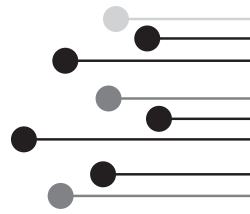# Using Mixed Methods and Dedoose

1.1 About This Book

Conducting social science research and program evaluations is about solving problems. Whatever the focus of the work, challenges may be best solved by taking particular perspectives that dictate the methods to be employed. Design issues to be considered include the target population, the data to be gathered, how one might interact with and transform these data, what analyses are to be conducted, and how best to reach the intended audience.

Deciding to employ a particular methodological approach must be guided by the central research question(s). This central point of a study is also referred to as the focus of the study, and the researcher must determine what types of data will best support an inquiry into the central point. Will the research goal(s) be best served with qualitative or quantitative data, or both? Once the data are gathered, the researcher must consider what strategies to use to analyze these data: for example, exclusively qualitative or quantitative, or comingled and analyzed from a mixed methods perspective. When considering a mixed methods approach, the researcher must keep in mind that this mixing can take place in different ways at different stages of a project. Finally, in what form will the researcher prepare the study findings to assure credibility and utility for the target audience(s)?

This book is structured into three parts, each addressing a key overarching theme in mixed methods research using technology. Part I, Foundations of Mixed Methods Research, discusses the foundational principles of mixed methods research, including qualitative and quantitative research and challenges for mixing, framing the purpose and focus of a study, and successfully adopting digital tools with an introduction to Dedoose. Part II, Data Interaction and Analysis, discusses collaboration and describes a more in-depth look at Dedoose, including data transformation and integration. Part III, Reporting Credible Results and Sharing Findings, discusses challenges and strategies for reporting meaningful findings and sharing data with a larger audience. Within these three themes, key areas are covered such as developing a mixed methods design; implementation of the mixed methods design; approaches to sampling, data gathering, synthesis, and analysis; and sharing your findings.

As illustrated in Figure 1.1, qualitative and mixed methods data analysis using a data application such as Dedoose requires an interaction with all three parts of

Figure 1.1 Qualitative and Mixed Methods Data Analysis Using Dedoose

Foundations of Mixed Methods Research

Data Interaction & Analysis

Reporting Credible Results & Sharing Findings
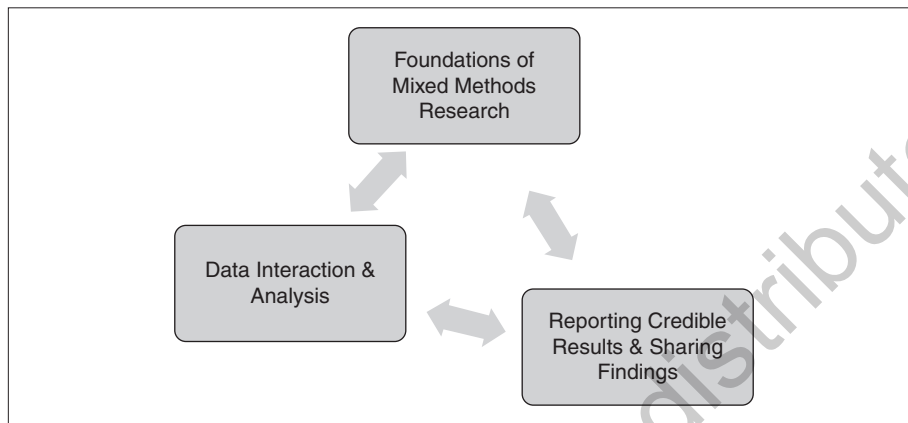
this book. The goal of this book is to provide connections between the research process and computer-aided data management, analysis, and visualization using Dedoose. Specifically, proven analytic strategies for qualitative and mixed methods work as illustrated by various case studies. The book is written for a broad audience of academics, teachers, graduate students, evaluators, doctoral students, program administrators, and investigators in a wide range of disciplines planning to use Dedoose.

Throughout this book, the importance of engaging in well-considered research design thinking to complement researcher technological skill building is emphasized. To begin this broader discussion, essential steps in thinking through a research design are highlighted. That is, a study typically begins with a core topic often expressed with key words. Next, the social problem is framed so as to demonstrate the importance of the proposed research. From there research design thinking wrestles with the methodological complexity of a central focus and key research questions. A well-known remark attributed to Albert Einstein highlights the importance of this upfront thinking:

> If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 minutes determining the proper question to ask, for once I know the proper question, I could solve the problem in less than five minutes.

This book also introduces the necessary methodological skills to use Dedoose properly as a social science researcher. These skills and empirical practices promote sound, high-quality mixed methods work. In the coming chapters, look for examples in how Dedoose functionality and features facilitate the "mixing" that is purported to enhance the quality and complexity of your mixed

methods study/work/results. Accordingly, this book provides some review of research foundations, design, and practical examples to establish the clear building blocks on why and how to use Dedoose effectively.

Part I, Foundations of Mixed Methods Research, is covered in Chapters 1 to 3, where foundational principles of mixed methods research, successfully adopting digital tools, and an introduction to Dedoose are discussed.

1.2 Mixed Methods and Mixed Paradigms

If qualitative research is defined as working with words and images, and quantitative research as working with numbers, then a superficial definition of mixed methods is the working with both words and numbers. Researchers recognize that social science inquiry involves much more than simply working with words and numbers. Today, researchers work with all kinds of data, including images, social media, audio recordings, and video files, and increasingly appreciate recent advances in applications of mixed methods research, which is evolving to mean so much more. This book takes a very general perspective in defining mixed methods and strives to be as inclusive as possible to the range of perspectives taken by others. When seeking to address a research question, researchers commonly apply a particular level of analysis that, in the past, may have been represented in purely qualitative or purely quantitative terms. When a single paradigm was used, the analysis of data was restricted to that paradigm. This practice did not allow for mixing of research methods.

Where the authors accept that all methods have limitations, those seeking to "mix" methods recognize that an understanding of the phenomena under study may be better represented by the application of multiple methods of inquiry. Where such an approach is taken, in any of many forms, the general intention is to capitalize on the strengths of various methods with the hopes of acquiring more comprehensive understandings of that inherent complexity faced when exploring natural phenomena in context.

As mixed methods research practices have grown, so too has the importance of recognizing the challenges of mixing paradigms. For the purposes of discussion in this book, the term *paradigm* is intended to represent the research methods of a qualitative or quantitative study along with the distinct philosophical worldviews of each. For example, a qualitative paradigm would encompass accepted data gathering and analysis procedures. In addition, the qualitative paradigm would philosophically integrate an appropriate qualitative theoretical orientation to the study. Refer to Patton (2015, Chapter 3) for an examination of 16 different qualitative theoretical approaches. Further discussions regarding philosophical integration may be found in a range of research methods textbooks, including Creswell and Poth (2017), Denzin and Lincoln (2013), O'Reilly and Kiyimba (2015), and Somekh and Lewin (2012). Of importance to this discussion is acknowledging and respecting that qualitative and quantitative approaches represent distinctly different field research methods and philosophical foundations. Toward that end, this book is intended as a guide to mixing these two paradigms.

1.2.1 Mixed Methods Considerations

Given the emphasis on mixed methods data analysis in this book, upcoming chapters explore the key characteristics of both qualitative and quantitative paradigms, including the use of data and data management techniques. Furthermore, this book explores the integration of mixed approaches within social science. Of greatest importance to this distinction is that any mixing demands thoughtful design decisions toward generating high-quality inquiry that anticipates identifying insights that are greater than what might have been achieved where only a single perspective was employed.

A key consideration here is that the researcher must justify up front the need to conduct a mixed methods study. Mixed methods is not an easy shortcut taken by the researchers because they cannot make up their mind if their study is qualitative or quantitative. "Oh, it is all too complicated, I will just throw it all together and do mixed methods." Rather, there must be a clear rationale for using a mixed methods design from the outset.

1.2.2 Combining Paradigms

It is important to acknowledge that a strong collection of either quantitative or qualitative data with only a token amount of data from the other paradigm does not justify a mixed methods design. Simply having a bit of extra data from the opposite paradigm is not sufficient to claim the use of mixed methodology. A mixed methods study must comprise a well-designed qualitative study and a well-designed quantitative study with clearly written justification supporting the use of a mixed methods design.

The purpose and focus, or central point, of the study will determine if mixed methods research is the appropriate choice for your study rather than the types of available data. Refer to Section 2.2, Framing the Purpose and Focus (Chapter 2), for further discussions on framing the purpose and focus. Appropriate mixed methods research questions must be constructed based on this research design thinking. From here, this book is intended to assist you with designing and conducting a mixed methods study using Dedoose.

There is a rich body of research literature to draw on that can assist with guiding the mixing process for research design decisions (Creswell, 2017; Hesse-Biber, 2010b; Mertens, 2017; Onwuegbuzie, Slate, Leech, & Collins, 2009; Tashakkori & Teddlie, 2003). A few of the more common mixing approaches include sequential, concurrent, and nested. Nested is also referred to as embedded. Each of these approaches offers variations to positioning the qualitative and quantitative stages. Figure 1.2 shows these three variations of mixing research. All three variations begin with the same social problem and conclude with the results drawn from credible mixed research evidence. It is the middle part where the mixing process varies. The concurrent approach involves both quantitative and qualitative field research methods conducted simultaneously. The sequential approach involves either quantitative or qualitative field research methods conducted in order. Note

Figure 1.2 Common Mixing Approaches

Concurrent   Sequential   Nested
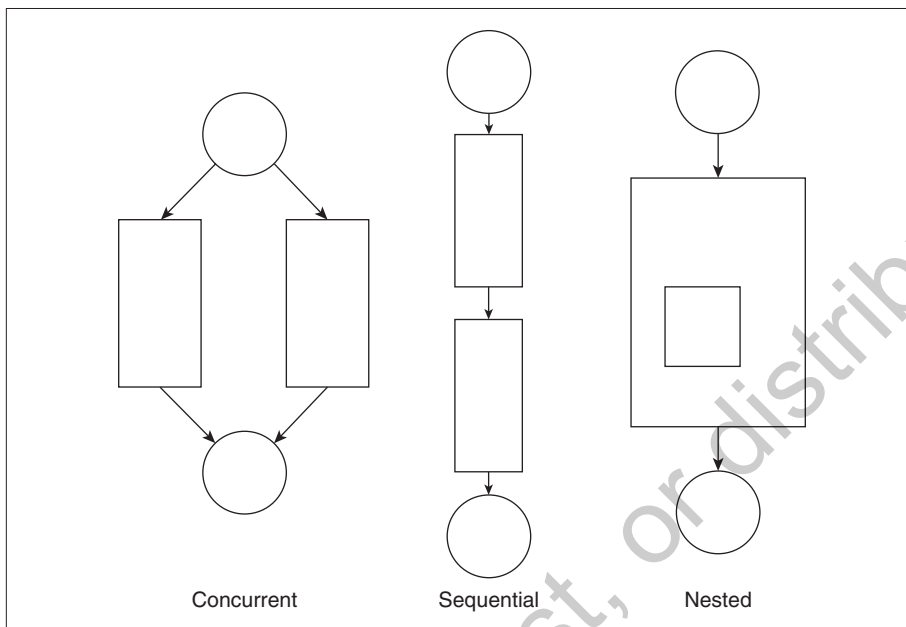
that positioning which is first and which is second requires thoughtful consideration. A nested approach is unique in that either quantitative or qualitative field research is chosen as primary, and the secondary approach is nested within the primary. Choosing which is primary and which is secondary must be based on the overall study requirements of the research design and appropriately justified. As noted by Hesse-Biber (2010b), mixing practices have previously favored primary quantitative methodologies. Mixing today, however, has become more accepting of qualitative designs that are primary or equal. An example of this shift would be a nested mixed methods design with quantitative inquiry embedded within a larger qualitative project.

1.3 Using Cloud Technology to Support Mixed Methods Research

Cloud-based services and tools such as Dropbox, Google Drive, Google Hangouts, SurveyMonkey, Qualtrics, Skype, Pamela, WeChat, WhatsApp, and Viber are now widely adopted and are making the online sharing of resources, gathering of data, manipulation of documents and other information, and communication far more efficient and accessible. Many of these listed apps are commonly used

by researchers today. Over the next few years, there will continue to be version updates full of new functions and new apps providing functionality beyond what exists today. Consider what steps you might take to prepare yourselves for the future. What does the changing app environment mean for you and your research? Does it make a difference if you are working alone or working in a team?

While there is a rich history in the literature on technology adoption, very little of this work has focused systematically on how end users choose to adopt and then make use of technology when conducting social science research. From a general perspective, there are widely held views that individuals show varying levels of predisposition to adopt technology (Crook, 1994; Rogers, 1962; Schiffman, 1991). However, where serious concern is raised about quality and methodological rigor, as in academic work, researchers must be similarly concerned about whether the use of any technology is appropriate. Keeping in mind the barriers to technology adoption that are discussed in Chapter 2, and when and how technology is brought into the investigative process, work must include salient reflection on the nature of the question being addressed, the nature of the data, and the technological expertise of those responsible for "driving" the process where technology is in play.

For the anthropologist studying the use of technology in human cultural development, the notion of working in the cloud opens boundless possibilities for sharing and connectivity. The shared work setting also portrays an ongoing struggle for researchers as technologies advance. In many respects, getting one type of computer to talk to a different type continues to be challenging. Researchers require an intuitive work environment that transcends proprietary products, equipment, and communication platforms. A cloud-based work environment has proven to effectively respond to this problem. In particular, finding the best way for qualitative and quantitative data to interact in a mixed methods design is increasingly of vital importance. Technology continues to rapidly evolve in response to the problem of great inefficiencies in research data management and integration.

1.4 What Is Dedoose?

This book is about Dedoose, so what is Dedoose? Dedoose is a web-based application that allows you to organize and analyze research data, no matter what form those data take. Whether your research data are qualitative (text, audio, images, or video), quantitative (spreadsheets, surveys, test scores, ratings, or demographics), or a mixture of both, Dedoose's design is flexible enough for you and your team to manage these data and apply whatever methodologies you choose. Dedoose supports both traditional qualitative approaches and mixed methods approaches to data interaction and analysis in a secure, collaborative environment. As an application, Dedoose can assist you with your data analysis—however, like all qualitative and mixed methods data applications, it will not do the analysis for you. The researchers drives the analysis process, not the data application.

1.4.1 Relational Database

Dedoose is a web-based application that is built as a relational database. You can connect your mixed methods data by using codes, code weights, descriptors, and memos. This allows you to manage your project and build, and track, a web of connections between various aspects of your database.

Basically, a relational database allows data to live in natural forms within an application. An example is text imported as .docx or .txt files. The Dedoose relational database also supports spreadsheets as .xls or .csv files, video as .mp4 files, audio as .mp3 files, and images as .jpg files. The key benefit to allowing different forms of data to live in natural formats within a single application is maximized efficiency. For example, when you paste an image into a document, the result is a single file with two different forms of data—image and text. Your use of this file is limited by what you can do with each form of data. However, through a set of relationships these different types of data are connected in Dedoose as a relational database so that all the information can be efficiently used for visualization and analysis.

1.4.2 Research and Evaluation Data Applications

The acronyms QDAS (qualitative data analysis software) and CAQDAS (computer-assisted qualitative data analysis software) have been in common use for many years (Gilbert, Jackson, & di Gregorio, 2013; Richards, 2015; Silver & Lewins, 2014). This book adopts the use of research and evaluation data applications (REDA), which has more recently been introduced as an acronym to broaden the use of technological tools by welcoming more mixed methods data handling than what QDAS or CAQDAS has traditionally represented.

Consider the implications for REDA such as Dedoose, which are emerging as new cloud-based applications for data analysis. This acronym supports the adoption of strategies that promote quality technological integration and improved mixed methods practices by exploring how researchers, educators, and evaluators adopt advances in technology.

REDA implies an ability to not only manage your data but also analyze it. Examples of REDA therefore include Google Sheets, SurveyMonkey, and Dedoose. Given ongoing technological advances in REDA, ongoing researcher skill building is encouraged. Furthermore, teachers and trainers should stimulate students to think outside the box when adopting new features in REDA.

1.5   Dedoose: A Historical Journey

Looking back at the history of technologies for qualitative and mixed methods research, consider the tasks in which scholars were engaged, the tools available at the time, and how they attempted to capitalize on these tools and their

functionality. Prior to the commonplace use of personal computers, paper, pen/pencil, typewriters, and hand calculators were the "tools" of the day.

Anthropologists and other social scientists engaged in text analysis were noted for their use of colored pens/pencils and margin notes to mark up their text files as they identified and explored patterns that emerged from their data. The first highlighter was invented in 1963, then sticky notes in 1968, adding other tools to the arsenal of investigators looking to mark up their documents. To this point, the work was all manual, and there are endless stories of the painstaking sorting, exploring, and resorting that took place as researchers would organize their documents across dining room tables searching for the patterns around which they would tell their stories.

Following the availability of mainframe computers in the 1950s, the later 1970s ushered in the personal computer. For the first time, individuals could afford to purchase these digital tools and the associated productivity software that was of particular value to academic audiences. In the early 1980s, software for the management and interaction with qualitative data was being developed to essentially digitize the work carried out by anthropologists previously done with paper and pencil. These software packages allowed for more rapid movement through qualitative data management and analysis. Coding activities particularly benefitted from rapid technological advances in the excerpting process and subsequent pattern exploration and retrieval processes, especially when individuals were dealing with larger data sets.

During the 1980s, academic early adopters of technology for qualitative and mixed methods research were commonly confronted with methodological tensions when using software packages. Due to demanding learning curves, these early software packages were often found gathering dust on an academic office shelf as researchers reverted to traditional manual data management and analysis practices. Setting aside the time to learn the software and to integrate training into established research methods courses was often overwhelming and costly. Academic early adopters, such as ourselves, who persevered with early software adoption began to organize training support groups and conference training events. From these early adoption efforts, social science disciplines increasingly acknowledged the benefits to incorporating technology into social science methodological research and teaching practices.

Dedoose was developed at the University of California, Los Angeles (UCLA), Fieldwork and Qualitative Data Research Laboratory. The lab served as a methodological consulting service in qualitative and mixed methods research. There were pockets of individuals and teams attempting to make use of traditional qualitative data analysis software, but many were abandoning these tools due to cost and complexity. These frustrations prompted the development of macros for word processor software that allowed for basic coding and excerpt retrieval without the need for purchasing or learning other software (Ryan, 1993). When you consider what most people are doing most of the time with their qualitative data, exploring and tagging content for later retrieval, this relatively simple solution met 100% of the needs for many who were supported by the lab.

However, as researchers and evaluation teams began adopting more mixed methods approaches, the data being collected became increasingly complex and research demanded the use of other tools to manage, integrate, and analyze. As this methodological evolution (some would argue rebirth) took place, it was common to see the use of word processors (with their code and retrieve macros), statistical software to carry out the more traditional quantitative data analysis, and spreadsheet software to help integrate various forms of data and to build visual displays for manuscripts and presentations. Moreover, research teams were increasingly crossing disciplinary boundaries and collaborating with other teams working on different computer platforms in locations spread across the country and the globe. The challenges faced with file sharing, platform compatibility, and version control cannot be understated, and so as more complex data sets were being generated by geographically distributed teams, the work became increasingly inefficient.

In 1999, Salesforce emerged as one of the first applications to be delivered via the Internet. Cloud technologies provide a platform on which a wide range of applications can be built and delivered along with a powerful and rapidly advancing set of tools for the development of these applications. In 2003, EthnoNotes first became widely available for the collaborative, cross platform, management, analysis, and visualization of qualitative and mixed methods research data (Lieber, Weisner, & Presley, 2003). While initially built on a more traditional relational database software package, EthnoNotes was fully transformed into a pure web application in 2006 and later re-engineered and rebranded as Dedoose in 2010. Dedoose now serves qualitative and mixed methods researchers and research teams as an application (REDA) for managing, interacting with, sharing, analyzing, and visualizing qualitative and mixed methods research data.

> Visit **http://www.dedoose.com/** and **http://www.immrglobal.org/** for additional resources, including videos, user guides, FAQs, articles, case studies, and more to help you use Dedoose for your research.