It can be used, for example, as an approach to think about designing documentaries (Creswell & McCoy, 2011) or as a means for "seeing" participatory approaches to HIV-infected populations in the Eastern Cape of South Africa (Olivier, de Lange, Creswell, & Wood, 2010).

In *The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry* (Hesse-Biber & Johnson, 2015), Hesse-Biber (2015) takes the position that the definition of mixed methods continues to be contested both within and outside the mixed methods community. However, she says that

> what most approaches to mixed methods have in common is the mixing of at least one qualitative and one quantitative method in the same research project or set of related projects (e.g., in a longitudinal study). (p. xxxix)

In 2007, in the first edition of this book, we provided a definition that had both a methods and a methodological orientation, while in the 2011 second edition, we included an emphasis on the priority of the quantitative and qualitative data in a study. Today, we are inclined to stress the intent of a study rather than the vague and often confusing priority. We still feel that a definition for mixed methods should incorporate many diverse viewpoints, however. In this spirit, we rely on a **definition of core characteristics of mixed methods research**. It is a definition we suggest in our teaching, workshops, and presentations on mixed methods research (Creswell, 2014). It combines a methods, research design, and philosophy orientation. It also highlights the key components that go into designing and conducting a mixed methods study; thus, it will be the one emphasized in this book. In mixed methods, the researcher

- collects and analyzes both qualitative and quantitative data rigorously in response to research questions and hypotheses,
- integrates (or mixes or combines) the two forms of data and their results,
- organizes these procedures into specific research designs that provide the logic and procedures for conducting the study, and
- frames these procedures within theory and philosophy.

These core characteristics, we believe, adequately describe mixed methods research. They have evolved from many years of reviewing mixed methods articles and determining how researchers use both quantitative and qualitative approaches in their studies.

EXAMPLES OF MIXED METHODS STUDIES

One way to better understand the nature of mixed methods research beyond a definition is to examine published studies in journal articles. Although philosophical assumptions often exist in the background of published mixed methods studies, the core characteristics of our definition can be seen in the following examples:

- A researcher collects data on quantitative instruments and on qualitative data reports based on focus groups to see if the two types of data show similar results but from different perspectives. (See the study of food safety knowledge, practices, and beliefs in Hispanic families with young children by Stenger, Ritter-Gooder, Perry, and Albrecht, 2014.)
- A researcher collects data using quantitative survey procedures and follows up with interviews of a few individuals who completed the survey to help explain the

reasons behind and meaning of the quantitative survey results. (See the study of fear of falling for community-dwelling elderly people who had recently fractured a hip by Jellesmark, Herling, Egerod, and Beyer, 2012.)

- A researcher explores how individuals describe a topic by conducting interviews, analyzing the information, and using the findings to develop a survey instrument. This instrument is then administered to a sample of a population to see if the qualitative findings can be generalized to a population. (See the study of graduate engineering student retention by Crede and Borrego, 2013.)
- A researcher conducts an experiment in which quantitative measures assess the impact of a treatment on an outcome. Before the experiment begins, the researcher collects qualitative data to help design the treatment, to design the standard care condition, and to better design strategies to recruit participants to the trial. (See the study of an acupuncture-based intervention for women experiencing low back pain during pregnancy by Bartlam et al., 2016.)
- A researcher wants to develop several in-depth analyses of cases—for example, small family medicine clinics. It is important to compare how these clinics treat patients' cardiovascular disease. The researcher collects quantitative data on patients from their health records and also gathers qualitative interview data from the doctors, nurses, and medical assistants. When these quantitative and qualitative data are compared, it is apparent that some practices have strong procedures and some weak procedures. Family medicine case clinics are selected for both categories of procedures, and conclusions are drawn about how they differ in treating patients. (See study by Shaw et al., 2013.)
- A researcher seeks to bring about change in understanding certain issues facing women. The researcher gathers data through instruments and focus groups to explore the meaning of the issues for women. It is a participatory form of inquiry in which the participants—the women—play a major role in helping to understand the problem. The larger understanding of change guides the researcher and informs all aspects of the study, from the issues being studied, to the data collection, to the call for reform at the end of the study. (See the study exploring student–athlete culture and understanding specific rape myths by McMahon, 2007.)
- A researcher seeks to evaluate a program that has been implemented in the community. The first step is to collect qualitative data in a needs assessment to determine what questions should be addressed. This is followed by the design of an instrument to measure the impact of the program. This instrument is then used to compare certain outcomes both before and after the program implementation.

Based on this comparison, follow-up interviews are conducted to determine why the program did or did not work. This multiphase mixed methods study is often found in long-term evaluation projects. (See the study of the long-term impacts of interpretive programs at a historical site by Farmer and Knapp, 2008.)

These examples all illustrate the collection and analysis of both quantitative and qualitative data, the integration or mix of the two types of data and results, and an underlying assumption that mixed methods research could be a useful approach to address important research problems.

WHAT RESEARCH PROBLEMS REQUIRE MIXED METHODS?

Authors of the example studies crafted their research as mixed methods projects based on their assumption that mixed methods could best address their research problems. An important preliminary consideration is recognizing the types of research problems best suited for mixed methods research. When preparing a research study employing mixed methods, the researcher needs to provide a rationale or justification for why mixed methods best addresses the topic and the research problem.

Not all situations justify the use of mixed methods. There are times when qualitative research may be best because the researcher aims to explore a problem, honor the voices of participants, map the complexity of the situation, and convey multiple perspectives of participants. At other times, quantitative research may be best because the researcher seeks to understand the relationship among variables or determine if one group performs better on an outcome than another group. In our discussion of mixed methods, we do not want to minimize the importance of choosing either a quantitative or qualitative approach when it is merited by the situation. Further, we would not limit mixed methods to certain fields of study or topics. Mixed methods research seems applicable to a wide variety of disciplines in the social, behavioral, and health sciences. Although some disciplinary specialists may select not to use mixed methods because of a lack of interest in qualitative or in quantitative research, most topic area problems can be addressed using mixed methods.

Instead of thinking about fitting different methods to specific content topics, we suggest thinking about fitting methods to different types of research problems (or questions). For example, we find a quantitative survey approach best fits the need to understand the views of participants in an entire population. A quantitative experiment approach best fits the need to determine whether a treatment works better than a control condition. Likewise, a qualitative ethnography approach best fits the need to understand how a culture-sharing group works. What situations, then, warrant an approach that combines

quantitative and qualitative research—a mixed methods inquiry? In general, **research problems suited for mixed methods** are those in which one data source may be insufficient. Further, results often need to be explained, exploratory findings need to be generalized, a primary experimental design needs to be expanded or enhanced, multiple cases need to be compared or contrasted, the participants need to be involved in the research, and/or a program needs to be evaluated. Over the years, authors in the mixed methods field have enumerated multiple reasons (also called rationales) for using mixed methods (Bryman, 2006). We will focus here on the major reasons.

A Need Exists to Obtain More Complete and Corroborated Results

We know that qualitative data provide a detailed understanding of a problem while quantitative data provide a more general understanding. This qualitative understanding arises out of studying a few individuals and exploring their perspectives in great depth, whereas the quantitative understanding arises from examining a large number of people and assessing responses to a few variables. Qualitative research and quantitative research provide different pictures, or perspectives, and each has its limitations. When researchers study a few individuals qualitatively, the ability to generalize the results to many is lost. When researchers quantitatively examine many individuals, the understanding of any one individual is diminished. Hence, the limitations of one method can be offset by the strengths of the other, and the combination of quantitative and qualitative data provides a more complete understanding of the research problem than either approach by itself.

There are several ways in which one data source may be inadequate. One type of evidence may not tell the complete story, or the researcher may lack confidence in the ability of one type of evidence to address the problem. The results from the quantitative and qualitative data may be contradictory, which would not be discovered by collecting only one type of data. Further, the type of evidence gathered from one level in an organization might differ from evidence examined from other levels. These are all situations in which using only one approach to address the research problem would be deficient. A mixed methods design best fits these problems. For example, when Shannon-Baker (2015) studied the experience of culture shock on undergraduate students participating in a short-term study abroad program, she collected both quantitative survey data and qualitative data in the form of reflective journals, self-portraits, and artist statements. Reflecting on the use of both forms of data to understand the problem because a single form alone would have been inadequate, she said,

> The implications of using limited approaches in any line of inquiry result in investigating a problem from only a single angle. As a result, we can only investigate

> information that is connected to those lines of inquiry. By instead engaging in multiple forms of inquiry, we can explore information that is not accessible through a single approach alone. (Shannon-Baker, 2015, p. 36)

A Need Exists to Explain Initial Results

Sometimes the results of a study may provide an incomplete understanding of a research problem and there is a need for further explanation. In this case, a mixed methods study is used, with the second database helping to explain the first. A typical situation is when quantitative results require an explanation as to what they mean. Quantitative results can net general descriptions of the relationships among variables, but the more detailed understanding of what the statistical tests or effect sizes actually mean is lacking. Qualitative data and results can help build that understanding. For example, Eckert (2013) conducted a mixed methods study investigating the extent to which measures of incoming teacher qualifications predict teacher efficacy and retention in high-poverty urban schools in the United States. The first, quantitative phase of the study tested the relationship among preparation, efficacy, and retention, while the second, qualitative phase consisted of interviews with beginning teachers in urban schools to explain the relationships among the variables. The rationale for using mixed methods to study this situation was stated as:

> To gain a greater understanding of the chain of evidence that links teacher preparation, teacher efficacy, and teacher retention, I conducted a mixed-methods sequential explanatory study, which involved the collection and analysis of quantitative data followed by the collection and analysis of qualitative data. . . . In regard to the chain of evidence, the quantitative phase of research established the linkages, whereas the qualitative phase brought nuance, context, and understanding to each link in the chain. (Eckert, 2013, p. 79)

A Need Exists to First Explore Before Administering Instruments

In some research projects, the investigators may not know the questions that need to be asked, the variables that need to be measured, and the theories that may guide the study. These unknowns may be due to the specific, remote population being studied (e.g., Native Americans in Alaska) or the newness of the research topic. In these situations, it is best to first explore qualitatively to learn what questions, variables, theories, and so forth need to be studied and then follow up with a quantitative study to generalize and test what was learned from the exploration. A mixed methods project is ideal

in these situations. The researcher begins with a qualitative phase to explore and then follows up with a quantitative phase to test whether the qualitative results generalize. For example, Mbuagbaw et al. (2014) studied the acceptability and readiness of a text-messaging program to improve adherence to therapy for individuals with the human immunodeficiency virus in Cameroon. Their study began with focus group interviews, and the themes from the focus groups were then used to develop an instrument that was administered to a second sample of clients to test the generalizability of the themes with the larger sample. The authors explained, "This design enhances our ability to generalise qualitative findings, develop questions to measure community acceptability/readiness and to facilitate collaboration between researchers with qualitative and quantitative backgrounds" (p. 3).

A Need Exists to Enhance an Experimental Study With a Qualitative Method

Experimental studies provide quantitative tests of the effectiveness of a treatment for producing certain outcomes. In some situations, a secondary qualitative research method can be added to an experimental study to provide an enhanced understanding of some aspect of the intervention. In this situation, the qualitative method can be embedded within a primary experimental methodology. For example, Donovan et al. (2002) conducted an experimental trial comparing the outcomes for three groups of men with prostate cancer receiving different treatment procedures. When the authors experienced difficulty recruiting participants, they added a qualitative component in which they interviewed the men to determine how best to recruit them into the trial (e.g., how best to organize and present the information). Toward the end of their article, the authors reflected on the value of this preliminary, smaller, qualitative component used to design procedures for recruiting individuals to the trial:

> We showed that the integration of qualitative research methods allowed us to understand the recruitment process and elucidate the changes necessary to the content and delivery of information to maximize recruitment and ensure effective and efficient conduct of the trial. (p. 768)

A Need Exists to Describe and Compare Different Types of Cases

Mixed methods research is being used to develop an in-depth understanding of one or more different types of cases followed by a comparison of the cases in terms of certain criteria. Often both the qualitative and quantitative data are gathered at the same time

and then brought together to form distinct cases for analysis. For example, Walton (2014) used a case study approach to examine a cross-sector partnership that was working to lead science education reform. In addition to her qualitative interviews and document analysis, she included a quantitative survey to measure the collaboration occurring among stakeholders within the partnership. She described the rationale for this approach by stating,

> The use of multiple data sources in this study facilitated a holistic understanding of the [partnership's] work and progress toward creating an infrastructure for change. . . . The quantitative findings enhanced the qualitative and promoted the creation of a more comprehensive and nuanced description of the case than would have been possible using qualitative interview data in isolation. (p. 70)

A Need Exists to Involve Participants in the Study

A situation may exist in which participants need to help shape the study so that useful change can occur in their lives. Their involvement may occur in many phases of the research, from identifying the problem to using the results to make changes. The participants are involved because the researchers need to understand the detailed nuances of the problem or need the participants' help to implement the research findings that will impact people or communities. In these cases, the researcher gathers both quantitative and qualitative data to best engage individuals and bring about change. For example, in a study of the transition of care for homeless individuals from the hospital to a shelter, Greysen, Allen, Lucas, Wang, and Rosenthal (2012) presented data to participants in the study and key stakeholders in the community. These individuals became involved in discussing the accuracy of the findings and recommendations for hospitals and shelters. The authors commented, "This feedback process was critical for shaping our interpretations and presentation of data collected from study participants in the context of the community to which they belong" (p. 1486).

A Need Exists to Develop, Implement, and Evaluate a Program

In projects that span several years and have many components, such as evaluation studies, researchers may need to connect several studies to reach an overall objective. These studies may involve projects that gather both quantitative and qualitative data simultaneously and gather the information sequentially. We can consider them multiphase or multiproject types of mixed methods studies. These projects often involve teams of researchers working together over many phases of the project. For example,

Peterson et al. (2013) conducted a multiphase evaluation study to develop and implement an intervention aimed at motivating behavior change for individuals with chronic diseases. To understand the individuals' values and beliefs, they started by conducting a qualitative study in the first phase. Based on the qualitative results, they refined and pilot tested the intervention in the next phase. In the final phase the team tested the effect of the intervention for different groups using randomized controlled trials. Peterson et al. (2013) presented a figure of the three phases of their research over 5 years and described the need for this multiphase translational research approach this way: "By integrating qualitative and quantitative methods and findings into the study design, researchers can gain deeper insight into the participant's point of view, explore complex social phenomena, and effectively tailor intervention approaches" (p. 218).

These scenarios illustrate situations in which the problem is best studied using mixed methods. This discussion begins to lay the groundwork for understanding the designs of mixed methods that will be discussed later and the reasons authors cite for undertaking a mixed methods study. Although we cite a single reason for using mixed methods in each illustration, many authors cite multiple reasons, and we recommend that aspiring (and experienced) researchers begin to take note of these many rationales in published studies.

WHAT ARE THE ADVANTAGES OF USING MIXED METHODS?

Understanding the nature of mixed methods involves more than knowing its definition and when it should be used. In addition, at the outset of selecting a mixed methods approach, researchers need to know the advantages that accrue from using it so they can convince others of these advantages. We now enumerate some of the advantages.

Mixed methods research provides a way to harness strengths that offset the weaknesses of both quantitative and qualitative research. This has been the historical argument for mixed methods research for more than 30 years (e.g., see Jick, 1979). One might argue that quantitative research is weak in understanding the context or setting in which people live. Also, the voices of participants are not directly heard in quantitative research. Further, quantitative researchers are in the background, and their own personal biases and interpretations are seldom discussed. Qualitative research makes up for these weaknesses. On the other hand, qualitative research is seen as deficient because of the personal interpretations made by the researcher, the ensuing bias created by this, and the difficulty in generalizing findings to a large group because of the limited number of participants studied. Quantitative research, it is argued, does not have these weaknesses. Thus, the strengths of one approach make up for the weaknesses of the other.

Mixed methods research provides more evidence for studying a research problem than either quantitative or qualitative research alone. Researchers are able to use all of the tools of data collection available rather than being restricted to those types typically associated with quantitative research or qualitative research.

Mixed methods research helps answer questions that cannot be answered by quantitative or qualitative approaches alone. For example, "Do participant views from interviews and from standardized instruments converge or diverge?" is a mixed methods question. Others would be, "In what ways do qualitative interviews explain the quantitative results of a study?" (using qualitative data to explain the quantitative results) and "How can a treatment be adapted to work with a particular sample in an experiment?" (exploring qualitatively before an experiment begins). To answer these questions, quantitative *or* qualitative approaches would not provide a satisfactory answer. The array of possible mixed methods questions will be explored further in the discussion in Chapter 5.

Mixed methods research offers new insights that go beyond separate quantitative and qualitative results. By combining the approaches, researchers gain new knowledge that is more than just the sum of the two parts. As Fetters and Freshwater (2015) suggested, mixed methods research provides the research equivalent of the equation 1 + 1 = 3.

Mixed methods research provides a bridge across the often adversarial divide between quantitative and qualitative researchers. We are social, behavioral, and human sciences researchers first, and divisions between quantitative and qualitative research only serve to narrow the approaches and the opportunities for collaboration.

Mixed methods research encourages the use of multiple worldviews, or paradigms (i.e., beliefs and values), rather than the typical association of certain paradigms with quantitative research and others with qualitative research. It also encourages us to think about paradigms that might encompass all of quantitative and qualitative research, such as pragmatism. These paradigm stances will be discussed further in the next chapter.

Mixed methods research is practical in the sense that the researcher is free to use all methods possible to address a research problem. It is also practical because individuals tend to solve problems using both numbers and words; by combining inductive and deductive logic through abductive thinking (Morgan, 2007); and by employing skills in observing people as well as by recording behavior. It is natural, then, for individuals to employ mixed methods research as a preferred mode for understanding the world.

Mixed methods research enables scholars to produce multiple written publications from a single study. These publications may include a quantitative article (from the quantitative strand of the study), a qualitative article (from the qualitative strand), an overview article about the entire mixed methods study, and a methodological article about how the study advances our understanding of mixed methods research. In an era

in which faculty (and students) need multiple publications, mixed methods research provides this opportunity.

Mixed methods research also helps researchers develop broader skillsets. Students using mixed methods emerge from their program with some expertise in multiple forms of research methods—quantitative methods, qualitative methods, and mixed methods. In short, they have enhanced their toolkit of skills to address research questions, to become productive members of mixed methods teams, and to be able to teach using multiple methods.

WHAT ARE THE CHALLENGES IN USING MIXED METHODS?

Mixed methods is not the answer for every researcher or every research problem. Its use does not diminish the value of conducting a study that is exclusively either quantitative or qualitative. It does, however, require researchers to have certain skills, time, and resources for extensive data collection and analysis and to be able to educate others who may be less familiar with the basic ideas of mixed methods research.

The Question of Researcher Skills

We believe that mixed methods is a realistic approach if the researcher has the requisite skills. We strongly recommend that researchers first gain experience with both quantitative research and qualitative research separately before undertaking a mixed methods study. At a minimum, researchers should be acquainted with the data collection and data analysis procedures of both quantitative and qualitative research. This point was emphasized in our definition of mixed methods. Researchers also need to be aware of general ethical considerations involved with conducting research with human participants.

In terms of quantitative research skills, mixed methods researchers should be familiar with common methods of collecting quantitative data, such as using measurement instruments and administering closed-ended attitudinal scales. Researchers need an awareness of the logic of hypothesis testing and the ability to use and interpret statistical analyses, including common descriptive and inferential procedures available in statistical software packages. Finally, researchers need to understand essential issues of rigor in quantitative research, including reliability, validity, experimental control, bias, and generalizability. In later chapters we will delve into what constitutes a rigorous quantitative approach.

A similar set of qualitative research skills is necessary. Researchers should be able to identify the central phenomenon they are exploring in their study; to pose exploratory,

meaning-oriented research questions; and to value participants as the chief sources of information. Researchers should be familiar with common methods of collecting qualitative data, such as semi-structured or unstructured interviews using open-ended questions and qualitative observations. Researchers need basic skills in analyzing qualitative text data, including coding text and developing themes and descriptions based on these codes, and should be acquainted with a qualitative data analysis software package. Finally, it is important that researchers understand essential issues of quality in qualitative research, including credibility, trustworthiness, and common validation strategies.

Finally, those undertaking this approach to research should have a solid grounding in mixed methods research, including knowledge of procedures for integrating or combining quantitative and qualitative data. This requires reading the literature on mixed methods that has accumulated since the late 1980s and noting the best procedures and the latest techniques for conducting a good inquiry. It may necessitate taking courses in mixed methods research that are available both online and in residence on many campuses. It may mean also apprenticing with someone familiar with mixed methods who can provide an understanding of the skills involved in conducting this form of research.

The Question of Time and Resources

Even when researchers have basic quantitative and qualitative research skills, they should ask themselves if a mixed methods approach is feasible given time constraints and resources. Mixed methods research involves collecting more types of data and analyzing more types of information than either quantitative or qualitative research alone. Thus, time and resources are important issues to consider early in the planning stage. Researchers might ask themselves the following questions:

- Is there sufficient time to collect and analyze two different types of data?
- Are there sufficient resources to collect and analyze both quantitative and qualitative data?
- Are the skills and personnel available to complete this study?

Mixed methods researchers need to consider the lengthy time required to gain approval for the study, to obtain access to participants, and to complete the data collection, analysis, and integration. Researchers should keep in mind that qualitative data collection and analysis often require more time than what is needed for quantitative data. The length of time required for a mixed methods study is also dependent on whether the study will be

using a one-phase, two-phase, or multiple-phase design. Researchers need to think about the expenses that will be part of the study. These expenses may include, for example, printing costs for quantitative instruments, recording and transcription costs for qualitative interviews, and the cost of quantitative and qualitative data analysis software programs.

Researchers need to think carefully about how they can manage the increased demands associated with mixed methods designs. For students who are expected to work independently, this means carefully planning the scope of the study to keep it manageable. Researchers who are working on large projects should consider working in teams to manage the demands, and team research has increasingly become more popular as part of interdisciplinary investigations (O'Cathain, Murphy, & Nicholl, 2008a). A team has the advantage of bringing together individuals with diverse methodological and content expertise, and tasks can be divided according to the quantitative or qualitative skills of individuals. Working with a team can be a challenge, however. It can increase the costs associated with the research, and individuals with the necessary skills need to be located.

Leadership on these teams is important. Team leaders need to create and maintain successful collaboration among team members and spend time coordinating the project. Important considerations include how leaders will reconcile methodological differences among team members; what the appropriate team membership should be that represents quantitative, qualitative, and mixed methods orientations; what leadership skills are needed by the team leader; how team members can recognize the value of mixed methods; and what the successful outcomes of such a team might be.

The Question of Educating Others About the Value of Mixed Methods

Mixed methods research may be seen as a new methodology by some scholars. These individuals may not know what it is or how it is conducted. Other scholars may feel that they have always been doing mixed methods research. These other scholars may have collected both quantitative and qualitative data but not systematically combined or integrated the two databases as is discussed in this book. Some individuals may hold misconceptions about mixed methods research—for example, they may collect only qualitative data and then analyze it quantitatively, such as in content analysis (Krippendorff, 2004), and believe this constitutes mixed methods. Some scholars may not have utilized many of the advances in mixed methods that we will discuss, such as the use of mixed methods research questions, the diagrams of designs, the identification of the validity issues that often arise in different designs, the use of joint displays to show integration, and so forth. A simple analogy can help to clarify their understanding. Consider the field of quantitative research. Many researchers have been conducting simple correlations and

regressions, but the field has advanced to sophisticated levels where researchers now are using structural equation modeling and hierarchical linear modeling. While researchers may have been using the basic ideas of correlations, the field has advanced to new techniques and procedures so that the regression analysis of today looks very different than the simple correlations of yesterday. A similar analogy could be made between the observations and interviews used by anthropologists in the early 20th century and the more sophisticated techniques used by grounded theorists and ethnographers today. Interviews and observations are still used, but the methodologies have advanced into more sophisticated and elaborate approaches.

Therefore, an important consideration is how to educate individuals about what mixed methods now constitutes. A good way we can accomplish this is by locating exemplary mixed methods studies in the literature and sharing these studies with others. These studies can be selected from prestigious journals with a national and international reputation. But how does a researcher find these mixed methods studies?

Mixed methods studies can be difficult to locate in the literature because not all researchers use the term *mixed methods* in their titles or in the discussion of their methods. Based on our extensive work with the literature, we have developed a short list of terms that we use to search for mixed methods studies within electronic databases and journal archives. These terms include

- mixed method* (where * is a wildcard that will allow hits for *mixed method*, *mixed methods*, and *mixed methodology*) and
- quantitative AND qualitative.

Note that the second search term uses the logic operator AND. This requires that both words appear in the document to satisfy the search criteria. If too many articles are found, a researcher can limit the search so that the terms must appear within the abstract or restrict the search to recent years. If not enough articles result, researchers can try searching for combinations of common data collection techniques, such as "survey AND interview." By using these strategies, researchers may locate a few good examples of mixed methods research that illustrate the core characteristics introduced in this chapter. Sharing these examples with stakeholders can be helpful when educating them about the utility and feasibility of a mixed methods approach.

SUMMARY

Before deciding on a mixed methods approach, the researcher needs to consider several preliminary considerations. First, the researcher needs some understanding as to what

constitutes a mixed methods study. We have provided a definition of mixed methods that includes collecting and analyzing both qualitative and quantitative data, integrating the two forms of data and their results, using specific mixed methods designs, and framing the study within theory and philosophy. Most important in this list is the utilization of two sets of data, one quantitative and one qualitative, and the integration of these data.

The researcher also needs to determine if the problem can best be addressed using mixed methods. Mixed methods is not dependent on a specific issue or topic of study, and it can be used to examine a vast array of problems when one type of data is insufficient. Some problems are best studied by using two data sources, and collecting only one may provide an incomplete understanding. One study may need a second database to help explain the first, and yet another may require the researcher first explore a topic qualitatively before undertaking a quantitative study. Mixed methods has many applications, such as inserting qualitative data into an experiment, comparing different cases, using to support participatory-stakeholder involvement, or for evaluating the success of a program.

These situations all illustrate the value of using multiple data sources to understand research problems. Another advantage is that the strength of one method may offset the weaknesses of the other. Using multiple sources of data simply provides more evidence for studying a problem than a single method. Oftentimes research questions are posed that require both an exploration and an explanation that draw from different data sources, and new insights may be gained because of the combination. Mixed methods also is well suited for interdisciplinary research that brings scholars together from different fields of study in teams, and it enables researchers to employ multiple philosophical perspectives that guide their research. Finally, mixed methods is both practical and intuitive in that it helps offer multiple ways of viewing problems—something found in everyday living.

This does not mean that using mixed methods is easy. It requires that the researchers have skills in several areas: quantitative research, qualitative research, and mixed methods research. It takes time to gather the extensive data from both quantitative and qualitative sources, and it takes resources to fund these data collection (and data analysis) efforts. Further, individuals planning a mixed methods study need to educate others about the value of mixed methods. It is a relatively new approach to inquiry, and it requires an openness by others to using multiple perspectives in research. A search through the literature will yield good examples of mixed methods studies today, and these can be shared with important stakeholders to help educate them about such studies.

Activities

Locate a mixed methods study in your field or discipline. Engage in these steps:

Suspend your interest in the content of the articles and focus instead on the research methods used.

Review the core characteristics of mixed methods research in our definition and identify how the study addresses each of the core characteristics.

Consider the value of mixed methods research for different audiences, such as policymakers, graduate advisors, individuals in the workplace, and graduate students. Discuss the value for each audience.

Consider whether a mixed methods approach is feasible for your study. List the skills, resources, and time that you have available for the project.

Consider designing a mixed methods project. State in your own words how you will define mixed methods research, mention why mixed methods is well suited to address your research problem, and cite both the advantages and challenges of using mixed methods as an approach to research.

Additional Resources to Examine

For definitions of mixed methods, consult the following resources:

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. Thousand Oaks, CA: Sage.

Greene, J. C. (2007). *Mixed methods in social inquiry*. San Francisco, CA: Jossey-Bass.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*(2), 112–133.

For the rationale or purpose for using mixed methods to address problems, see the following resources:

Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, *6*(1), 97–113.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, *11*(3), 255–274.

Mayring, P. (2007). Introduction: Arguments for mixed methodology. In P. Mayring, G. L. Huber, L. Gurtler, & M. Kiegelmann (Eds.), *Mixed methodology in psychological research* (pp. 1–4). Rotterdam/Taipei: Sense Publishers.

For the advantages and value of mixed methods research, see the following resources:

Farquhar, M. C., Ewing, G., & Booth, S. (2011). Using mixed methods to develop and evaluate complex interventions in palliative care research. *Palliative Medicine*, *25*(8), 748–757.

Molina-Azorín, J. F. (2011). The use and added value of mixed methods in management research. *Journal of Mixed Methods Research, 5*(1), 7–24.

For the skills needed to conduct mixed methods research, see the following resources:

Creswell, J. W., Tashakkori, A., Jensen, K. D., & Shapley, K. L. (2003). Teaching mixed methods research: Practices, dilemmas, and challenges. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research* (pp. 619–637). Thousand Oaks, CA: Sage.

Curry, L. A., O´Cathain, A., Plano Clark, V. L., Aroni, R., Fetters, M., & Berg, D. (2012). The role of group dynamics in mixed methods health sciences research teams. *Journal of Mixed Methods Research, 6*(1), 5–20.

Guetterman, T. C. (2015). *The development, design, and test of a self-assessment instrument of mixed methods research proficiency.* Available from ProQuest Dissertations and Theses database (UMI No. 3707829).

2

THE FOUNDATIONS OF MIXED METHODS RESEARCH

Prior to designing a mixed methods study, researchers need to consider more than whether their research problems or questions are best suited for mixed methods. They also should develop a deep understanding of mixed methods so they can not only define and justify mixed methods and recognize its core characteristics, they can also reference important works that have established this approach. This means understanding some of the history of mixed methods and being familiar with key writings that have informed its development. Another step prior to designing a study is to reflect on the different beliefs about knowledge and the acquisition of knowledge that a researcher might assume when selecting mixed methods. This reflection requires knowledge about philosophical assumptions. Finally, mixed methods researchers today often select a theory to use as a lens that shapes the entire study. Thus, an initial step in planning a mixed methods study is to give some consideration to whether a theory will be used in a study and, if so, how the theory will be incorporated into the project.

This chapter reviews historical, philosophical, and theoretical foundations for planning and conducting a mixed methods study. In this chapter, we will address

- the historical foundations of mixed methods,
- the philosophical assumptions that inform the choice of a mixed methods study, and
- theoretical lenses that may be used in mixed methods research.

HISTORICAL FOUNDATIONS

In planning a mixed methods project, researchers need to know something about the history of mixed methods, how it has evolved, and the current interest in it. As well

as providing a definition for mixed methods, a mixed methods plan or study should include references to the literature, a justification for its use, and documentation about its acceptance in a particular field of study. This all requires some knowledge of the historical foundations of mixed methods research, such as knowing when it began, who has been writing about it, and what recent controversies and developments have occurred.

When Mixed Methods Began

We often date the beginnings of mixed methods back to the late 1980s with the coming together of several publications all focused on describing and defining what is now known as mixed methods. Several writers working in different disciplines and countries all came to the same idea at roughly the same time. Writers from sociology in the United States (Brewer & Hunter, 1989) and in the United Kingdom (Fielding & Fielding, 1986); from evaluation in the United States (Greene, Caracelli, & Graham, 1989); from management in the United Kingdom (Bryman, 1988); from nursing in Canada (Morse, 1991); from medicine in the United States (Crabtree & Miller, 1992); and from education in the United States (Creswell, 1994) were all sketching out the concept of mixed methods from the late 1980s to the early 1990s. All of these individuals were writing books, book chapters, and articles on an approach to research that moved beyond simply using quantitative and qualitative methods as distinct, separate strands in a study. They were giving serious thought to ways to link or combine these methods. The authors began a discussion about how to integrate, or mix, the data and their reasons for it; Bryman (2006) would pull these integrative approaches together several years later. The authors also discussed the possible research designs and the names for designs; Creswell and Plano Clark (2007) would later assemble a list of the classifications of types of design. A shorthand notation system was developed to convey these designs; Morse (1991) gave specific attention to the notation. Debates emerged about the philosophy behind this form of inquiry; Reichardt and Rallis (1994) would make explicit the debate forming in the United States.

Antecedents to these procedural and philosophical developments in mixed methods had taken form much earlier than the late 1980s (Creswell, 2011b). As early as 1959, Campbell and Fiske discussed the inclusion of multiple sources of quantitative information in the validation of psychological traits. Others had advocated the use of multiple data sources—both quantitative and qualitative—to conduct scholarly studies (Denzin, 1978), and several well-known figures in quantitative research, such as Campbell (1974) and Cronbach (1975), advocated for the inclusion of qualitative data in quantitative experimental studies. The combination and interplay of survey research and fieldwork was a central feature in the writings of Sieber in 1973. In the field of evaluation, Patton

in 1980 suggested "methodological mixes" for experimental and naturalistic designs, and he advanced several diagrams to illustrate different combinations of these mixes. In short, these developments signaled key beginnings to what would later be more systematic attempts to forge mixed methods into a complete research design and to create a distinct approach to research (Creswell, 2011b).

Why Mixed Methods Emerged

A number of factors have contributed to the evolution of mixed methods research from the late 1980s to how we know it today. The complexity of our research problems calls for answers beyond simple numbers in a quantitative sense or words in a qualitative sense. A combination of both forms of data provides the most complete analysis of complex problems. Researchers situate numbers in the contexts and words of participants, and they frame the words of participants with numbers, trends, and statistical results. Both forms of data are necessary today. In addition, qualitative research has evolved to a point where writers consider it a legitimate form of inquiry in the social and human sciences (see Denzin & Lincoln, 2005, 2011). Quantitative researchers, we believe, recognize that qualitative data can play an important role in quantitative research. Qualitative researchers, in turn, realize that reporting only the participant views of a few individuals may not permit generalizing the findings to many individuals. Audiences such as policymakers, practitioners, and others in applied areas need multiple forms of evidence to document and inform research problems. A call for increased sophistication of evidence leads to the collection of both quantitative and qualitative data. Further, the potential for publishing multiple papers from a mixed methods project creates an incentive to do this form of research for faculty that today are often under demands to increase their publications. Also, mixed methods research is intuitive for many because it mirrors the types of evidence that we collect to make sense of the world. One can look to news broadcasts, for example, to see multiple data sources being used, such as interviews and charts and graphs to depict current events. Finally, Kelle (2015) has noted the mutual alienation between qualitative and quantitative research that has existed since the 1920s and has attributed the rise of the mixed methods movement to strategies to overcome "the speechlessness between both traditions" (p. 603).

The Development of the Name

There has been much discussion about the name for this form of inquiry. During the past 50 years, writers have used different labels, making it difficult to locate specific research studies that we would call "mixed methods" research. It has been called "integrated" or "combined" research, advancing the notion that two forms of data are blended together

(Steckler, McLeroy, Goodman, Bird, & McCormick, 1992). It has been called "quantitative and qualitative methods" (Fielding & Fielding, 1986), which acknowledges the approach is actually a combination of methods. It has been called "hybrid" research (Ragin, Nagel, & White, 2004); "combined research" (Creswell, 1994); or "methodological triangulation" (Morse, 1991), which all recognize the convergence of quantitative and qualitative data. It has also been called "mixed methodology" (Tashakkori & Teddlie, 1998), which acknowledges it encompasses the research process stretching from philosophy to interpretation. Along the same line, this approach has recently been called "mixed research" to reinforce the idea that it is more than simply methods and ties into other facets of research, such as philosophical assumptions (Onwuegbuzie, 2012; Onwuegbuzie & Leech, 2009). We believe that the most frequently used name today is "mixed methods research," a name associated with the *SAGE Handbook of Mixed Methods in Social & Behavioral Research* (Tashakkori & Teddlie, 2003a, 2010b), the SAGE *Journal of Mixed Methods Research* (*JMMR*), and *The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry* (Hesse-Biber & Johnson, 2015). The continued use of the term *mixed methods* by a large number of social, behavioral, and human science scholars will encourage researchers to see this approach as a distinct model of inquiry.

Stages in the Evolution of Mixed Methods

Our approach to mixed methods research has grown out of the work of others as well as the historical and philosophical discussions of the last several decades. For those designing and conducting mixed methods studies, a historical overview is not an idle exercise in recapping the past. Knowing this history helps researchers justify their use of this approach and cite leading proponents of it in their discussions about methods.

There have been several stages in the history of mixed methods (e.g., Tashakkori & Teddlie, 1998). Here we will review this history and organize it into five, often overlapping, time periods of development, as shown in Table 2.1.

Formative period. The **formative period** in the history of mixed methods began in the 1950s and continued up until the 1980s. This period saw the initial interest in using more than one method in a study. It found momentum in psychology in the 1950s through the combination of multiple quantitative methods in a study (Campbell & Fiske, 1959); the use of surveys and fieldwork in sociology (Sieber, 1973); multiple methods in general (Denzin, 1978); the initiatives in triangulating both quantitative and qualitative approaches (Jick, 1979; Patton, 1980); and discussions in psychology about combining quantitative and qualitative data when they arose from different perspectives (see Cook & Reichardt, 1979). These were the early antecedents of mixed methods as it is known today (Creswell, 2011a).

TABLE 2.1 ■ Major Contributions to the Development of Mixed Methods Research and Selected Writings

Stage of Development	Major Contributions	Key Selected Writings
Formative period (before 1980)	Argued for use of multiple quantitative methods	Campbell and Fiske (1959)
	Used both quantitative and qualitative methods	Sieber (1973) Jick (1979)
	Argued for using both quantitative and qualitative methods	Denzin (1978) Cook and Reichardt (1979)
Paradigm debate period (1970s to mid-1990s)	Discussed stances within the debate (purists, situationalists, and pragmatists)	Rossman and Wilson (1985)
	Discussed ways to reconcile the two traditions	Bryman (1988) Reichardt and Rallis (1994)
	Suggested that we move past the paradigm debate	Greene and Caracelli (1997) Tashakkori and Teddlie (1998)
Early procedural development period (late 1980s through 1990s)	Identified reasons and procedures for combining quantitative and qualitative research	Bryman (1988) Greene, Caracelli, and Graham (1989) Brewer and Hunter (1989)
	Identified a typology for types of mixed methods designs	Morse (1991) Creswell (1994) Morgan (1998)
	Presented a topical overview and procedures for mixed methods research	Newman and Benz (1998) Tashakkori and Teddlie (1998) Bamberger (2000)
Expanded procedural development period (ongoing since 2003)	Provided a comprehensive treatment of the current state of the field	Tashakkori and Teddlie (2003a, 2010b) Hesse-Biber and Johnson (2015)
	Positioned mixed methods research as a new methodology and advocated for its acceptance through funding and publications	Johnson and Onwuegbuzie (2004) Creswell (2009b) Creswell, Klassen, Plano Clark, & Smith (2011)

(Continued)

TABLE 2.1 ■ (Continued)

Stage of Development	Major Contributions	Key Selected Writings
	Provided comprehensive guides for designing and conducting mixed methods research studies	Creswell and Plano Clark (2007, 2011) Greene (2007) Teddlie and Tashakkori (2009) Morgan (2014) Morse and Niehaus (2009)
	Applied mixed methods within specific disciplinary contexts (e.g., health sciences) and intersected with other research approaches (e.g., action research, culturally sensitive program evaluation, and systematic reviews)	Curry and Nunez-Smith (2015) Ivankova (2015) Nastasi and Hitchcock (2016) Heyvaert, Hannes, and Onghena (2017)
Reflection and refinement period (ongoing since 2003)	Identified important issues and controversies in mixed methods	Tashakkori and Teddlie (2003b, 2010a) Creswell (2011a)
	Mapped the mixed methods literature into overarching frameworks	Greene (2008) Creswell (2008, 2009b) Plano Clark and Ivankova (2016)
	Critiqued the marginalized position of qualitative research within some mixed methods	Howe (2004) Giddings (2006)
	Critiqued the assumptions and discourse of mixed methods research	Holmes (2006) Freshwater (2007)
	Presented new and refined paradigms for mixed methods	Mertens (2003, 2009) Johnson and Stefurak (2013)
	Identify major developments in the field	Creswell (2015b)

Source: Adapted from Creswell & Plano Clark (2011).

Paradigm debate period. The **paradigm debate period** in the history of mixed methods developed during the 1970s and 1980s when qualitative researchers were adamant about different assumptions for quantitative and qualitative research (see Bryman, 1988; Guba & Lincoln, 1988; Smith, 1983). The paradigm debate involved scholars arguing whether or not qualitative and quantitative data could be combined because qualitative