

# Skills, Experiences, and Attitudes to Conduct Mixed Methods Research

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## QUESTIONS ADDRESSED IN THIS CHAPTER:

- What skills are essential in conducting mixed methods research?
- How does a researcher learn these skills?
- What attitude should a researcher have toward methodology?

## QUANTITATIVE AND QUALITATIVE RESEARCH SKILLS

When I introduced the characteristics of mixed methods research, I suggested that researchers include rigorous quantitative and qualitative methods. This requires obtaining and knowing the methods. In addition, researchers also need skills in mixed methods research. As I review quantitative, qualitative, and mixed methods research skills, there are many ways that I could have talked about these skills. For example, there are specific quantitative guidelines for an experimental intervention trial as found in the CONSORT 2010 statement in the *Annals of Internal Medicine* (Schulz et al., 2010) or the specific guidance for qualitative research from the Robert Wood Johnson Foundation (Cohen & Crabtree, 2006). For this discussion, I wanted to advance current resources that reflect important thinking in both quantitative and qualitative research. A source for both quantitative and qualitative research skills would be the American Psychological Association's (APA's) "standards" recently published in *American Psychologist* (Applebaum et al., 2018; Levitt et al., 2018) and then published in 2019 in the *Publication Manual* (American Psychological Association, 2019). These "standards" were constructed by both a quantitative and qualitative task force with the charge of developing "standards" that writers and reviewers of APA journal articles might use. My discussion, of course,

simplifies and condenses the “standards,” and I refer the reader to the original discussions for further elaboration.

As shown in Tables 2.1 and 2.2, the task forces constructed the “standards” to follow the steps in the process of research. The process starts with defining a problem; forming hypotheses or questions (as well as purpose statements or aims); collecting, analyzing, and interpreting (or drawing inferences) from the data; and disseminating the results. To discuss research as a process of steps is something I have followed in writing all of my research methods books. It holds for both quantitative and qualitative research, but with differences between the two approaches residing not in the general process but in how each part of the process unfolds in an actual research study.

**TABLE 2.1**

Skills in Quantitative Research

Skill Categories	Specific Skills, Know How to:
Research problem	_____ Identify why quantitative research is well suited for studying the research problem _____ Select theoretical and practical implications for the problem _____ Relate the problem to previous scholarship and how it adds to the literature
Hypotheses, aims, and objectives	_____ Write hypotheses, research questions, aims, and objectives that incorporate variables _____ Relate these statements to the research design
Data collection	_____ Report demographics for a sample _____ Recruit, gain permission, and include/exclude participants in the study _____ Identify an appropriate sampling strategy _____ Calculate an appropriate size, power, and precision for a sample _____ Identify appropriate methods for collecting data _____ Calculate estimates of reliability and validity for the measures _____ Identify the type of design and whether conditions were manipulated or naturally observed _____ Address ethical issues related to data collection

Skill Categories	Specific Skills, Know How to:
Data analysis	<input type="checkbox"/> Calculate for missing data <input type="checkbox"/> Use inferential statistics <input type="checkbox"/> Use quantitative software for analysis <input type="checkbox"/> Apply both descriptive and inferential statistics <input type="checkbox"/> Report results of inferential tests, including $p$ -values, effect sizes, and confidence intervals <input type="checkbox"/> Apply complex data analysis (e.g., structural equation modeling) if used
Discussion	<input type="checkbox"/> Discuss support or nonsupport for hypotheses, questions, etc. <input type="checkbox"/> Interpret the results in view of research by others, biases, imprecision of measures, adequacy of sample size, etc. <input type="checkbox"/> Discuss generalizability of the results
Dissemination	<input type="checkbox"/> Use the formal quantitative structure for reporting research <input type="checkbox"/> Publish in outlets for quantitative research

Source: Adapted from JARS-Quant, Applebaum, Cooper, Kline, et al. (2018).

**TABLE 2.2**  
Skills in Qualitative Research

Skill Categories	Specific Skills, Know How to:
Research problem	<input type="checkbox"/> Frame the research problem and relate it to applicable literature <input type="checkbox"/> Design case examples, personal narratives, and vignettes for the introduction
Purpose, aims, and objectives	<input type="checkbox"/> State the purpose, goals, or aims of the study that include the target audience <input type="checkbox"/> Describe the approach to inquiry (e.g., interpretive, theoretical), if it helps to understand the purpose, goals, or aims
Method	<input type="checkbox"/> Summarize the overall research design (e.g., interpretive, constructivist, feminist, grounded theory, ethnography) and why the design was chosen

(Continued)

**TABLE 2.2 (CONTINUED)**

Skill Categories	Specific Skills, Know How to:
Researcher, study participants, and data collection	<ul style="list-style-type: none"><li>_____ State researcher reflexivity based on personal experiences and how it shapes the interpretation of data</li><li>_____ Identify the appropriate number of participants, their recruitment, and their selection</li><li>_____ State the forms of data collection (e.g., interviews, observations)</li><li>_____ Identify the questions asked during data collection</li><li>_____ Convey the extensiveness of data collection</li><li>_____ Identify audio/visual recording methods</li><li>_____ Identify ethical issues related to data collection</li></ul>
Data analysis	<ul style="list-style-type: none"><li>_____ Know the process of data analysis, including coding and theme identification</li><li>_____ Provide illustrations and descriptions of analytic schemes</li><li>_____ Apply qualitative software for data analysis</li><li>_____ Identify the integrity (i.e., validity) of the claims made and the strategies used to document it</li><li>_____ Describe interrater reliability (i.e., intercoder agreement)</li></ul>
Research findings	<ul style="list-style-type: none"><li>_____ Present findings compatible with the research design or approach to inquiry</li><li>_____ Develop synthesizing illustrations (e.g., diagrams, tables)</li></ul>
Discussion	<ul style="list-style-type: none"><li>_____ Describe the central contribution of the study</li><li>_____ Identify how the study conclusions are similar or different from prior literature</li></ul>
Dissemination	<ul style="list-style-type: none"><li>_____ Know the varied structures that relate to the different approaches to qualitative inquiry</li><li>_____ Familiarity with publication outlets for qualitative research</li></ul>

Source: Adapted from JARS-Qual, Levitt, Bamberg, Creswell, et al. (2018).

In Tables 2.1 and 2.2, I have adapted the “standards” to reflect specific skills needed by a researcher when conducting research. I added to the APA skill set a category about the dissemination of results because this is an important skill to know. It should be mentioned that qualitative researchers in general are reluctant to set forth standards or a checklist of features that should belong in a good qualitative methods section of a study. Such standards would constrain emerging and creative ideas. However, I think that all researchers recognize that qualitative inquirers do have certain procedures in mind when they engage in research. Likewise, quantitative researchers tend to operate with procedures even more fixed than in qualitative research.

As shown in Table 2.1, I concur that quantitative research is largely deductive in approach, working from a theory or conceptual framework that the researcher tests and supports or refutes. Standards such as validity, reliability, generalizability, and the control of bias provide a foundation of skills to be obtained by the quantitative researcher. Qualitative research, on the other hand, is much more inductive, developing from the perspectives of participants in a study and building to larger themes and perspectives that characterize the phenomenon under study. Qualitative skills require understanding reflectivity, saturation of the data, validity strategies, and interpretive approaches used by the researcher. In both approaches to research, the importance of questions and hypotheses and their link to specific designs form the foundation for building research skills.

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## MIXED METHODS SKILLS

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In writing this discussion, I wanted to identify skills being currently discussed in the literature about mixed methods research. Consequently, I turned to the APA standards for mixed methods research (Levitt et al., 2018) and augmented this list with the self-rated mixed methods skill assessment recommendations developed by Guetterman et al. (2017). This self-rated assessment of mixed methods skills was developed as an intake assessment for the scholars participating in the National Institutes of Health and its Office of Behavioral and Social Sciences, Mixed Methods Research Training Program (MMRTP) housed at Johns Hopkins University (<https://www.jhsph.edu/academics/training-programs/mixed-methods-training-program-for-the-health-sciences/>).

The skills presented in Table 2.3 reinforce my defining characteristics of mixed methods research that I advanced in Chapter 1. They do not emphasize (as I would) the three central features of mixed methods found in integration, a specific mixed methods design, and the meta-inferences that need to be identified. I do feel that covering all of these skills will provide a good foundation for conducting a mixed methods study. In this skill set, one finds new features of mixed methods that will be discussed in more detail later in this book, such as a mixed methods question, the diagram of the design

procedures, the strategies for linking validity threats to a design, integrating the data in a mixed methods joint display analysis, and drawing metainferences from a joint display table.

**TABLE 2.3**

Skills in Mixed Methods Research

Skill Categories	Specific Skills, Know How to:
Research problem	<p>_____ Use mixed methods research when the problem needs to be addressed by both quantitative and qualitative research</p> <p>_____ Ground the study in a theoretical or conceptual framework</p>
Research objectives, aims, and goals	<p>_____ Write good qualitative, quantitative, and mixed methods questions</p> <p>_____ Link the questions to the research problem</p> <p>_____ Identify personal philosophical assumptions guiding the research</p> <p>_____ Justify the use of mixed methods methodology</p>
Design/approach	<p>_____ Identify the appropriate mixed methods design to study the problem/questions</p> <p>_____ Draw a diagram of the procedures</p> <p>_____ Justify the choice of an appropriate design</p> <p>_____ Identify validity threats of the specific design used</p>
Sampling and data collection	<p>_____ Identify a sampling strategy that matches the mixed methods design</p> <p>_____ Calculate appropriate quantitative and qualitative sample sizes</p> <p>_____ Organize the sources of data into quantitative and qualitative data types</p> <p>_____ Convey the sources of data in the order that matches the design procedures</p> <p>_____ Identify ethical issues related to the sampling, data collection, and the design</p>

Skill Categories	Specific Skills, Know How to:
Data analysis	<p>_____ Separately report the quantitative and qualitative data analysis</p> <p>_____ Integrate the two databases</p> <p>_____ Construct a mixed methods data analysis table for integration (a joint display)</p>
Inferences	<p>_____ Draw meta-inferences from a joint display table</p> <p>_____ Relate the meta-inferences to past literature and theory</p>
Dissemination	<p>_____ Construct an appropriate writing structure that matches the design</p> <p>_____ Communicate results of a mixed methods study to lay audiences</p>

Source: Adapted from Guetterman, T. C., Creswell, J. W., Wittink, et. al. (2017); Levitt, Bamberg, Creswell, et. al. (2018).

## MIXED METHODS TEAMS

The above discussion focuses on the skills that an individual might have to conduct mixed methods research. Unfortunately, most individuals do not have the luxury of building a comprehensive skill set. An alternative would be to participate in a mixed methods team with individuals having different skills. One physician said to me at my workshop, “What is the minimum I need to know to conduct mixed methods research?” I answered that either you need to know about data collection and data analysis for both quantitative and qualitative research, or you need to join a team with individuals who have skills in this area. An academic team makes sense, and we have seen a growing presence of mixed methods teams in academia because of the increased frequency of interdisciplinary research. Individuals on these teams hold different methodological orientations—quantitative and qualitative skills. Team members with mixed methods skills may serve as the bridge between these two groups and facilitate the conversation about differences in thinking when they arise. We might have a medical sociologist sitting next to a biostatistician or an anthropologist working on a team with a measurement specialist. In global research settings, the diversity of participants on a team may be even more pronounced, with individuals bringing their own local cultural norms to the research table.

How do these diverse team members interact? When academic teams work on a problem, individuals may relate to the discussion from their own disciplinary perspective (working parallel to their own discipline) or from an

interdisciplinary perspective (working across disciplinary fields) (see O’Cathain, Murphy, & Nicholl, 2008a). Overlaying these methodological differences may be the extent to which individuals cross disciplinary boundaries or stay within their own field’s perspective as they work on a team. O’Cathain et al. (2008a, p. 1579) advanced possible configurations, as shown in Table 2.4.

**TABLE 2.4**  
Different Disciplinary Configurations of Members  
on a Mixed Methods Team

<b>Team A:</b> Principal investigator (medical) led the quantitative component; sociologist led the qualitative component and was responsible for parts of the quantitative component; statistician; and project researchers
<b>Team B:</b> Principal investigator (social scientist) led the qualitative and quantitative components; clinicians; psychologist; statistician; and two project researchers
<b>Team C:</b> Principal investigator (clinical) led the qualitative and quantitative components with two project researchers

Source: O’Cathain, Murphy, & Nicholl (2008, p. 1579). Permission granted by SAGE Publications.

In current writings, we see that successful mixed methods teams have research support, have members with a range of expertise, engage in either multidisciplinary or interdisciplinary interactions, hold respect for diverse methodological orientations, and have a good leader who bridges across the areas of expertise and methodological persuasions. This leader pays attention to team composition, gives equal treatment to diverse methodologies, helps to shape dialogue, and values and involves all team members in decisions (Brannen & Moss, 2012). This leader also constructs a shared vision and develops a history of working together. Moreover, the team leader for a mixed methods project ideally has experience in quantitative, qualitative, and mixed methods research.

## EXPERIENCES IN MIXED METHODS RESEARCH

When asked about the skill set needed to undertake a mixed methods study, I often refer to experiences gained by students in my graduate program at the University of Nebraska–Lincoln. Graduate students entered a mixed methods course after they had completed classes on statistics and quantitative designs (e.g., experimental designs) and one or two qualitative research classes. This approach reinforced the need for quantitative and qualitative skills as a prerequisite to learning mixed methods research.



As shown in Table 2.5, at the top of my list of experiences would be taking courses or training in mixed methods research (as well as quantitative and qualitative research). Both courses and training have moved online with the current virus pandemic, and this has probably enhanced their availability to scholars. I know that in the Michigan Mixed Methods Research Program (mixedmethods.org), online workshops are now being offered on the general designs of mixed methods research at least three times a year. Conferences provide keynotes,

**TABLE 2.5**  
Experiences Building Mixed Methods Skills

Type of Experience	Examples of Experiences	Description of the Experience
Training experiences	<p>_____ Taking or teaching courses in research methods and mixed methods research</p> <p>_____ Attending conferences where mixed methods papers are presented</p> <p>_____ Attending mixed methods workshops</p>	<p>_____ Taking or teaching qualitative, quantitative, and mixed methods courses</p> <p>_____ Attending a mixed methods conference and mixed methods sessions at other conferences</p> <p>_____ Attending a mixed methods workshop training program</p>
Research experiences	<p>_____ Reading books and articles</p> <p>_____ Working on projects</p> <p>_____ Getting funded projects</p>	<p>_____ Routinely reading what has been written about mixed methods and remaining current</p> <p>_____ Working on projects to hone skills to conduct mixed methods research</p> <p>_____ Obtaining a funded mixed methods study</p>
Mentoring experiences	<p>_____ Mentoring others</p> <p>_____ Being mentored</p>	<p>_____ Assisting others in mixed methods projects in peer review or consultation</p> <p>_____ Finding and working with an experienced mixed methods mentor</p>

Source: Adapted from Gutterman (2017).

sessions, and workshops that are going online. The scholar Mixed Methods Research Training Program sponsored by the National Institutes of Health and the Office of Behavioral and Social Sciences represents a national training program for mixed methods in the health sciences coordinated at Johns Hopkins University (<https://www.jhsph.edu/academics/training-programs/mixed-methods-training-program-for-the-health-sciences/about-the-program/>).

In terms of research experiences, researchers can obtain skills by participating in a research project, writing an application for funding to a federal agency or a private foundation, and reading books on mixed methods research. My estimate would be that over 40 books have been written on this methodology, and they reflect different orientations from more philosophically oriented to theoretically positioned and methodologically focused. By reading these books, one can learn the language of mixed methods research, and many contain a glossary of important terms. Further, reading mixed methods articles published either as a methodology piece (focused on how to conduct the research) or as an empirical study (focused on the application of mixed methods to a topic) will further contribute to skills.

Finally, skills can be learned from mentors. In the Johns Hopkins Mixed Methods Research Training Program, emerging scholars are matched with experienced mixed methods consultants for one year. During this year, mentees' projects are discussed with the mentors. Those skilled in mixed methods research can also become mentors themselves and offer campus workshops or lectures about this methodology.

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## ATTITUDES TOWARD RESEARCH METHODOLOGIES

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When I wrote about conducting qualitative research (Creswell & Poth, 2018), I included a chapter about the type of thinking that would be helpful for a qualitative researcher to have. What about a mixed methods researcher? I find no definitive list of personal perspectives useful for a mixed methods researcher, but from my years of experience in the field, I feel that certain perspective or attitudes are certainly important as one ventures into mixed methods.

An openness to the diversity of research methodology certainly helps. This often means setting aside the narrow training in methods gained through graduate school or through experiences and being open to looking at research problems through the lens of different approaches. Reading about mixed methods, engaging in training in this approach, and experiencing the steps of a mixed methods project certainly help to create this openness. Having a mentor who has opened the mixed methods door also helps. Further, I see mixed methods research as a creative process where the investigator often invents ways to proceed and present information. For example, there are no fixed procedures for mixed methods designs and even fewer templates for diagramming the design of a study. This calls for the researcher to be inventive. The tables of joint displays

also need to be creatively shaped by the researcher without fixed approaches in the literature. In short, an openness to creativity is a certain part of conducting this form of research. Helpful also is a willingness to share with others, such as sharing research studies, reviewing projects of others, and educating advisers, committee members, journal editors, and funding application review team members about mixed methods research. An attitude of helping others understand this methodology goes a long way in promoting the field and in having a satisfactory experience with this approach.

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## RECOMMENDATIONS FROM THIS CHAPTER

The position I have taken is to urge mixed methods researchers to become skilled in quantitative, qualitative, and mixed methods research. A current list of skills can be drawn from recent publications of practices and standards. Collaboration on teams represents good team interactions, and it requires individuals to openly share their different methodological orientations under the guidance of a leader with diverse research skills. Whether the mixed methods project is undertaken by an individual or a team, the skills developed may come from coursework or training, research experiences, and being mentored or mentoring others. Augmenting the skills and the training would be the personal experiences or attitudes necessary to conduct this research. An openness to diverse methodologies is essential, as well as the creative process involved in many aspects of the methodology and the willingness to share work with others and obtaining their feedback.

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## ADDITIONAL READINGS

Creswell, J. W., & Báez, J. C. (2020). *30 essential skills for the qualitative researcher* (2nd ed.). Los Angeles, CA: SAGE.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: SAGE.

O’Cathain, A., Murphy, E., & Nicholl, J. (2008a). Multidisciplinary, interdisciplinary, or dysfunctional? Team working in mixed-methods research. *Qualitative Health Research*, *18*, 1574–1585.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin.

VERBI GmbH. (2013). MAXQDA [Computer software]. Retrieved from [www.maxqda.com/](http://www.maxqda.com/)

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