

The Need to Rigorously Develop Common Quality Guidelines for Reporting Mixed Methods Research

Journal of Mixed Methods Research
2023, Vol. 17(1) 6–11

© The Author(s) 2022

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/15586898221143561

journals.sagepub.com/home/mmr



Timothy C. Guetterman¹, José F. Molina-Azorin², and Sergi Fàbregues³

Quality in mixed methods research is a key topic in the field. A virtual special issue was published in this journal (Fàbregues et al., 2021), giving researchers a collection of articles providing practical guidance to evaluate the quality of mixed methods research studies. In the last 15 years, the scholarship on mixed methods research quality has seen three major developments: identifying core criteria for mixed methods research quality, contextualizing criteria for different disciplines and designs, and constructing criteria for use in systematic reviews. The developments are a marker of maturation of mixed methods as a field. Although the mixed methods literature about quality has grown at a steady, yet relatively slow pace, a unified and common set of quality criteria remains elusive. The purpose of this editorial is to summarize the developments related to quality, and as a starting point, to call upon the field to develop and adopt a set of common quality standards for reporting mixed methods research.

Major Developments Related to Quality

Identifying Common and Core Criteria

The concept of quality has been discussed in the literature. A notable advancement was the proposed legitimization typology (Onwuegbuzie & Johnson, 2006) as a term for the concept of validity meant to span qualitative and quantitative perspectives and entrenched terminology (e.g., validity, trustworthiness, etc.). They described the concept was synonymous with quality, hence our inclusion here. The most salient contribution was the typology itself, which gives mixed methods investigators a way to identify validity concerns by considering different types of legitimization. The legitimization typology is broad, as they explained “legitimation as a process, not just an outcome” (Onwuegbuzie & Johnson, 2006, p. 56), and later articles have discussed applying the typology to assess quality (Onwuegbuzie et al., 2011) and the addition of new types

¹University of Michigan, Ann Arbor, MI, USA

²University of Alicante, Alicante, Spain

³Universitat Oberta de Catalunya, Barcelona, Spain

Corresponding Author:

Timothy C. Guetterman, Mixed Methods Program, Department of Family Medicine, University of Michigan, 1018 Fuller St., Ann Arbor, MI 48104, USA.

Email: tguetter@umich.edu

(Collins et al., 2012; Perez et al., 2023). Other concepts of quality are procedurally oriented or focus on evaluating research outputs. Several quality criteria span disciplines, including the eight domains advanced by O’Cathain (2010) and Hirose and Creswell’s (2023) parsimonious list of six core quality criteria for an empirical mixed methods research article.

In reviewing scholarship related to quality, validity, and legitimation, the natural question arises as to whether the terms are synonymous. In absence of clear consensus, we propose that quality is distinct yet closely related to validity and legitimation. For this editorial, we define quality as a broader concept that refers to how well a mixed methods study was conducted through scientifically accepted design and procedures. Validity and legitimation are an aspect of quality that provides a way to think about potential threats to validity of a study. Validity and legitimation span the process of research from conceptualizing the study through conducting the study. On the other hand, quality encompasses research design, procedures, and validity threats. Quality can apply to the overall study, a proposal to conduct research, or the evaluation of an article, dissertation, or other mixed methods report. Quality is often presented in the form of criteria, where each criterion is an indicator of high quality.

Through a systematic review Fàbregues and Molina-Azorin (2017) identified 19 quality criteria that span general research criteria, to mixed methods procedures, to specific aspects about the quantitative and qualitative strands of the study. Examining similarities and frequencies of each criterion across published quality frameworks, they identified common criteria grouped by study phase. They acknowledge that some reject the idea of common quality criteria because “quality is shaped by the context of each researcher and study” (Fàbregues & Molina-Azorin, 2017, p. 2860). Despite the growth in quality criteria and related publication and work to synthesize across existing quality frameworks none have appeared to achieve wide adoption by authors of empirical mixed methods articles or journals publishing articles. Therefore, a question remains about how to achieve wide adoption of criteria, given disagreement about whether it is even a good idea to establish common quality criteria for mixed methods research.

Different Disciplines

Perhaps one reason for the lack of common quality criteria is related to differences across disciplines. In brief, context matters and research does operate and adapt to within disciplinary boundaries. Some scholars have cautioned about developing a common, unified set of criteria given disciplinary differences and communities of practice (Collins et al., 2012; Cheek, 2015). Fàbregues et al. (2019) examined conceptualizations of quality across four disciplines: education, nursing, psychology, and sociology. A key finding was understanding different perspectives of quality, notably a flexible perspective contingent on discipline and communities of practice and a fixed perspective that quality is universal across disciplines. Interestingly, differentiating the views by discipline does not seem to account for the increasing amount of interdisciplinary mixed methods research. Therefore, methodological questions persist as to how to reconcile differing perspectives on quality.

Systematic Reviews

A widely used set of criteria for appraising the quality of mixed methods research in systematic mixed studies reviews is the Mixed Methods Appraisal Tool (MMAT). Mixed studies reviews include qualitative, quantitative, and mixed methods studies. The MMAT was developed and refined into a set of 25 methodological quality criteria in five categories: qualitative, quantitative randomized controlled trial, quantitative non-randomized, quantitative descriptive, and mixed methods (Hong, Pluye et al., 2018). The tool has undergone refinement through a literature review

and a virtual Delphi process to reach consensus (Hong, Fàbregues et al., 2018). Each category has five criteria, and they provide a detailed explanation of each criterion. The MMAT is adaptable in that categories are meant for application to whatever approach the study being appraised followed. Rouleau et al. (2023) filled an important gap in assessing methodological quality of systematic reviews. Their article is focused precisely on conducting systematic reviews of systematic reviews. Their focus is then a level higher than appraising an individual study.

The systematic review tools provide an important component to quality in mixed methods research. The tools are concrete and operationalized such that they are relatively easy to apply. However, they do have a different purpose—use in systematic reviews. Thus, a need remains to bridge the gap between these systematic review tools and assessing quality in a single empirical mixed methods study.

Models of Quality Criteria for Reporting From Other Approaches to Research

Hong and Pluye (2019) distinguished three key dimensions of quality in mixed methods research: methodological quality, conceptual quality, and reporting quality. This editorial focuses on reporting quality. As indicated by these authors, reporting quality is the degree to which a published study provides transparent, accurate, and comprehensive information about its design and execution. Therefore, the quality of the reporting is based on how thoroughly the methods and results are communicated to readers.

Guidelines for reporting have been widely adopted for other approaches to research and may provide a path forward for consensus about mixed methods quality. Perhaps as a matter of practical need or as a way to sidestep broader debates about quality, validity, and best practices, these guidelines are squarely focused on reporting research. As such, they are useful for authors, reviewers, and editors in considering the quality of reported empirical research.

Numerous guidelines by approach are available through the EQUATOR Network. (Note: EQUATOR is an acronym for Enhancing the Quality and Transparency Of health Research.) The EQUATOR Network consists of a website with a comprehensive list of quality reporting criteria (<http://www.equator-network.org/>). The criteria are organized by design (e.g., qualitative research, randomized trials, and observational studies) and searchable. The goal of EQUATOR Network is “to improve the reliability and value of published health research literature by promoting transparent and accurate reporting and wider use of robust reporting guidelines” (<http://www.equator-network.org/>).

Two examples of criteria are the Consolidated Standards of Reporting Trials (CONSORT) and the Consolidated Criteria for Reporting Qualitative Research (COREQ). CONSORT consists of a 25-item checklist organized in sections—title and abstract, introduction, methods, results, discussion, and other information—in addition to a flowchart to document the trial progress through enrollment, allocation to intervention and control conditions, follow-up, and analysis (Schulz et al., 2010). COREQ includes 32 items in domains of research team and reflexivity, study design, and analysis and findings (Tong et al., 2007).

While there is not a single (or even a few) clearly adopted mixed methods reporting guideline, several efforts have been made. O’Cathain et al. (2008) developed the Good Reporting of a Mixed Methods Study (GRAMMS) guidelines. Leech and Onwuegbuzie (2010) proposed guidelines for reporting mixed methods in the field of counseling and beyond. The American Psychological Association developed journal reporting standards that now includes mixed methods research studies (Levitt et al., 2018). The benefits of guidelines for reporting are that they provide a structure for what needs to be included, at minimum, in reporting research. As noted by the EQUATOR Network, reporting guidelines are helpful for readers to ensure transparency and for

other researchers to ensure replicability. Yet, a need remains to have common and core reporting guidelines for mixed methods research.

A Call to the Field to Develop Guidelines for the Quality of Reporting of Mixed Methods Research

Comprehensive quality guidelines for mixed methods research may not reach consensus for some time. As a starting point, we would like to encourage mixed methods researchers to develop and implement *reporting* guidelines for mixed methods research studies. The EQUATOR Network would feel much more complete with a mixed methods research study type and corresponding guidelines. We realize some mixed methods researchers disagree with the need of consensus and standardization of quality guidelines. However, quality guidelines for reporting might be more acceptable and useful for developing the mixed methods field.

Thanks to a growing body of excellent scholarship on mixed methods quality (e.g., [Bryman et al., 2008](#); [Fàbregues & Molina-Azorin, 2017](#); [Hirose & Creswell, 2023](#); [Onwuegbuzie et al., 2011](#); [Onwuegbuzie & Johnson, 2006](#); [O’Cathain, 2010](#); [O’Cathain et al., 2008](#); [Perez et al., 2023](#); [Tashakkori & Teddlie, 2008](#)), researchers have a solid foundation. Now is the ideal time to develop common mixed methods research reporting criteria. We reiterate the recommendations that [Fàbregues and Molina-Azorin \(2017\)](#) set for future research: to increase empirical publications on quality, achieve consistency in terminology, and reach agreement on core criteria. Development of such reporting criteria should occur through a systematic process. Current guidelines, such as CONSORT and COREQ, were developed through a rigorous process. Approaches to developing quality standards for reporting research include conducting systematic reviews of existing criteria, synthesizing existing criteria, convening a workgroup to translate broader quality and validity concepts into specific reporting standards, and using consensus processes such as the [Hong, Pluye et al. \(2018\)](#) Mixed Methods Appraisal Tool for use in systematic reviews. In addition to a thorough literature review and interviews with users of the previous version, they used a virtual Delphi method to refine criteria. Perhaps a combination of approaches (i.e., applying mixed methods thinking) could yield common and well-accepted reporting standards for mixed methods research.

We have a few additional suggestions for quality reporting criteria for mixed methods research. First, the list of quality reporting criteria must be parsimonious and applicable. For example, the Standards for Reporting Qualitative Research includes 21 items grouped into domains ([O’Brien et al., 2014](#)) and the COREQ includes 32 items that are defined. Authors, reviewers, and editors can use these checklists to evaluate a qualitative manuscript. If the list of reporting criteria is otherwise excessively long or complex, mixed methods researchers may not apply it, which may mitigate the transparency of study reporting. Second, the issue of quality in mixed methods reporting is further complicated because mixed methods projects can lead to multiple, related articles (e.g., combinations of qualitative, quantitative, and mixed methods empirical articles). Thus, mixed methods quality reporting standards should account for these different publication pathways. Third, and it may seem trite, give the list a catchy name. A clear name and clever acronym can help researchers, reviewers, and editors find the criteria and begin to refer to it in short-hand. Fourth, we suggest an interdisciplinary group work together, engaging with differences and tensions, to develop a shared set of quality reporting criteria. Mixed methods researchers can then promote the criteria within their own disciplines and content-focused journals. Fifth, we recommend that authors consider updates to the existing mixed methods research reporting frameworks, when developing the common criteria. GRAMMS is one of the most cited frameworks, as evidenced by the increasing number of empirical mixed methods research articles that employ it. A consensus-building exercise among experts would help to update several criteria within this framework

(i.e., take into account recent developments of the concept of integration, such as the types of integration strategies and the use of joint displays) and overcome some of its limitations (i.e., define the meaning of the response options “yes,” “yes, but,” and “no” that are included within each criterion to assess its fulfilment).

Conclusions

Many of our readers, ourselves included, have likely reviewed empirical mixed methods articles for other journals. Based on our experience, many of the articles continue to lack attention to integration, such as describing procedures and reporting integrative mixed methods results. A common set of reporting guidelines could alleviate these concerns by encouraging accurate and transparent reporting of mixed methods research. That could further advance the adoption of mixed methods research across disciplines. The Mixed Methods International Research Association (MMIRA) can play a key role to develop a shared set of quality reporting criteria. In this regard, MMIRA is uniquely positioned to create a committee or task force group to develop this common set of reporting guidelines.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

- Bryman, A., Becker, S., & Sempik, J. (2008). Quality criteria for quantitative, qualitative and mixed methods research: A view from social policy. *International Journal of Social Research Methodology*, 11(4), 261-276. <https://doi.org/10.1080/13645570701401644>
- Cheek, J. (2015). It depends: Possible impacts of moving the field of mixed methods research toward best practice guidelines. In S. N. Hesse-Biber & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199933624.013.53>
- Collins, K. M. T., Onwuegbuzie, A. J., & Johnson, B. (2012). Securing a place at the table: A review and extension of legitimation criteria for the conduct of mixed research. *American Behavioral Scientist*, 56(6), 849-865. <https://doi.org/10.1177/0002764211433799>
- Fàbregues, S., & Molina-Azorin, J. F. (2017). Addressing quality in mixed methods research: A review and recommendations for a future agenda. *Quality & Quantity*, 51(6), 2847-2863. <https://doi.org/10.1007/s11135-016-0449-4>
- Fàbregues, S., Molina-Azorin, J. F., & Fetters, M. D. (2021). Virtual special issue on “quality in mixed methods research”. *Journal of Mixed Methods Research*, 15(2), 146-151. <https://doi.org/10.1177/15586898211001974>
- Fàbregues, S., Paré, M. H., & Meneses, J. (2019). Operationalizing and conceptualizing quality in mixed methods research: A multiple case study of the disciplines of education, nursing, psychology, and sociology. *Journal of Mixed Methods Research*, 13(4), 424-445. <https://doi.org/10.1177/1558689817751774>
- Hirose, M., & Creswell, J. W. (2023). Applying core quality criteria of mixed methods research to an empirical study. *Journal of Mixed Methods Research*, 17(1), 12-28. <https://doi.org/10.1177/15586898221086346>

- Hong, Q. N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O’Cathain, A., Rousseau, M.-C., Vedel, I., & Pluye, P. (2018). The mixed methods appraisal tool (MMAT) version 2018 for information professionals and researchers. *Education for Information, 34*(4), 285-291. <https://doi.org/10.3233/EFI-180221>
- Hong, Q. N., & Pluye, P. (2019). A conceptual framework for critical appraisal in systematic mixed studies reviews. *Journal of Mixed Methods Research, 13*(4), 446-460. <https://doi.org/10.1177/1558689818770058>
- Hong, Q. N., Pluye, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O’Cathain, A., Rousseau, M.-C., & Vedel, I. (2018). *Mixed methods appraisal tool (MMAT), version 2018*. Registration of copyright (#1148552). Canadian Intellectual Property Office, Industry Canada.
- Levitt, H. M., Bamberg, M., Creswell, J. W., Frost, D. M., Josselson, R., & Suarez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA publications and communications board task force report. *American Psychologist, 73*(1), 26-46. <https://doi.org/10.1037/amp0000151>
- O’Brien, B. C., Harris, I. B., Beckman, T. J., Reed, D. A., & Cook, D. A. (2014). Standards for reporting qualitative research: A synthesis of recommendations. *Academic Medicine, 89*(9), 1245-1251. <https://doi.org/10.1097/ACM.0000000000000388>
- O’Cathain, A. (2010). Assessing the quality of mixed methods research: Towards a comprehensive framework. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (2nd ed., pp. 531-555). SAGE.
- O’Cathain, A., Murphy, E., & Nicholl, J. (2008). The quality of mixed methods studies in health services research. *Journal of Health Services Research & Policy, 13*(2), 92-98. <https://doi.org/10.1258/jhsrp.2007.007074>
- Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools, 13*(1), 48-63.
- Onwuegbuzie, A. J., Johnson, R. B., & Collins, K. M. T. (2011). Assessing legitimation in mixed research: A new framework. *Quality & Quantity, 45*(6), 1253-1271. <https://doi.org/10.1007/s11135-009-9289-9>
- Perez, A., Howell Smith, M. C., Babchuk, W. A., & Lynch-O’Brien, L. I. (2023). Advancing quality standards in mixed methods research: Extending the legitimation typology. *Journal of Mixed Methods Research, 17*(1), 29-50. <https://doi.org/10.1177/15586898221093872>
- Rouleau, G., Hong, Q. N., Kaur, N., Gagnon, M., Côté, J., Bouix-Picasso, J., & Pluye, P. (2023). Systematic reviews of systematic quantitative, qualitative, and mixed studies reviews in healthcare research: How to assess the methodological quality of included reviews? *Journal of Mixed Methods Research, 17*(1), 51-69. <https://doi.org/10.1177/15586898211054243>
- Schulz, K. F., Altman, D. G., & Moher, D., CONSORT Groupa (2010). CONSORT 2010 statement: Updated guidelines for reporting parallel group randomized trials. *Annals of Internal Medicine, 152*(11), 726-732. <https://doi.org/10.1136/bmj.c332>
- Tashakkori, A., & Teddlie, C. (2008). Quality of inferences in mixed methods research: Calling for an integrative framework. In M. M. Bergman (Ed.), *Advances in mixed methods research* (pp. 101-119). Sage.
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care, 19*(6), 349-357. <https://doi.org/10.1093/intqhc/mzm042>