

USING
MIXED METHODS
RESEARCH SYNTHESIS
FOR LITERATURE REVIEWS

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4 MIXED METHODS RESEARCH SERIES



INTRODUCTION TO MMRS LITERATURE REVIEWS



Chapter Outline

In this chapter, we first provide a historical sketch on the development of various forms of literature reviews, including meta-analyses, meta-syntheses, and mixed methods research syntheses (MMRS), and we introduce and explain basic concepts and definitions related to these various forms of literature reviews. Second, we present an overview of the stages for conducting MMRS literature reviews. Third, we discuss ontological orientations for MMRS and how these orientations influence the MMRS process. Fourth, we provide practical guidelines for conducting MMRS. Finally, we discuss potential strengths and challenges for MMRS.



HISTORICAL SKETCH, CONCEPTS, AND DEFINITIONS

The increasing amount of published scientific research articles and books has been an impetus for conducting literature reviews. When researchers, policy makers, and practitioners want to read about a topic or problem they are interested in, it is way more time-efficient to read one or a few good literature reviews than to be swamped by all primary-level studies (also called original studies) published on the topic or problem. Review authors who conduct a **literature review** seek to synthesize the content of primary-level studies and other primary-level data sources on a certain topic, problem, intervention, program, or phenomenon of interest. In Box 1.1, we explain the terminology

used in this book to refer to persons who conduct a literature review and to persons who conduct a primary-level study. In the remainder of this section, we provide a historical sketch of the development of various forms of literature reviews, and we introduce and explain basic concepts and definitions related to various forms of literature reviews.

The first known records of review authors conducting literature reviews to synthesize existing knowledge and empirical evidence on a certain phenomenon of interest date back to the 18th century (Chalmers, Hedges, & Cooper, 2002). Most of these earliest literature reviews were quantitative in nature. Quantitative, statistical methods (e.g., correlation coefficients and average correlations; Pearson, 1904) were used to synthesize the empirical evidence from quantitative primary-level studies. In 1976, Gene V. Glass introduced the term **meta-analysis** to describe statistical methods for synthesizing quantitative primary-level studies (Chalmers et al., 2002). During the 20th century, meta-analyses were frequently used to synthesize quantitative primary-level evidence on the effectiveness of various treatments, interventions, and programs.

Box 1.1 Terminology Used in This Book

Throughout this book, we refer to persons who conduct a literature review as **review authors**. We use this term to refer to anybody who is undertaking a literature review for research purposes. Accordingly, also students who conduct a literature review for their master's theses or doctoral dissertations are referred to as *review authors* throughout this book even though they may not be authors of a published work. The term *review authors* is consistent with the terminology proposed and used by leading organizations promoting and disseminating literature reviews, such as the Campbell Collaboration and the Cochrane Collaboration.

We use the term **researchers** to refer to researchers who conduct primary-level studies. In a **primary-level study**, researchers typically collect qualitative and/or quantitative data directly from their research participants, for example, through interviews, observations, and/or questionnaires. These primary-level studies are *the data* included in literature reviews.

The practice of conducting quantitative effectiveness reviews was strongly influenced by the **evidence-based practice (EBP) movement**. EBP is based on the premise that high-quality research is needed to help determine what works and what types of policy and practice initiatives are likely to be most effective (Evans & Benefield, 2001). In other words, high-quality research is expected to serve as the foundation for policy and practice decisions and actions. The EBP movement encouraged review authors to conduct **systematic reviews** (Hammersley, 2001). These systematic reviews were expected to deliver high-quality cumulative knowledge that could inform policy and practice (Clegg, 2005). The Cochrane Collaboration (2015) describes systematic reviews as follows: *A systematic review attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given review question. Review authors conducting systematic reviews use explicit methods aimed at minimizing bias, in order to produce more reliable findings that can be used to inform decision making.* Systematic reviews are characterized by (a) a clearly stated set of objectives with predefined eligibility criteria for primary-level studies; (b) an explicit, reproducible methodology; (c) a systematic search that attempts to identify all primary-level studies that would meet the eligibility criteria; (d) an assessment of the validity of the findings of the included primary-level studies, for example, through the assessment of risk of bias; and (e) a systematic presentation and synthesis of the characteristics and findings of the included primary-level studies (Green et al., 2011). Advantages of these systematic literature reviews include (a) a quick assimilation of large amounts of information by researchers, policy makers, and practitioners, through consulting these systematic reviews; (b) the use of explicit and transparent methods that limit bias in identifying and rejecting studies; (c) reliable and accurate conclusions because of the systematic methods used; (d) the establishment of generalizability of findings and consistency of results due to a formal comparison of the results from the different included primary-level studies; (e) an identification of the reasons for potential heterogeneity and, consequently, the generation of new hypotheses about particular subgroups; (f) the generation of new perspectives and frameworks that transcend the retrieved primary-level studies; and (g) a potential reduction of the delay between research discoveries and implementation of effective strategies in practice (Gough, Oliver, & Thomas, 2012; Greenhalgh, 1997; Moher, Stewart, & Shekelle, 2012).

However, over time there was a growing recognition that simply quantitatively synthesizing the existing quantitative evidence on the effects of certain treatments, interventions, and programs was not sufficient for accurately informing policy and practice decisions and actions, and that it was necessary to capture the *bigger picture*. To determine which treatments, interventions, and programs were not only effective, but also feasible, appropriate, and meaningful, it was necessary to synthesize the existing empirical evidence on, for instance, user perspectives; participant behaviors, experiences, and preferences; and implementer behaviors, experiences, and preferences (Hannes, Booth, Harris, & Noyes, 2013). These questions on feasibility, appropriateness, and meaningfulness urged review authors also to synthesize the existing qualitative evidence on treatments, interventions, and programs of interest. Several qualitative **meta-synthesis** methods for summarizing qualitative primary-level studies and for generating new insights and understanding from interrelated qualitative research findings were developed, such as formal grounded theory (Eaves, 2001; Kearney, 1998, 2001), meta-ethnography (Britten et al., 2002; Noblit & Hare, 1998), thematic synthesis (Thomas & Harden, 2008), and meta-aggregative synthesis (Hannes & Lockwood, 2011).

In addition to the mono-method quantitative and qualitative literature reviews (i.e., meta-analyses and meta-syntheses), review authors developed approaches for combining empirical evidence described in various kinds of primary-level studies by using various kinds of qualitative and quantitative synthesis techniques, within a single literature review, to answer complex review questions and study complex topics and problems. When a team of review authors undertakes a literature review by applying the principles of mixed methods research (MMR), we say that they undertake a **mixed methods research synthesis** (MMRS). The data included in an MMRS are findings extracted from various qualitative, quantitative, and MMR primary articles, and various qualitative, quantitative, and mixed synthesis techniques are used to integrate the primary-level studies within the MMRS (Heyvaert, Maes, & Onghena, 2013).

Other terms that are used to describe an MMRS are *mixed methods synthesis* (Harden & Thomas, 2005), *mixed research synthesis* (Sandelowski, Voils, & Barroso, 2006; Voils, Sandelowski, Barroso, & Hasselblad, 2008), and *mixed studies review* (Pluye, Gagnon, Griffiths, & Johnson-Lafleur, 2009). Following the general definition of MMR proposed by R. Burke Johnson, Anthony J. Onwuegbuzie, and Lisa A. Turner (2007), we define an MMRS as a literature review in which review authors combine qualitative, quantitative, and MMR

primary-level studies and apply a mixed methods approach to synthesize and integrate those studies (e.g., using qualitative, quantitative, and MMR viewpoints, data collection techniques, data synthesis techniques, and inferential techniques), to enhance the breadth and depth of understanding complex phenomena, problems, and topics (Heyvaert et al., 2013).

A discourse that inspired the development and use of qualitative literature reviews (i.e., meta-syntheses) in addition to quantitative literature reviews (i.e., meta-analyses), and eventually the development and use of MMRS literature reviews, was the **complex interventions discourse** (Anderson et al., 2013; Petticrew et al., 2013; Squires, Valentine, & Grimshaw, 2013). To study a complex intervention or program, MMRS literature reviews offer several advantages over mono-method literature reviews.

First, most interventions and programs used in the social sciences, crime and justice sciences, educational sciences, psychology, international development, social welfare, and biomedical and health sciences are multilayered and consist of multiple components. In comparison with mono-method literature reviews, MMRS literature reviews are more appropriate to study these multiple components and layers, how these components and layers are related, and how these components and layers interact.

Second, policy makers and practitioners are often interested not only in the effectiveness of complex interventions and programs but also in their feasibility, appropriateness, and meaningfulness. The following question is related to the effectiveness of an intervention or program: *How effective is (the intervention/program) in addressing (the problem)?* The following question is related to the feasibility of an intervention or program: *What are barriers and facilitators to implementing (the intervention/program)?* The following question is related to the appropriateness of an intervention or program: *Are (the intervention's/program's) desired outcomes consistent with the target group's priorities and/or beliefs?* The following question is related to the meaningfulness of an intervention or program: *How do (the target groups) feel about participating in (the intervention/program)?* In comparison with mono-method literature reviews, MMRS literature reviews are more appropriate to study different but related review questions on effectiveness, feasibility, appropriateness, and meaningfulness of a single intervention or program in the various review strands. Questions on the effectiveness, feasibility, appropriateness, and meaningfulness of complex interventions and programs will be discussed in closer detail in Chapter 2.

Third, complex interventions and programs are not *magic bullets* that will always hit their target, and their effects often depend on context and implementation (Pawson, Greenhalgh, Harvey, & Walshe, 2005). MMRS literature reviews offer the opportunity to answer a diverse range of complementary questions on these complex interventions and programs in the various review strands, such as follows: *What is it about this intervention or program that works, for whom, in what circumstances, in what respects, and why?* (Pawson et al., 2005). It can, for instance, be interesting to study the question of *why* the program or intervention worked or did not work when applied in different contexts or circumstances, deployed by different stakeholders, or used for different purposes. We will discuss this issue in closer detail in Chapters 5 and 7.

Fourth, multiple types of empirical evidence often exist regarding a single intervention or program, which are reported in quantitative, qualitative, and MMR primary-level studies. MMRS literature reviews offer the opportunity to integrate these different types of research evidence on the same intervention or program in a single literature review.

OVERVIEW OF THE STAGES FOR CONDUCTING MMRS LITERATURE REVIEWS

An MMRS process generally includes eight stages. In this first chapter, we provide a brief overview of the stages that will be discussed in the remainder of this book.

First, you will write a **protocol** for your MMRS. In this protocol you *a priori* document all methodological and substantive choices that you will make throughout the MMRS process. The protocol helps you to plan how you will achieve your review objectives and answer your review questions, for instance, by deciding which MMRS design, which sampling strategy, which search strategies, which inclusion and exclusion criteria, and which synthesis approaches are most appropriate for reaching your review objectives and answering your review questions. We will discuss review protocols, review objectives, review questions, and MMRS designs in Chapter 2.

Second, you will select a sampling strategy that is appropriate for your MMRS. You will decide whether you will conduct an exhaustive, selective, or

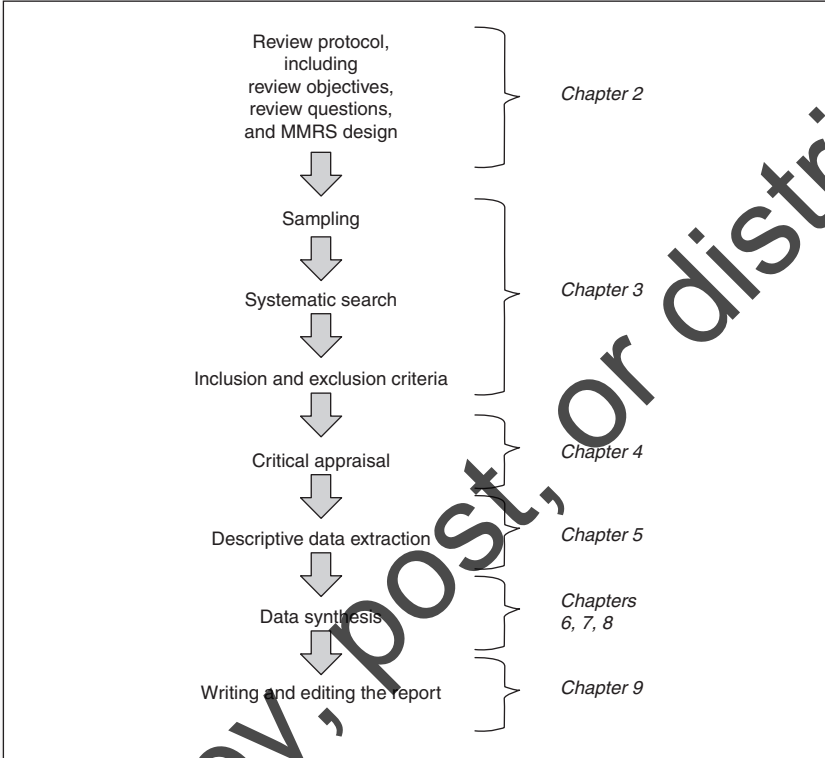
purposeful search for primary-level studies to be included in your MMRS. Third, in accordance with the selected sampling strategy, you will search for primary-level studies that might be relevant to your MMRS. Fourth, you will apply the inclusion and exclusion criteria that were stipulated in the protocol to the primary-level studies that were retrieved by the search process. This fourth stage will enable you to filter out irrelevant studies, as well as to keep only the primary-level studies that are relevant for answering your review questions. We will discuss sampling strategies, search strategies, and inclusion and exclusion criteria in Chapter 3.

Fifth, you may opt to appraise critically the methodological quality of the primary-level studies you retrieved. In Chapter 4, we will provide guidance on how to appraise critically the retrieved studies. We will discuss different approaches to quality assessment of the retrieved qualitative, quantitative, and MMR primary-level studies. Also in Chapter 4, we will discuss how to document the critical appraisal process, how to assess agreement on critical appraisal scores, and how to valorize the outcome of the critical appraisal exercise.

Sixth, you will extract relevant data from the included primary-level studies. In Chapter 5, we will discuss how descriptive data can be extracted from the primary-level studies included in an MMRS literature review. The descriptive data extraction process consists of four steps: (1) deciding which data will be extracted and developing a preliminary data extraction form and coding guide, (2) piloting the extraction form and the coding guide, (3) conducting the data extraction, and (4) identifying and discussing differences in extraction between review authors. We will describe, discuss, and illustrate these four steps in Chapter 5.

Seventh, in accordance with the purpose of the MMRS, the review question(s) posed, and the data included in the MMRS, you will select and use appropriate data synthesis approaches to describe, summarize, evaluate, interpret and/or integrate the primary-level data. We will discuss data synthesis approaches that can be used within various MMRS in Chapters 6, 7, and 8.

Eighth, you will write, edit, and disseminate your MMRS report. In Chapter 9, we will first discuss the writing process and how the intended audience for the MMRS influences this writing process. Furthermore, we will discuss ethics in the writing process and the sections to be included in the MMRS report. Finally, we will discuss publication outlets for MMRS literature reviews.

Figure 1.1 Stages for Conducting MMRS Literature Reviews

In Figure 1.1 we provide a visual overview of these eight stages for conducting MMRS literature reviews, and we indicate which stages will be discussed in which chapters of our book.

ONTOLOGICAL ORIENTATIONS FOR MMRS LITERATURE REVIEWS

Ontology is the study of *what is*, the study of *reality*. It has often been argued that researchers who conduct primary-level research should be explicit about their ontological orientation toward research. At the synthesis level too, review authors should reflect on their ontological orientation toward research and how this orientation influences their MMRS. Ontological orientations

toward research are often positioned on a continuum with on the one end the realist orientations and on the other end the idealist orientations. Researchers following realist orientations consider reality to be an external, concrete structure, whereas researchers following idealist orientations consider reality to be constructed, to be a projection of human imagination (Morgan & Smircich, 1980).

Review authors with **realist orientations** toward research synthesis treat the primary reports included in their review as more or less faithfully reflecting the primary-level studies that were conducted and the findings described in those primary reports as more or less faithfully reflecting the phenomenon under study, regardless of how those primary-level studies were themselves ontologically located (Sandelowski, Voils, Leeman, & Crandell, 2012). These review authors believe that research syntheses can produce the best evidence currently available to guide and improve policy and practice. Realist orientations toward research synthesis correspond to the strategy generally promoted by the EBP movement we discussed earlier.

Review authors with **idealist orientations** toward research synthesis will often go *beyond* what is described and reflected in the primary studies they retrieved. They often seek to reveal patterns or relationships between concepts and structures that remained hidden before. These review authors often intend to challenge reigning knowledge claims and dominant discourses, including the strategies put forward by proponents of the EBP movement (Eisenhart, 1998; Sandelowski & Barroso, 2007; Sandelowski et al., 2012).

We have two important remarks related to the realist–idealist continuum. First, it is indeed a continuum, not a dichotomy. Many review authors hold ontological orientations situated somewhere in between the realist and the idealist position. An example of an intermediate ontological orientation, which leans a bit more toward the idealist position, is a team of review authors who sees reality as a social construction (Morgan & Smircich, 1980). Second, the realist–idealist continuum is not the same as the quantitative–qualitative continuum. Although the realist ontological orientation is often associated with quantitative synthesis approaches (Cohen, Manion, & Morrison, 2000), several qualitative synthesis approaches can also be associated with the realist ontological orientation. For instance, the meta-aggregative approach to qualitative evidence synthesis we will discuss in Chapter 6 is situated on the realist side of the ontological orientations continuum. However, most of the review authors situated on the idealist orientation side of the continuum are indeed qualitative review authors.

We recommend that you explicitly report on your ontological orientation toward research in the MMRS report, as this orientation will undeniably influence the decisions you make throughout the MMRS process. For instance, your ontological orientation will influence the purpose of the MMRS (Chapter 2): Do you aim to synthesize the best evidence currently available to guide and improve policy and practice? Or do you aim to question reigning knowledge claims and dominant discourses? Furthermore, your ontological orientation will, for instance, influence whether you consider it desirable to conduct a systematic, exhaustive search for empirical evidence or whether you prefer to use certain purposeful sampling strategies (Chapter 3), whether you consider it desirable to appraise the primary reports you retrieved (Chapter 4), which data synthesis approaches you consider to be appropriate for your MMRS (Chapters 6, 7, and 8), and which reporting style you consider to be appropriate for communicating the findings of your MMRS to the audience you envision (Chapter 9).

Review authors' core ontological assumptions are linked to their epistemological stance and their favored synthesis methods. **Epistemology** refers to the *theory of knowledge*; it is the study of the nature and scope of knowledge. Review authors with a realist ontological orientation toward research synthesis will most likely hold the epistemological stance that it is possible to accumulate knowledge, that empirical primary-level studies can be valid sources of knowledge, and that they can accumulate knowledge by using positivist techniques such as verification and falsification. Review authors with an idealist ontological orientation toward research synthesis will most likely hold the epistemological stance that they can obtain phenomenological insights by means of interpretive processes and by means of critically reflecting on specific processes, behaviors, and so on, in specific settings.

PRACTICAL GUIDELINES FOR CONDUCTING MMRS LITERATURE REVIEWS

In this section we want to provide some practical guidelines for conducting MMRS literature reviews that may be perceived as common sense but are often overlooked by novice review authors. Our practical guidelines include keeping a review diary, monitoring the congruence of the choices you make throughout the MMRS process, and providing rationales for these choices. We start with discussing the advantages of keeping a review diary in Practical Tip 1.1.

Practical Tip 1.1: Keeping a Review Diary

We strongly advise you to keep a **review diary** while you are conducting your MMRS. A review diary is a digital or written record of everything that was done, considered, and reflected on during the MMRS process. The main reason for keeping a review diary is that you keep an **audit trail** during the entire MMRS process. In your review diary, you can make explicit the review choices that have been risen during the entire MMRS process (e.g., related to how the search for primary studies was conducted and how the collected data were synthesized), the reasons why you have turned down certain choices, the reasons why you have considered certain choices, and the reasons why you have made your final choices.

First of all, the review diary will urge you to write down explicitly all the choices met throughout the MMRS journey, as well as the advantages and disadvantages related to each choice alternative. It can help you to reflect on all these choices, the choice alternatives, and their consequences, as well as to engage in a dialogue on these choices with the other members of your review team.

Second, if you accurately recorded every decision made, the review diary will be a great help when you are writing up your MMRS report. For instance, in the *Methods* section of your MMRS report, you will write down *how exactly* you conducted each stage of the MMRS, and *why* you did what you did. When you took detailed notes on your actions as well as the justifications for your actions during the MMRS process, writing up the *Methods* section is relatively straightforward. Also for the *Introduction*, *Findings*, and *Discussion* sections, a detailed review diary will be of great help. Novice review authors particularly experience that writing the *Discussion* section is very hard, especially when they have to write it from scratch and when there remains only a limited amount of time to write this final section. However, if you already *during* the MMRS process kept detailed notes on the obstacles met, possible limitations of your MMRS process you considered, possible interpretations of your findings, possible implications of your MMRS, and suggestions for future research, policy, and practice based on

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your study, writing the *Discussion* may not be so hard after all. Taking such notes during the MMRS process might help you to think about the content and structure of the *Discussion* before fully writing it out in the final stage, as well as might enhance the quality and clarity of this section. We will discuss the content of the various sections and subsections to be included in the MMRS report in Chapter 9, but we find it important to convince you now, at the beginning of your MMRS journey, of the importance of keeping detailed notes throughout the entire MMRS process.

Throughout the MMRS process you will make a lot of methodological and substantive decisions, relating to questions such as follows: *Which MMRS design will I use? Which sampling strategy will I use? How will I search for primary studies? Which inclusion and exclusion criteria will I apply? Which synthesis approach(es) will I use?* In Practical Tip 1.2, we discuss the importance of congruence of the decisions you make throughout the MMRS process.

Practical Tip 1.2: Importance of Congruence of Choices

Methodologically speaking, **congruence** refers to the *fit* between the choices made during the literature review process. There should be a *fit* between the different stages of your MMRS process (Figure 1.1). For instance, in your MMRS, there should be congruence between:

- Review questions—Review objectives
- MMRS design—Review questions; review objectives
- Sampling strategy—Design; review questions; review objectives
- Search strategy—Sampling strategy; design; review questions; review objectives
- Data synthesis approach—Collected data; design; review questions; review objectives

We advise you to write down explicitly all the methodological and substantive choices you made throughout the entire MMRS process and to reflect on the consistency between the choices: *Is there a good fit between each of the choices you made? Would another choice alternative result in a better fit? For instance, would another MMRS design be a better fit for your review objectives and review questions?*

A **rationale** refers to a reason, an argument, or a justification that you can give for making certain choices. In Practical Tip 1.3, we discuss the importance of rationales for the methodological and substantive choices you make throughout the MMRS process.

Practical Tip 1.3: Importance of Rationales for Your Methodological and Substantive Choices

Throughout the MMRS process, you are confronted with several choices, such as follows: *What is my review objective? How should I formulate my review question? Which design would be optimal for my MMRS?* Thinking about rationales is thinking about the pros and cons for every choice alternative. For instance, in Chapter 2, we will discuss three major MMRS designs: segregated, integrated, and contingent designs (Sandelowski et al., 2006). Thinking about the design choice for your MMRS, you can consider each of the three choice alternatives, and list for each of the alternatives the pros and cons, for instance:

	Why would this design be beneficial for my MMRS?	Why would this design be detrimental for my MMRS?
Segregated design
Integrated design
Contingent design

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(Continued)

This thinking about rationales can be reflected in the MMRS report. Of course, it is not desirable to discuss in the MMRS report *each* choice alternative for *each* methodological and substantive choice made throughout the MMRS process. However, the choice alternatives that *were* selected should be explicitly mentioned in the MMRS report (e.g., which MMRS design was used), and a rationale for selecting this alternative should be provided (e.g., explaining why this design *worked* for your MMRS). We will discuss this in closer detail in Chapter 9.

POTENTIALS AND PITFALLS FOR MMRS LITERATURE REVIEWS

We see two major advantages of conducting MMRS literature reviews. First, in comparison with a mono-method qualitative or quantitative literature review, an MMRS can allow greater richness and broader insights, and it can allow for exploring multiple facets on a topic, problem, intervention, program, or phenomenon of interest. Accordingly, a more diverse range of complementary questions on the topic, problem, intervention, program, or phenomenon of interest can be studied within an MMRS, for instance: *What is it about this kind of intervention that works, for whom, in what circumstances, in what respects, and why?* (Pawson et al., 2005). Furthermore, complex topics, problems, interventions, programs, or phenomena can be approached from different perspectives, resulting in possibly more complete, concrete, and nuanced answers in comparison with mono-method literature reviews. This might result in more useful suggestions for policy and practice. For example, in the MMRS of James Thomas et al. (2004), the combination of quantitative controlled-trial studies describing the effects of interventions that promoted healthy eating with qualitative studies that examined the perspectives and understandings of children concerning barriers to and facilitators of fruit and vegetable intake increased the policy relevance of the literature review because it has the potential to inspire and inform the development of more effective and appropriate healthy-eating interventions (Harden & Thomas, 2005).

Second, the combination of various synthesis methods in an MMRS brings along possible advantages, such as (a) adding confidence in the literature review's conclusions when different synthesis methods, used for synthesizing various sources of primary-level evidence on a single phenomenon of interest, result in similar conclusions, and (b) revealing and developing challenging or integrating theories by comparing and combining the inferences that result from the diverse synthesis methods. Furthermore, the combination of qualitative and quantitative synthesis approaches holds the possibility to uncover and explain discrepancies between the findings of the included primary-level studies. For example, in the previously mentioned MMRS of Thomas et al. (2004), the insights gained within the qualitative strand allowed an in-depth and nuanced exploration of the statistical heterogeneity detected within the quantitative strand of the MMRS.

Although the mixing of qualitative, quantitative, and MMR empirical data and synthesis techniques in an MMRS can hold multiple opportunities, there are possible challenges concerning the implementation of an MMRS. In comparison with mono-method literature reviews, review authors conducting an MMRS have to deal with a more voluminous amount of data and more divergent data. A more voluminous amount of data included in a literature review results in an increased amount of time and resources needed to conduct each stage of the MMRS. For instance, a larger number of abstracts and full-texts will have to be screened in the data collection stage, and a potential larger number of studies will have to be critically appraised and synthesized.

Furthermore, the data included in an MMRS can be very divergent as the studies included in an MMRS can be qualitative, quantitative, and MMR primary-level studies on the phenomenon of interest. This is particularly challenging at the point where insights generated from different types of studies need to be integrated. Review authors should try to synthesize and integrate the various types of primary-level studies without ignoring the methodological identity of, and losing the intrinsic value of, all these various types of primary-level studies.

Another important challenge is that without a meaningful integration or "mix" of the qualitative and quantitative strands, a literature review can hardly be called an "MMRS." Especially when the qualitative and quantitative subteams, who are respectively involved in the qualitative and quantitative strand of an MMRS, are composed of *purely* qualitative and *purely* quantitative methodologists, skill specialization might hinder the integration of the findings (Bryman, 2007). We will elaborate on the team issue in Chapter 2.

Finally, we want to stress that the answer to the question of whether it makes sense to perform an MMRS on a certain topic depends on the topic at hand, on the kinds of empirical evidence available in the research domain, on the purpose of the synthesis, and on the posed review questions. Pawson (2008) noted that “method mix is the new methodological Holy Grail” (p. 120). Someone intending to conduct a literature review might nowadays be inclined to conduct an MMRS because conducting MMR is *hot and trendy*. However, MMRS—and MMR in general—is neither a *Holy Grail* that is the *ultimate aim* for every review author nor the *perfect choice* for every literature review. Sometimes, conducting a mono-method qualitative or quantitative literature review is way more appropriate to reach the review purposes and to answer the posed review questions. Conducting an MMRS is a time-consuming and expensive enterprise. Accordingly, the decision to conduct an MMRS should be a deliberate, rational, and well-justified decision. The review purpose and the review questions should be the key drivers for whether to choose an MMR approach. We will discuss this issue further in the next chapter.

Summary Points

- We refer to persons who conduct a literature review as review authors.
- When a team of review authors undertakes a literature review by applying the principles of mixed methods research (MMR), we say that they undertake a mixed methods research synthesis (MMRS).
- The data included in an MMRS are findings extracted from various qualitative, quantitative, and MMR primary articles, and various qualitative, quantitative, and mixed synthesis techniques are used to integrate the primary-level studies within the MMRS.
- Literature reviews were already conducted in the 18th century. Most of the earliest literature reviews were quantitative in nature. To determine which treatments, interventions, and programs were not only effective but also feasible, appropriate, and meaningful, qualitative and mixed methods approaches to literature reviews were developed.
- The complex interventions discourse inspired the development and use of MMRS literature reviews.
- The MMRS process includes eight stages: (1) writing the review protocol (including review objectives, review questions, and MMRS design); (2) sampling; (3) searching for primary-level studies; (4) applying

inclusion and exclusion criteria; (5) possibly critically appraising the methodological quality of the primary-level studies; (6) extracting relevant data from the primary-level studies; (7) interpreting, synthesizing, and integrating the data; and (8) writing and disseminating the MMRS report.

- It is important to reflect on your ontological orientation toward research and on how this orientation influences your MMRS.
- We strongly advise you to keep a review diary. This is a digital or written record of everything that was done, considered, and reflected on during the MMRS process.
- There should be congruence between the choices you make throughout the MMRS process.
- A first advantage of conducting MMRS literature reviews is that, in comparison with a mono-method qualitative or quantitative literature review, an MMRS can allow greater richness and broader insights, and it can allow for exploring multiple facets on a topic, problem, intervention, program, or phenomenon of interest.
- A second advantage is that the combination of various synthesis methods in an MMRS may allow us to (a) add confidence in the literature review's conclusions when different synthesis methods, used for synthesizing various sources of primary-level evidence on a single phenomenon of interest, result in similar conclusions; (b) reveal and develop challenging or integrating theories by comparing and combining the inferences that result from the diverse synthesis methods; and (c) uncover and explain discrepancies between the findings of the included primary-level studies.
- A first challenge of conducting an MMRS literature review is that, in comparison with a mono-method literature review, you have to deal with a more voluminous amount of data and more divergent data.
- A second challenge is that without a meaningful integration or “mix” of the qualitative and quantitative strands, a literature review can hardly be called an “MMRS.”
- The review purpose and the review questions should be the key drivers for choosing an MMRS approach.

Questions for Thought

- Think about your ontological orientation toward research synthesis. Do you situate yourself more on the realist end of the ontological

orientations continuum, and do you believe that research syntheses can produce the best evidence currently available to guide and improve policy and practice? Or do you situate yourself more on the idealist end of the ontological orientations continuum, and do you intend to reveal patterns or relationships between concepts and structures that remained hidden before, and/or to undermine reigning knowledge claims and dominant discourses by means of your research synthesis? Or do you situate yourself somewhere in between the realist and the idealist position?

- Think about the topic, problem, intervention, program, or phenomenon you want to focus your literature review on. Consider whether a quantitative literature review, a qualitative literature review, or an MMRS would be the most appropriate approach for your literature review. You can do this by listing your preliminary review objectives and review questions and by listing for each of the three approaches (i.e., quantitative literature review, qualitative literature review, and MMRS) whether it is likely to allow you to reach your review objectives and to answer your review questions.

Exercises

- Start keeping a review diary and record everything that you did, considered, and reflected on during your MMRS process in this diary (Practical Tip 1.1). Decide whether you want to keep a digital or written review diary.
- Make the first entries in the review diary. These first entries can for instance relate to the *Questions for Thought* we posed earlier. In addition, you can reflect on any topic mentioned in this first chapter in your review diary.
- Create an overview table in your review diary, including five columns.
 - In the first column of this table, you list the major MMRS stages that were depicted in Figure 1.1: (1) writing the review protocol (including review objectives, review questions, and MMRS design); (2) sampling; (3) searching for primary-level studies; (4) applying

inclusion and exclusion criteria; (5) possibly critically appraising the methodological quality of the primary-level studies; (6) extracting relevant data from the primary-level studies; (7) interpreting, synthesizing, and integrating the data; and (8) writing and disseminating the MMRS report.

- In the second column, you will later on mention the specific choices made within each of these stages. For instance, for the sampling stage (which will be discussed in Chapter 3), you can note down in the second column whether you will conduct an exhaustive, selective, or purposeful search for primary-level studies to be included in your MMRS.
- In the third column, you will leave a place to add rationales for the choices described in the second column. A rationale refers to a reason, an argument, or a justification that you can give for making certain choices (Practical Tip 1.3).
- In the fourth column, you will leave a place to reflect on the congruence of your choices for the different stages of your MMRS (Practical Tip 1.2). For instance, for the sampling stage, you can note down in the fourth column whether your choice to conduct an exhaustive, selective, or purposeful search for primary-level studies is congruent with your review objectives and review questions.
- In the fifth column, you will leave a place to reflect on the congruence of each of your choices with your ontological orientation toward research synthesis. For instance, for the sampling stage, you can note down in the fifth column whether your choice to conduct an exhaustive, selective, or purposeful search for primary-level studies is congruent with the ontological orientation toward research synthesis you described in your review diary.

Suggestions for Further Reading

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