

CHAPTER 6

Evaluating Research Articles

Once you have extracted, summarized, and analyzed relevant information from the sources that you deemed valuable for your study, you are now ready to critically evaluate the literature. Reading for the purpose of extracting and summarizing the relevant information demands paying attention to the details of the study, while reading for critical assessment comprises a “holistic judgment of the study” (Booth et al., 2016, p. 129). On the other hand, some literature review writers prefer to critically assess the quality of the studies they review at the same time they summarize them because, from their perspective, doing these two processes concurrently is more efficient and saves time (Booth et al., 2016).

In this book we have chosen to divide our discussion into two chapters: In Chapter 5, we discussed the procedures involved in extraction, analysis, and summarization of the sources; and in this chapter, we turn our focus to the critical reading of texts. We believe that doing so increases the level of clarity and understanding of the process involved in each step. You, on the other hand, should feel free to choose whether you want to combine the steps or work on each separately.

In any way you choose to proceed, be aware that the purpose of a review is to provide a critique, rather than a mere report, on the literature on your topic (Wellington, Bathmaker, Hunt, McCulloch, & Sikes, 2005). Critiquing the research sources means gauging the quality of the references and the soundness of the findings reported. In this chapter we first highlight the role of a critical evaluation of the literature on your topic. We then outline criteria that may help you in evaluating quantitative, qualitative, and mixed-methods research, and in examining the validity of these studies. Then we analyze the unique ways of assessing hermeneutic–phenomenological research.

CRITICAL EVALUATION OF THE QUALITY OF SOURCES

When you write a literature review it is important that you adopt a critical stance toward the sources you review (Ridley, 2012). This means having confidence in your own ability to make a deliberate and informed judgment while at the same time keeping a degree of humility and respect toward researchers whose work you are critiquing (Wellington et al., 2005).

You should assess the strengths and flaws of each individual study in order to evaluate its claims, assess its methodology, and ascertain the validity and credibility of the findings. The quality and integrity of your review depends, to a large extent, on the sources you use. The claims you put forth in your writing draw their trustworthiness from the data you present as evidence (Booth et al., 2008; Machi & McEvoy, 2012). You should ensure that poorly designed research with unreliable evidences will not negatively impact the quality of your review or lead to misleading arguments (Galvan & Galvan, 2017).

At the same time, while you should be a critical reviewer, you should not be a hypercritical one (Booth et al., 2008). Your role as a literature review writer is not to look for perfect studies (Petticrew & Roberts, 2006) or to highlight every flaw in each research article that you review. Almost all studies have some weaknesses and your role is to consider which flaws are crucial and which have a minimal effect on the findings (Booth et al., 2016). While some researchers (e.g., Cooper, 1988) suggest eliminating studies with severe methodological inadequacies from the literature review, others (e.g., Booth et al., 2016; Hart, 1998; McMillan & Wergin, 2010) assert that even when the study has imitations, it can still provide valuable information. In fact, Walsh and Downe (2005), when discussing the appraisal of qualitative research, recommend that even if there are serious flaws in studies, they may still be worth including in the review in order to highlight the need for better-quality studies in the future.

In short, what is important is the impact of the findings from each article upon your own review’s claims, arguments, and conclusions. As you write your review, acknowledge the weaknesses, as well as the strengths, of these studies and demonstrate their relative impact on your work. This explicit awareness of the quality of the reviewed studies becomes what Dawidowicz (2010, p. 90) refers to as the “logical bridge” that allows your readers to understand how you have drawn your arguments from your sources and reached trustworthy conclusions.

While you may want to assess the quality of *all* the sources that are part of your literature review, we suggest that the detailed evaluation of articles be done mostly for those studies that are critical for your own review and have a central role in planning your future research. Additionally, we agree with Galvan and Galvan’s (2017) recommendation that rather than critique each article on its own,

it might, at times, be better to critique groups of sources together, especially when you identify a pattern of weakness that is common across these studies.

Furthermore, as you review individual articles, be cognizant of the style of your literature review. For example, systematic literature reviewers are basing their appraisal on precise and strict standards of evaluation (Jesson et al., 2011). By comparison, hermeneutic–phenomenological reviewers, while recognizing the importance of using rigorous sources, emphasize the idea that all articles may be included in the review (Walsh & Downe, 2005). Writers of traditional–narrative reviews assume a flexible stance and use different criteria for evaluating the quality of quantitative, qualitative, and mixed methods.

In this chapter, recognizing that each research type has its own quality standards, we follow the traditional–narrative reviewers and suggest criteria for appraising studies on the basis of their approach to research. We also offer guidelines for evaluating hermeneutic–phenomenological writings.

Most researchers (e.g., Booth et al., 2008; Cooper, 1984) contend that the quality of the design and methodology of the study and the validity and trustworthiness of the findings should be the primary criteria for judging its adequacy and the level of trust in its results. Therefore, in their discussion of literature critique, their focus is on ways to assess the study’s design and methodology. While we agree with this assertion, we chose to follow McMillan and Wergin (2010) and in this chapter we provide criteria for assessing every section of research articles. We do so because we believe it is important to examine all the elements of research studies to determine their quality, and that this knowledge is essential for literature reviewers. We also believe that knowing the criteria for assessing all the elements of a study will help you assess your own work and improve the quality of your study.

CRITERIA FOR EVALUATING INDIVIDUAL STUDIES ||||||||||||||||||

In the following sections we provide criteria for assessing the quality of articles that can be categorized as quantitative, qualitative, mixed-methods, and hermeneutic–phenomenological studies. You may recall that Chapter 2 highlights the differences among quantitative, qualitative, and mixed-methods research. As we pointed out, each type of research is distinguished in its nature and purpose and those distinctions impact the way the research is conducted. All of these types of research include some form of quality standards; those standards are drawn out of the traditions, orientations, expectations, and norms that typify each approach to research (McMillan & Wergin, 2010). As we evaluate the different types of studies, these differences should be considered.

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In quantitative research, demonstrating the quality of studies is an essential part of the research process and the criteria for assessing the studies are well established. On the other hand, there is considerable debate among qualitative researchers as to whether and how qualitative research should be evaluated (e.g., Booth et al., 2016; Denzin, 2009; Marshall & Rossman, 2015; McMillan & Schumacher, 2010).

From the qualitative researcher's point of view, truth is multiple and knowledge is socially constructed (Walsh & Downe, 2005). This assumption results in three basic positions on the value of assessment. The first camp (e.g., Dixon-Woods, Shaw, Agarwal, & Smith, 2004; Dixon-Woods, Bonas, et al., 2006; Teddlie & Tashakkori, 2009) contends that, in essence, *research is research*, and the set of shared criteria used by quantitative researchers (i.e., internal and external validity, credibility, transferability, conformability, and transparency) should be applied equally to qualitative studies.

The second camp asserts that there is an essential difference in the nature and purpose of qualitative and quantitative research. Therefore, a different set of criteria, unique to qualitative research, should be used to assess the soundness and trustworthiness of this type of study (e.g., Bazeley, 2013; Creswell, 2018; Lincoln & Guba, 1985; Marshall & Rossman, 2015; Maxwell, 2013).

The third camp of qualitative researchers believes that applying an explicit set of criteria to qualitative research is incompatible with the nature and purpose of this type of inquiry. They reject any kind of regulatory expectations implied by using assessment criteria (e.g., Denzin, 2009; Hammersley, 2007).

In this book we accept the notion that qualitative research should meet criteria for good research practice. With that in mind, and following Lincoln and Guba (1985), we believe that qualitative studies should not be judged using traditional standards borrowed from quantitative approaches. Rather, assessment of qualitative studies should be done using an alternative set of criteria reflecting the fact that qualitative methods are inherently subjective and local in scope; and validity and reliability should be defined within this framework.

Our discussion of evaluative criteria is divided into three parts. First, we provide criteria for those sections of the articles that are common to quantitative, qualitative, mixed-methods, and hermeneutic–phenomenological research, while also pointing out particular aspects that may differ among these types. Secondly, we provide separate criteria for evaluating the methodology and findings sections that differentiate quantitative, qualitative, and mixed-methods research. We also include a section about assessing the validity of these types of research. Thirdly, we present a short discussion that highlights criteria for assessing hermeneutic–phenomenological research. Each section concludes with a checklist that is designed to summarize the different processes of quality assessment for that specific type of research.

ELEMENTS OF RESEARCH ARTICLES COMMON TO QUANTITATIVE, QUALITATIVE, MIXED-METHODS, AND HERMENEUTIC–PHENOMENOLOGICAL RESEARCH |||||

There are certain elements that are expected to be included in most types of research articles, and the criteria used to assess them are therefore similar. On the other hand, there are parts that are unique to articles from different traditions of research, and the assessment criteria are therefore different. Following, we present the criteria to assess the elements that are common to quantitative, qualitative, mixed-methods, and hermeneutic–phenomenological research, while at the same time we point out the differences that distinguish each.

Title

The title is the reader’s first introduction to the content of the article and thus should represent it accurately; it should be informative and fully explanatory. Most readers are likely to encounter the title for the first time when they conduct an electronic search on their topic, and a misleading title can cause the writer to overlook valuable articles or to invest unnecessary time and energy in obtaining references that are not relevant. Titles should be concise and avoid words that do not serve a useful purpose such as “A Study of . . .” It is recommended that the title not include more than 12 words (*Publication Manual of the American Psychological Association* [APA], 2010, p. 23). When possible, use complete rather than abbreviated terms. The use of colons in the title allows for conciseness as well as explanations.

Abstract

An abstract provides a preview and a summary of the study. The length of the abstract is commonly restricted by the journal where it is published, ranging most often from 50 to 150 words. Abstracts should accurately summarize the article and contain information about the purpose of the study, a brief description of the study’s methodology, and the main findings (McMillan & Schumacher, 2010). A good abstract should be accurate, nonevaluative, coherent, readable, and concise (American Psychological Association, 2010, p. 26).

Introduction

The introduction provides a general context for the study, including a review of past literature and a definition of key terms and concepts. The introduction also includes a problem statement that defines the purpose of the study, the rationale for conducting it, and its significance for the researcher and for the field. This

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statement should also communicate the study's design (e.g., experimental or interpretive) and the variables to be studied (McMillan & Wergin, 2010).

Although in dissertations, theses, and grant proposals the introduction is a separate chapter, in published research articles the introduction and literature review are often combined into a single section. The research questions and—where appropriate—hypotheses may be included in this section or they may follow the literature review.

Literature Review

A well-structured literature review provides the background information about the topic of the study, placing it in the broader scholarly literature. A good review includes a critical analysis of previous studies (McMillan & Wergin, 2010), notes gaps in knowledge, inconsistencies, or the need to confirm previous findings, and builds a case for conducting the proposed study. A literature review typically starts with more general information about the topic and ends with a focused discussion of studies that are most related to the planned research.

Research Questions and Hypotheses

While the general purpose of the study may be stated in the introduction, the study's specific research questions and/or hypotheses are usually found after the literature review and are based on the information presented there. Although hypotheses are appropriate in most empirical quantitative studies, other nonexperimental studies may contain research questions but not hypotheses (McMillan & Schumacher, 2010). In studies where hypotheses are stated, they should be phrased in a way that allows them to be tested.

Research questions in qualitative, as well as in hermeneutic–phenomenological research, are mostly open-ended. It is common to start the research with questions of *what* and *how* and avoid phrasing them in a way that leads to yes or no answers. While the questions serve as a boundary around the inquiry, they should be general enough to allow flexibility in the research process (Efron & Ravid, 2013; Marshall & Rossman, 2011). It is common for questions in qualitative and hermeneutic–phenomenological research to evolve and change throughout the research process (Boell & Cecez-Kecmanovic, 2010, 2014).

In mixed-methods studies, there are likely to be two or more research questions, each calling for a different approach to data collection (Efron & Ravid, 2013). A use of mixed methods allows researchers to pose both specific and open-ended questions. The questions can be determined at the start of the study or emerge once the study is under way (Creswell & Plano Clark, 2011).

TO DO:

Evaluating Common Elements in Quantitative, Qualitative, Mixed-Methods, and Hermeneutic–Phenomenological Research

Table 6.1 provides a checklist for evaluating elements that are common to quantitative, qualitative, mixed-methods, and hermeneutic–phenomenological research.

TABLE 6.1. A Checklist for Evaluating Common Elements in Research Articles Reporting on Quantitative, Qualitative, Mixed-Methods, and Hermeneutic–Phenomenological Research		
	Common article elements	✓
Title	■ Is concise, clear, and accurately summarizes the main idea of the article	
Abstract	■ Summarizes the article accurately and concisely within the prescribed number of words	
	■ Is nonevaluative	
	■ Includes information about the study's purpose	
	■ Includes information about the study's methodology	
	■ Includes information about the study's major findings	
Introduction	■ The rationale for the study is presented, including its importance and relevance	
	■ Key terms and concepts are explained	
	■ The problem to be studied is stated and its significance is examined	
Literature review	■ The research topic is placed in a broad scholarly context	
	■ Provides comprehensive background information to evaluate the current research	
	■ Important previous research findings are noted	
	■ Critically discusses and evaluates related research studies	
	■ Well organized in a logical order	
	■ Includes up-to-date studies	
Research questions and/or hypotheses (may be included in the introduction or follow the literature review)	■ The research questions are clearly stated	
	■ In quantitative research, the hypotheses are related to the research questions and are testable	
	■ In qualitative and hermeneutic–phenomenological research, the questions are open-ended, often starting with <i>what</i> and <i>how</i>	
	■ In qualitative and hermeneutic–phenomenological research the questions evolve and change throughout the research process	
	■ Research questions are both open-ended and specific in mixed-methods approach	
	■ There may be more than one research question in mixed-methods research, each calling for a different approach to data collection	

SECTIONS OF RESEARCH ARTICLES THAT CHARACTERIZE
QUANTITATIVE, QUALITATIVE, AND MIXED-METHODS RESEARCH

Quantitative Research: Methodology, Results, Discussion, Validity, and Reliability

Methodology

This section describes how the study was conducted and includes information about the study’s participants, data collection tools, data collection procedures, and data analysis. The description should be specific and detailed to allow other researchers to duplicate the study without having to contact the authors of the article (Garrard, 2014). It is important to note whether the study was experimental or nonexperimental. Experimental studies allow researchers to test cause-and-effect relationships between variables, whereas descriptive or nonexperimental studies are used to describe phenomena and test noncausal relationships between variables. While experimental methods are the best choice for studying cause-and-effect relationships, it is sometimes impossible or not practical to use such designs (Galvan, 2014) and nonexperimental methods have to be implemented.

Next we provide information about each subsection of the methodology: participants, data collection tools, data collection procedures, and data analysis. A brief discussion of the ethics of conducting quantitative research is also included.

PARTICIPANTS

It is important to provide specific information about the participants to allow for the generalization of the findings and replication of the study (American Psychological Association, 2010). This subsection should report on the demographic characteristics of the sample, the number of participants, and how they were selected. The reason for doing this is that results from a small sample are not considered as strong as those from a large sample. In another example, using volunteers in a study may introduce a degree of bias. Additionally, information about the participants may be study specific. For example, the age or gender of the participants may be important characteristics in one study but not in another.

DATA COLLECTION TOOLS

A variety of instruments may be used to collect data in quantitative studies, including surveys, tests, ratings, and archival materials (McMillan & Wergin, 2010). Structured interviews and observations may also yield quantitative data. A detailed description of the tool(s) used to collect data should be provided along with sample items.

Most data collection tools used by researchers fall into three general categories: (1) existing instruments that were developed by others, (2) modified existing instruments, and (3) new tools developed specifically for the study (Creswell & Plano Clark, 2011).

Using Existing Instruments. This approach allows the researchers to skip the step of constructing and validating the data collection tool; doing so is appropriate when the current study measures the same subjects, concepts, or traits as those measured by the existing tool.

Modifying an Existing Instrument. This approach can also provide some shortcuts in the process of developing the data collection tools. However, the researcher has to demonstrate the reasons for the modifications and document that these changes do not negatively affect the tool's reliability and validity. (See the section in this chapter about validity and reliability in quantitative research.)

Developing New Instruments. The third approach for developing tools specifically for the study is usually the most time-consuming and demanding; on the other hand, newly developed instruments tend to be most closely related to the study's specific purpose and research questions.

DATA COLLECTION PROCEDURES

The procedures used to collect data are described in this subsection. Information about how the study was conducted should be complete and clear enough to allow the study to be replicated. Information in this section may include the following: the process, duration, and schedule of the study, and a description of how the data were collected.

DATA ANALYSIS

This subsection describes how the data were analyzed, and the statistical tests used to analyze the data. The statistical tests may be listed in relation to the study's hypotheses. While this may be a helpful section, it is not always included in quantitative articles.

RESEARCH ETHICS

The rights and welfare of the study's participants should be assured; they should be informed of the nature of the research and be allowed to withdraw at any point. When minors participate in a study, their parents or legal guardians should provide their consent. Strictly following ethical guidelines is especially important in

experimental studies where people participate in planned interventions (R. Ravid, 2015). In studies that involve human subjects, researchers should follow the guidelines provided by their professional associations, organizations, and/or universities.

Results

The findings from the study are presented in this section. If research questions and/or hypotheses were stated for the study, they are repeated here and the data that were used to test them are presented. The main findings are reported and evaluated to determine whether they support the study's hypotheses. The results are presented here without an attempt to interpret them (McMillan & Wergin, 2010) or to offer explanations and implications. Numerical data, tables, and charts are often used to present the findings, along with a narrative that introduces and then interprets the data.

Discussion

The results are interpreted, evaluated, and explained in this section. When the results are unexpected or contrary to those predicted, tentative explanations should be provided (R. Ravid, 2015). This section also includes a discussion of how the study's findings fit with prior research on the topic, pointing to similarities, differences, and extensions of current knowledge.

Conclusions about the study and implications for practitioners are also found in this section. It is recommended that limitations of the current study and suggestions for future research be offered in the final discussion.

Validity and Reliability

In designing quantitative studies, researchers have to ensure the *external* and *internal validity* of their investigation. Internal validity refers to the degree that the researcher can demonstrate that the outcomes obtained are due to the planned intervention rather than extraneous variables that were not controlled in the study (R. Ravid, 2015); whereas external validity refers to the degree that the findings can be generalized to a larger population or to other settings.

Both types of validity are especially important in experimental research that investigates cause-and-effect relationships. Internal validity refers to the extent that researchers can document that any changes in the variable under study (dependent variable) were caused by the planned treatment (the independent variable) and not by other uncontrolled variables. Those uncontrolled or unanticipated variables (often referred to as extraneous variables) may present an alternative explanation for the study's outcomes (the dependent variable). (For more information, see www.socialresearchmethods.net/kb/intval.php). Threats to internal validity

include bias in selecting the study participants (e.g., using volunteers for the experimental group), testing (the effect that a pretest has on the posttest performance of study participants), history (events that happen while the study takes place that may affect the dependent variable, especially in long-term studies), and instrumentation (the level of reliability and validity of the instrument being used to assess the effectiveness of the intervention) (R. Ravid, 2015).

Most studies are aimed at extending their findings to other similar settings, groups, and populations, rather than addressing only a local issue. Therefore, in order to contribute to the body of knowledge, a study should have high external validity, in addition to internal validity. There is, though, some tension between internal and external validity. In order to be of value, a study should have a tight control to ensure high internal validity; but this tight control makes the study unlike real life, thus limiting its external validity.

VALIDITY AND RELIABILITY OF DATA COLLECTION TOOLS

The validity of the data collection tools should also be reported. This type of validity refers to the extent to which an instrument measures that which it is designed to measure and whether appropriate inferences and interpretations are made using the results of the instrument (R. Ravid, 2015). It is important to remember that data collection tools are developed and validated for a specific purpose; thus, when they are used for other purposes or in different contexts, the validity has to be reestablished and documented.

There are three major types of validity that relate to data collection tools: (1) Content validity (whether the items or questions measure the content they are designed to measure); (2) criterion-related validity (whether the scores relate to another external tool that measures the same or related concepts); and (3) construct validity (whether the scores measure what they are supposed to measure) (Creswell & Plano Clark, 2011).

Reliability of data collection tools refers to the consistency and dependability of the instruments used to gather data (R. Ravid, 2015). There are several ways to assess the reliability of a measuring tool, and all of them rely on the use of correlation among the test items or with other quantitative measures (Mertler, 2012). Some of the most common ways of assessing reliability are (1) test-retest, where the same test is administered twice to the same group of examinees and the scores from the two testing sessions are correlated and compared; (2) alternate forms, in which two alternate forms of the same test are given to the same group of examinees and the scores of each person from the two testing sessions are correlated; (3) measures of internal consistency, which refers to using the scores from a single testing to assess the reliability of the whole test (R. Ravid, 2015).

Different types of studies require instruments with various levels of reliability. For example, the reliability of psychological tests used to diagnose and place people

into treatment should have a reliability of .90 or higher. High-stakes achievement tests also commonly have reliabilities over .90. By comparison, lower levels of reliability are acceptable for measurement tools used in a study to assess a group of students, especially if they are used to measure noncognitive performances or traits.

When discussing the validity of an instrument, its reliability should also be reported because reliability is a precondition to validity. It is safe to expect that no measure is totally valid (Galvan & Galvan, 2017), but the assumption is that valid tests are also reliable.

TO DO:

Quantitative Research Evaluation Checklist

To appraise quantitative studies, you may want to use the checklist in Table 6.2. This checklist provides a systematic way to identify the strengths and weaknesses of the methodology, results, discussion, and reliability and validity.

TABLE 6.2. A Checklist for Evaluating Quantitative Research Articles: Methodology, Results, Discussion, and Validity and Reliability		
Quantitative research articles		✓
Methodology	■ Description should be specific and detailed.	
	■ Whether the study was experimental or nonexperimental is noted.	
	Participants	■ There is a clear and detailed description of the participants and their characteristics.
		■ There is an explanation of how the sample was selected.
	Data collection tools	■ Data collection tools are clearly described.
		■ Information is provided as to whether existing, modified, or newly developed data collection tools are used.
		■ There is information about the reliability and validity of the data collection tools.
		■ When appropriate, sample items or questions are included.
	Procedures	■ The procedures for conducting the study are clearly and adequately described.
		■ There is a description of the process, duration, and schedule of the study.
		■ The data collection process is described.
	Data analysis	■ There is an explanation of the study's design and data analysis.
		■ Statistical procedures used to test the study's hypotheses are listed when appropriate.
(continued)		

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TABLE 6.2. (continued)		
Quantitative research articles		✓
Ethics	■ Ethical guidelines are followed.	
Results	■ The main findings are reported.	
	■ The results are clearly presented and easy to follow.	
	■ There are tables, graphs, or charts that help explain the findings.	
Discussion	■ The results are examined, explained, and evaluated.	
	■ There is a discussion of the findings in relation to the original questions and/or hypotheses.	
	■ Findings are discussed in relation to prior research on the topic.	
	■ The study's conclusions are justified based on the results of the study.	
	■ The authors provide possible explanations for unexpected results.	
	■ Weaknesses and limitations of the study are discussed.	
	■ Implications of the findings for practitioners are presented.	
	■ There are suggestions for further research.	
Validity and Reliability	■ There is evidence of the study's internal validity, especially in experimental studies.	
	■ There is evidence of external validity.	
	■ The validity of the data collection instrument(s) is presented.	
	■ The reliability of the data collection instrument(s) is documented.	
	■ The level of reliability of the measure is appropriate for its use in the study.	
	■ The reliability levels of the data collection instrument(s) are reported when validity is discussed.	

Qualitative Research: Methodology, Ethical Considerations, Results, Discussion, Validity, and Trustworthiness

Methodology

The methodology section in qualitative studies follows a similar process as described above for quantitative research; however, qualitative inquiry typically tends to be holistic, subjective, and interpretative. These characteristics are mirrored in the methodology's strategies and procedures (Creswell, 2012). There are several approaches to qualitative research. Here we highlight the characteristics most common among them.

RESEARCHER'S ROLE

The researcher's subjectivity is acknowledged and perceived as a given in qualitative research. Self-awareness of one's values, assumptions, and biases is clearly and honestly stated. The researcher is thoughtful about his or her preconceived notions about the study's topic and practices disciplined subjectivity. This means an awareness of the impact of one's subjectivity, and an effort to monitor its influence on the study's process and findings (Marshall & Rossman, 2011).

SETTING

Qualitative research is embedded within particular settings and knowledge of the contextual factors of the research site is essential for a holistic understanding of the inquiry findings. The researcher should provide detailed information about the setting and offer a rationale for selecting it for the study.

PARTICIPANTS

Background information on the study's participants and a rationale for the sampling procedures should be offered. The sample in qualitative studies is selected purposively and deliberately and is based mostly on the participants' experiential knowledge about the topic and their ability and willingness to share it with the researcher (Efron & Ravid, 2013).

DATA COLLECTION TOOLS

Detailed information about the data collection tools and the rationale for choosing these particular strategies should be provided. The most common types of data collection strategies in qualitative studies are open-ended observations, interviews, documents, and audio and visual material. The Internet and social media have also become popular tools among qualitative researchers. Data collection often includes the use of multiple sources of data, thus enabling the researcher to *triangulate* the patterns and trends in the data collected and to corroborate the findings (Merriam, 2009).

PROCEDURES

In this section the researcher describes the research process and identifies the data collection and recording methods. Additionally, a record of the process is available (mostly in the appendices). This includes interview and observation protocols, field notes, transcripts, original and annotated documents, and informant consent (Bazeley, 2013).

DATA ANALYSIS

In this section the researcher usually describes the systematic process that is used for coding the data, identifying emerging categories, and synthesizing and interpreting the discovered patterns. The researcher uses evidence to support the findings, searches for alternative interpretations, and employs different sources to triangulate his or her assertions, thus enhancing the trustworthiness of the findings. The researcher also reflects on whether disciplined subjectivity was practiced and ensures that preconceived assumptions do not color the interpretation (Richards, 2009).

Ethical Considerations

In most qualitative studies there is direct interaction with the participants during the data collection process. Since it is not feasible to assure the anonymity of the participants, there is a special need to protect their confidentiality, interest, and well-being. The researcher should ensure that the participants and the setting's identity are not revealed by name or with identifying information. Participants have to be notified regarding the nature and the goals of the study and they should consent in writing to take part in it. When the participants are minors, their parents or guardians should sign a consent form. Formal ethical permission to conduct the study should be obtained from the appropriate bodies (Miller & Birch, 2012).

Results

The study's findings may be organized thematically around the categories, themes, and patterns, or by a chronological description of the study process. Reporting on the results is done in what qualitative researchers describe as a "thick" narrative (i.e., a rich, detailed, and vivid account). The findings are supported by evidence from the data, quotations from participants' perspectives in their own voices, as well as detailed descriptions of contexts, events, actions, interactions, and participants' behavior. The findings may also be contextualized within theoretical frameworks and linked to the literature on the topic (Yin, 2015).

Discussion

In this final section of the study, the researcher discusses holistically the meaning of the findings. Meaning is discussed in relation to the research question(s). There may also be considerations of the findings' implications and the actions they invoke. While qualitative studies usually limit the implications of the results to the setting of the study, the conclusions may lead to a transferability of the findings

to other similar contexts. Additionally, the interpretation of the study's findings may lead to a discussion of the phenomenon within broader social, cultural, and political contexts (Maxwell, 2013). The researcher often adds a personal reflection about the study process from his or her perspective.

Validity and Trustworthiness

Most qualitative researchers agree that qualitative studies should not be judged against standards borrowed from quantitative approaches but rather on the basis of criteria that reflect the unique nature of this approach. Lincoln and Guba (1985), in their seminal book, proposed a set of guidelines to establish the trustworthiness of qualitative studies and to define the concept of validity and reliability within a qualitative research framework. These guidelines are comprised of four criteria: credibility, transferability, dependability, and conformability.

- ▶ *Credibility* focuses on the accuracy and integrity of a study, and the believability of its findings.
- ▶ *Transferability* examines whether the study results may be applied to another comparable setting where a similar research question is examined.
- ▶ *Dependability* assesses whether the procedures used during the inquiry are appropriate for the study's question(s) and were adequately implemented.
- ▶ *Conformability* considers the extent to which the study's findings represent the data accurately rather than reflect the researcher's bias.

When the quality of a qualitative study and the trustworthiness of its findings are appraised, attention should be given to the following issues that are drawn from the four criteria listed above (Bazeley, 2013; Creswell, 2012; Galvan, 2014; Marshall & Rossman, 2011; Maxwell, 2013).

Drawing from the four criteria above, researchers (e.g., Bazeley, 2013; Creswell, 2012; Galvan & Galvan, 2017; Marshall & Rossman, 2011; Maxwell, 2013) suggest the following benchmarks to appraise the strength of a qualitative study and to evaluate the trustworthiness of its findings:

- ▶ *Prolonged engagement* in the research setting allows an in-depth understanding of the study's setting and participants. It strengthens the researcher's insight into the participants' culture, perspectives, behavior, and interactions.
- ▶ *Researcher bias* should be openly and honestly discussed throughout the research process. The researcher's subjectivity should be monitored and kept in check through self-reflection. Information about personal and professional involvement with the topic and the participants should be disclosed.

- ▶ *Description of the research process and procedures* used in the study should be explicit and detailed. To demonstrate that these procedures were adequate, the researcher should describe the inquiry process and include details about the sample selection, the data collection and analysis tools, and the rationale for choosing them.
- ▶ *Thick description* should be provided as part of the analysis section. This includes vivid descriptions of the context, the events, and the participants. Additionally, quotations that capture the participants' points of view and their experiences, as seen from their perspectives, should be interwoven throughout the narrative.
- ▶ *Triangulation* of data obtained from multiple sources should be utilized. This is done in order to corroborate the information, cross-examine the identified patterns and trends, and strengthen the credibility of the findings discovered in the data.
- ▶ *Negative case analysis* of alternative possible interpretation and discrepant information should be presented. The researcher should relate the strategies used to check possible counter-understandings and how they were taken into account as the study findings were interpreted.
- ▶ *Member checking* should be used to ensure that the participants' perspectives and experiences are accurately presented in the research narrative. The transcripts, the data analysis, and the final findings may be shared with the participants to enhance accuracy.
- ▶ *Peer debriefing* refers to sharing the study with other researchers in order to ascertain the credibility and trustworthiness of the process used in conducting the research.

TO DO: *Qualitative Research Evaluation Checklist*

To appraise qualitative studies, you may want to use the checklist in Table 6.3 (pp. 111–112). This checklist provides a systematic way to identify the strengths or weaknesses of the methodology, results, discussion, and validity and trustworthiness found in published qualitative studies.

TABLE 6.3. A Checklist for Evaluating Qualitative Research Articles: Methodology, Results, Discussion, and Validity and Trustworthiness		
Qualitative research articles		✓
Methodology	■ Description should be specific and detailed.	
	Researcher's role ■ Researcher's subjectivity and preconceived notions about the topic are discussed.	
	Setting ■ Detailed information about the setting and rationale for selecting it is provided.	
	Participants ■ Background information about the participants is offered.	
		■ Participant selection is based on their knowledge of the topic and their ability and willingness to share it.
	Data collection tools	■ The process of data collection is clearly and comprehensively described.
		■ Methods used to generate data are clearly described.
		■ Multiple sources of data collection were used to enable triangulation.
		■ Data collection strategies are appropriate for the research question(s).
	Procedures	■ The procedures for conducting the study are clearly and adequately described.
		■ A record of the process, including interviews, observations, protocols, field notes, and transcripts, is available in the appendix.
	Data analysis	■ The method of data analysis is logically developed and clearly presented.
		■ The process for coding the data and for identifying categories, themes, and patterns is outlined.
		■ The relationships among the patterns are supported by the data.
	Ethics	■ The identity of the participants and the settings is kept confidential.
		■ Formal ethical permissions to conduct the study were obtained.
		■ The participants were informed about the nature of the research and their confidentiality was assured.
Results	■ There is a clear explanation of how the findings are drawn from the data analysis.	
	■ The results are reported in a “thick” narrative.	
	■ The findings are supported by illustrative quotations and specific instances.	
	■ The findings clearly and adequately address the research question(s).	
	■ Contradictory findings and outlier data are included in the research findings.	
		(continued)

TABLE 6.3. (continued)		
Qualitative research articles		✓
Discussion	■ The meaning and implications of the study are discussed in relation to the research questions.	
	■ The discussion relates the study's findings to existing literature on the topic.	
	■ The findings are discussed within the broader social, cultural, and/or political contexts.	
	■ The researcher reflects on the experiences of conducting the study.	
Validity and Trustworthiness	■ The credibility, transferability, dependability, and conformability of the study are discussed.	
	■ The research process and data collection phases entailed a prolonged engagement.	
	■ The researcher discusses personal biases and preconceived assumptions.	
	■ The research process, procedures, and documentation are recorded.	
	■ There is a rich ("thick") description of the participants, the setting(s), and the events.	
	■ There is an explanation on how data results were triangulated.	
	■ Processes for alternative possible interpretation and discrepant information are presented.	
	■ Procedures for checking the research accuracy from the perspective of participants and peer researchers are used.	

Mixed-Methods Research: Methodology, Results, Discussion, Validity, Reliability, and Trustworthiness

Methodology

Mixed-methods research refers to the blending or combining of quantitative and qualitative methods and techniques into a single study. The two methods are blended in studies where researchers believe that data collection using only one approach is not sufficient (Creswell & Plano Clark, 2011). The order and importance of the quantitative and qualitative methods can differ from study to study reflecting the research design used. Three common types of mixed-methods designs are: (1) embedded design, (2) two-phase design, and (3) triangulation design (Efron & Ravid, 2013). The researchers should clearly explain the reasons for choosing to use multiple methods and how they were implemented in the study. Mixed-methods research presents quantitative and qualitative questions and the chosen methods should match those questions.

RESEARCHER'S ROLE

The researcher assumes an objective or subjective stance or attitude depending on the research question under investigation.

SETTING AND PARTICIPANTS

As was described when discussing the quantities and qualitative approaches, the reasons for selecting the sample, the type of sample selected, the characteristics of the participants, and the setting where the study was conducted should be clearly described.

DATA COLLECTION TOOLS

Both quantitative and qualitative data collection tools should be described in this section. The description should be detailed and specific enough to allow readers to duplicate the study, if they choose to do so. Sample questions or items should also be included.

PROCEDURES

The data collection strategies can be used either simultaneously or sequentially. The different data tools complement each other by highlighting different aspects of the same questions (Efron & Ravid, 2013). The steps used to collect both quantitative and qualitative data should be explicitly described.

DATA ANALYSIS

The procedures for data analysis vary among the three types of mixed- methods designs (embedded, two-phased, and triangulation). The differences are based on three elements: (1) whether the data are analyzed sequentially or concurrently, (2) how and when the integration of the quantitative and qualitative data occur, and (3) whether the quantitative or qualitative approach is given priority in the study or the two approaches are equal (Creswell, 2018).

Results

In mixed-methods studies, the results from the quantitative phase allow the researcher to inform, strengthen, and explain the findings from the qualitative phase; and the findings from the qualitative phase allow the researcher to further explain the results from the quantitative phase. The data can also be mixed, as in triangulation design, where both quantitative and qualitative findings are integrated and analyzed concurrently (McMillan & Schumacher, 2010).

Results are presented in different formats based on the data source that yielded these findings. The conventions described in this chapter for presenting the results from quantitative and qualitative data sources apply in mixed-methods studies as well. An explanation should be given of how the findings from the quantitative and qualitative methods were integrated.

Ethical Considerations

The ethical considerations listed for quantitative and qualitative studies should be followed in mixed-methods research as well.

Discussion

Reporting the study’s conclusions and their meaning does not differ a great deal when writing quantitative, qualitative, or mixed-methods studies. All research reports present, interpret, and explain results. Findings should be evaluated in light of other research reported in the literature review. If there are conflicting findings due to the use of different research methods, they are examined and properly explained. Limitations and suggestions for further research should also be offered.

Validity, Reliability, and Trustworthiness of Mixed-Methods Studies

The procedures for ensuring the validity, reliability, and trustworthiness of mixed-methods research reflect the specific requirements of each approach. Therefore, when appraising mixed-methods research researchers should follow the guidelines for quantitative and qualitative approaches described in this chapter.

TO DO:

Mixed-Methods Research Evaluation Checklist

To assess the quality of mixed-methods studies you may want to use the checklist in Table 6.4. This checklist provides a systematic way to identify the strengths or weaknesses of the methodology, results, discussion, validity, reliability, and trustworthiness found in published mixed-methods studies. (For further details on how to assess quantitative and qualitative studies see Tables 6.2 and 6.3.)

TABLE 6.4. A Checklist for Evaluating Mixed-Methods Research Articles: Methodology, Results, Discussion, and Validity, Reliability, and Trustworthiness			
Mixed-methods research articles			✓
Methodology	■ The reasons for choosing a mixed-methods approach are clearly explained.		
	■ The methods used match the research questions, and each method is designed to answer at least one research question.		
	Researcher’s role	■ The researcher role—an objective or subjective stance—is assumed to match the research question being investigated.	
	Site and participants	■ The site and participants are fully described and the reasons for selecting them are presented.	
(continued)			

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TABLE 6.4. (continued)			
Mixed-methods research articles			✓
Methodology (continued)	Data collection tools	■ Data collection tools, both quantitative and qualitative, are described in detail.	
		■ Sample items from data collection tools are included.	
	Procedures	■ The steps used to collect both quantitative and qualitative data are explicitly described.	
	Data analysis	■ The procedures for data analysis reflect the type of mixed data designs (embedded, two-phased, or triangulation).	
		■ It is indicated whether the analysis occurred sequentially or concurrently.	
		■ It is indicated when the integration of quantitative and qualitative data occurred.	
		■ It is clear whether the quantitative or qualitative approach is given priority.	
	Ethics	■ The ethical considerations listed for quantitative and qualitative studies are followed.	
Results	■ Findings are presented in different formats based on the method and data source used to generate the data.		
	■ An explanation is offered of how findings from the quantitative and qualitative methods are integrated.		
Discussion	■ The major findings are reiterated in relation to the study's questions.		
	■ Conflicting findings are examined and properly explained.		
	■ The study's findings are evaluated in relation to prior research in the field.		
Validity, reliability, and trustworthiness	■ The procedures for ensuring the validity, reliability, and trustworthiness of mixed-methods research follow the specific requirements of each approach.		

HERMENEUTIC—PHENOMENOLOGICAL RESEARCH:
ORIENTATION, DEPTH, STRENGTH, AND RICHNESS

Broadly speaking, hermeneutics is the theory and methodology of interpreting text. Inquiries written in this tradition are mainly used in philosophical and conceptual studies that focus on understanding texts through interpretation and reflective deliberation. The researcher’s data may include philosophical or theoretical narrative, poetry, fiction, and anything else that provokes thinking (Smythe & Spence, 2012). According to Max van Manen (2014), “To write is to reflect; to write is to

research” (p. 20). The writers do not report the content of the text but rather focus on its meaning (Smith, 1991). Hermeneutic researchers interpret the writings on their topic “so that the work of others turns into a conversation partnership that reveals the limits and possibilities of one’s own interpretive achievements” (van Manen, 1990, p. 76). This approach to research resists offering a single authoritative reading of the text and embraces the idea that the same text may present itself in numerous meaningful ways (Gadamer, 2004).

The ambiguous nature of the hermeneutic tradition does not lend itself to unanimous criteria of quality appraisal (Gadamer, 2004). Still, hermeneutic researchers assert that there are a number of requirements that need to be attended to in a rigorous study (Smith, 1999). The following evaluative criteria, based on van Manen’s (1990, pp. 151–152) suggestions, are *orientation*, *depth*, *strength*, and *richness*.

Orientation

Hermeneutic researchers do not report on the content of the reviewed texts but rather interpret the texts with a focus on their meaning. This meaning is drawn from the involvement of the researcher in the world of the participants and their stories (Kafle, 2011). It is accepted that since the researchers are closely involved with the researched texts, their predispositions are an integral part of the meaning they make of it. Thus, the text interpretation draws from the researchers’ subjective horizon of understanding (van Manen, 1990), which means their particular biographies, values, preconceptions, and prejudices. This subjectivity also includes the writer’s perspective on the historical, political, and cultural background that surrounds the topic. This subjectivity serves as a backdrop for the researcher’s meaning-making and it cannot be avoided.

Writers should be attentive to the multiple levels of subjectivity and biases they brings to their interpretations, openly acknowledge them, and contemplate their impact throughout the writing process (Gadamer, 2004; Van Manen, 1990). Although their interpretations, insights, and the meaning they make reflect their subjective positions, those positions should be supported with a rich analysis of relevant references.

Depth

Researchers should not be satisfied in mirroring themselves in the texts, but rather be open to different perspectives and orientations. The purpose is not to undermine one’s subjectivity, but to deepen and expand existing horizons by drawing from a broad range of relevant research across time, cultures, and contexts. The depth of the article is expressed in the ability of the writer to enter into the participants’

lived worlds and convey their intentions (Kafle, 2011). These intentions are presented within the context of similar, diverse, or opposing points of view.

The narrative is presented in a dialogical style and the researchers are engaged in conversations with authors holding different perspectives. The dialogical encounters provoke new understandings that go beyond the taken-for-granted assumptions (Barrett, Powley, & Pearce, 2011) and lead to “new ways of seeing and thinking within a deep sense of tradition” (Smith, 1991, p. 202).

Strength

Researchers should describe the philosophical underpinnings of the hermeneutic approach. They should consider the reasons for choosing this particular perspective and how this tradition of research complements the aims and objectives of their work.

Hermeneutic researchers should be able to present their understanding of the inherent meanings revealed through the participants’ stories and narrative. According to the hermeneutic tradition, the strength of the interpretation is enhanced when it is done within the cultural and historical background of texts. The researchers should consider the effects of these contexts on the authors they discuss and highlight the philosophical frames of reference that undergird these writers’ ideas and concepts.

Hermeneutic writers should maintain a balance between an understanding of the broad context and the interpretation of a specific text (Gadamer, 2004). There should be a back-and-forth circular movement between the whole (context) and the part (particular text) in a continuous dialogue “in such a way as to bring both into view simultaneously” (Geertz, 1979, p. 23).

Richness

Hermeneutic researchers reflect on the relationship between the form and the content of the narrative and pay close attention to the evocative power of language usage (van Manen, 2014). The etymological roots of words and tracing their historical meaning, as well as their current connotations, are valuable in this research tradition. Additionally, following the tradition of intense aesthetic quality (Ricoeur, 1981), the narrative of the literature review should be creative, original, and rich (Langdridge, 2007). The lingual deliberation in terms of metaphors, poetic images, similes, and analogies helps generate new insights and bring to the surface the multiple meanings of the text (Ricoeur, 1981; van Manen, 2014).

Paying attention to the language also entails clear, lucid, engaging, and persuasive writing. The arguments are well organized and the thoughts, concepts, and insights flow coherently. The concepts and assertions are developed on the basis

of a logical chain of reasoning, the ideas and insights of the reviewed authors are thoughtfully discussed, and the conclusions flow reasonably from the conceptual and philosophical deliberations.

Finally, richness in hermeneutic research also means that the writing provokes new understanding and insights about the topic at the center of the review. The writer invites the reader to take part in the dialogue among the writers that are reviewed, to contemplate the thoughts and comprehensions surfaced through the discussion, and to continue the conversation.

TO DO:

*Hermeneutic–Phenomenological Research Articles
Evaluation Checklist*

To assess the quality of hermeneutic–phenomenological research texts you may want to use the checklist in Table 6.5. This checklist provides a systematic way to appraise the quality of the text based on the criteria offered by van Manen (1990).

TABLE 6.5. A Checklist for Evaluating Hermeneutic–Phenomenological Research Articles Using van Manen’s Criteria		
Hermeneutic–phenomenological research articles		✓
Orientation	■ The researcher interprets the texts with a focus on their meaning rather than merely reporting on them.	
	■ The interpretation reflects the researcher’s biography, values, and prejudices.	
	■ The researcher is mindful of his or her perspective on the historical, political, and cultural background surrounding the topic.	
	■ The researcher reveals his or her biases and prejudices and reflects on how they shape the meanings given to the texts.	
Depth	■ The sources that the writer reflects on are presented within the context of similar, diverse, or opposing points of view.	
	■ The writer draws from a broad range of relevant research across time, cultures, and contexts.	
	■ The narrative is presented in a dialogical style and the researcher is engaged in conversations with different authors’ perspectives.	
	■ The author presents an understanding that goes beyond the taken-for-granted assumptions on a subject.	
(continued)		

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TABLE 6.5. (continued)		
Hermeneutic–phenomenological research articles		✓
Strength	■ The researcher discusses the tradition of hermeneutic–phenomenological philosophy that underpins the research.	
	■ The writer explains why this type of review was chosen and how it complements the research aims and objectives.	
	■ The researcher discusses the effects of the contextual background on the writings of the authors reviewed.	
	■ The researcher presents the philosophical and theoretical perspectives of the studies discussed.	
	■ The writer maintains a balance between an understanding of the broad context and the interpretation of a specific text.	
Richness	■ The researcher reflects on the relationship between the form and the content of the narrative.	
	■ The writer explores the hidden meaning of language by tracing its historical and etymological roots, as well as its current connotations.	
	■ The researcher’s narrative style is creative and uses poetic images, metaphors, similes, and so forth.	
	■ The narrative is clear, coherent, engaging, and persuasive.	
	■ The narrative provokes new understanding and insights about the topic.	

GROUP WORK

1. Choose two articles representing two of the research types discussed in this chapter (quantitative, qualitative, mixed methods, and hermeneutic–phenomenological).

2. Using the criteria checklist(s) for these two types, assess the quality of the selected articles.

3. Share your assessment with your group, highlighting the points that are most relevant for your literature review.

WHAT’S NEXT?

This chapter explored the value of a critical evaluation of the literature you review and presented criteria that may serve to assess your sources. The next chapter focuses on building a logical structure of your review of the literature by developing organizational strategies that allow your review to flow logically and smoothly from one argument to the next.

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CHAPTER SUMMARY

1. When you write a literature review, it is important that you adopt a critical stance toward the sources you review and acknowledge their weaknesses, as well as their strengths.
2. Rather than critique each article on its own, it might, at times, be better to critique groups of sources together, especially when you identify a pattern of weakness that is common across these studies.
3. All types of research draw their quality standards out of their traditions, orientations, expectations, and norms.
4. There are sections in articles that are common to quantitative, qualitative, mixed-methods, and hermeneutic–phenomenological research. These sections are the title, abstract, introduction, and literature review.
5. To ensure the ethics of quantitative, qualitative, and mixed-methods research, the rights and welfare of the study's participants should be assured. They should be informed of the nature of the research and be allowed to withdraw at any point.
6. In designing quantitative studies, researchers have to ensure the *external* validity and *internal* validity of their investigation.
7. There are three positions regarding the value of assessing qualitative research: (a) the criteria used by quantitative researchers should be applied equally to qualitative studies; (b) a unique set of criteria should be used to assess qualitative research; and (c) a rejection of any kind of criteria in assessing qualitative research.
8. The sections commonly found in the methodology section of qualitative studies are researcher role, setting, participants, data collection tools, procedures, and data analysis. These sections should provide detailed information for readers to gain a holistic understanding of the research process.
9. Mixed-methods research presents quantitative and qualitative questions and, depending on the question, the chosen methods for data collection, analysis, and interpretation should reflect both approaches.
10. The ambiguous nature of hermeneutic–phenomenological tradition does not lend itself to unanimous criteria of quality appraisal. However, four evaluative criteria are often used by researchers: *orientation*, *depth*, *strength*, and *richness*.