Cues to Quality in Quantitative Research Papers

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In this paper I propose three criteria by which quantitative research manuscripts may be judged: Contribution, Clarity, and Citizenship. A manuscript's scientific contribution is the most critical criterion to consider when assessing its value. Structural clarity refers to the extent to which the manuscript follows journal article reporting standards, whereas content clarity refers to how the research is conveyed in both text and tabular form. Citizenship is evidenced by cues that the study was ethically conducted, honestly reported, and described with enough detail that others may replicate or extend the research.

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Reading a well-conceptualized and skillfully presented quantitative research article ranks as one of the professional activities that I enjoy most. The primary reason I enjoy reading quantitative research is that despite claims to the contrary, numbers do not speak for themselves. Rather, through the process of operationalizing concepts so they are measurable, developing hypotheses under the guidance of an appropriate theory, then careful, ethical interpretation and reporting of the resulting analyses, researchers breathe life into the numbers that reflect the actual social, economic, psychological, and other concepts of interest. When this process is executed well, a quantitative research paper offers meaning beyond the otherwise lifeless numbers.

But how does one know whether a quantitative research manuscript is conceptualized well, skillfully presented, and responsibly completed? For this, we necessarily turn to the experience and judgment of experts in our fields. In the same way that experience and judgment is exercised by the jeweler charged with assessing the quality of a diamond according to its cut, color, carats, and clarity, or the loan officer tasked with assessing a loan applicant's capacity, character, and collateral, *Family & Consumer Sciences Research Journal* (FCSRJ) reviewers and editors assess the quality of each manuscript submitted for publication. Of course, whether assessing diamonds, loans, or research, there are cues that signal the level of quality. With due apologies for forcing a 3-Cs analogy even further, I have categorized those cues to quantitative research quality as: Contribution, Clarity, and Citizenship.

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CONTRIBUTION

The purpose of a quantitative research manuscript is to make a substantive contribution to a particular scientific literature through description, explanation, or prediction. Indeed, whether a manuscript makes a new or significant contribution to a particular literature is the most important criterion to consider when assessing the quality of a manuscript. According to American Psychological Association (APA) guidelines, the intended contribution of the research should be stated early in the manuscript (APA, 2010). For example, Fisher (2010) clearly states that "the purpose of this research was to investigate the effect of income uncertainty on household savings behavior" (p. 57). Subsequent text was written with this intended contribution in mind, and Fisher's focus on this contribution provides a sense of purpose to her manuscript.

Often, the intended contribution may be stated in terms of the gap in the literature that the research seeks to fill. For example, "…little research moves beyond convenience samples and cross-sectional estimates to examine family-level outcomes associated with acquiring food and medical care. To address this gap, this study investigated three questions:…" (Nielsen, Garasky, & Chatterjee, 2010, p. 138). With explicit statements of the intended contribution at hand, authors themselves provide the metric by which the research may be judged.

CLARITY

The clarity with which an author describes the research process is a second criterion by which a quantitative research manuscript may be evaluated. On this criterion, the *Publication Manual of the American Psychological Association* (APA, 2010) offers a wealth of guidance. It is useful to think of this criterion in terms of the structure of the manuscript and the clarity of the written and tabular content.

Structural Clarity

Generally, FCSRJ readers are accustomed to manuscripts adhering to APA style and structure. The Journal Article Reporting Standards (JARS) Appendix of the APA Manual (APA, 2010, pp. 247–250) provides virtually every structural detail that a quantitative research manuscript should follow, including specific recommendations for quantitative research involving experimental designs or interventions commonly undertaken (pp. 249–250 and p. 253). Wise authors recognize that departures from recommended manuscript structures cause reviewers and readers to invest unnecessary effort searching for the elements of the research process rather than being able to go directly to a nearly universally understood section of the manuscript for the information. The JARS standards recommend the following structure:

- Abstract
- Introduction to the research problem
- Methods

  - Participant characteristics
  - Sampling procedures
  - Sample size, power, and precision
  - Measures and covariates
  - Research design
- Results (statistical)
- Discussion of the results

One quickly notices, however, that the JARS recommendations rarely fit a manuscript perfectly, and disciplines' own conventions may require deviations from this general form. Still, a review of recent issues of this journal suggests that the JARS recommendations aid in one's ability to understand the research process being reported. For examples of how the general JARS structure can be slightly modified in a manner that maintains structural clarity, see Gutter, Garrison, and Copur (2010) and Seock and Hathcote (2010).

Content Clarity

Whereas structural clarity assists readers who are seeking specific components of information related to the research undertaken, the content within each section should accurately and succinctly describe the goals, instruments or measurement, procedures, and findings. Within each section, an author's primary responsibility is to write with clarity, toward the goal of providing all information necessary to understand the processes undertaken. Ideally, the content of each section builds the case for the contribution of the research. Because space is always constrained, a balance of information and brevity is required.

Again, the *Publication Manual of the American Psychological Association* (2010) provides excellent guidance on ways to improve the clarity of the content. Most relevant to quantitative research manuscripts are Chapters 3–5. Because not every detail of the research process can be included, I find it helpful when certain cues of credibility or research competence are included in each section. For example, authors who carefully describe how each construct is measured engender trust from readers through full disclosures. Further, authors who plainly describe the study participants, how they were selected, reasons for inclusion or exclusion, and how cases with missing values were handled signal that they are methodologically astute regarding sampling. This information influences the extent to which the results might be generalized to the population of interest, further informing the manuscript's potential contribution. Other similar cues of research credibility are discussed in Chapter 5.

Quantitative researchers must also be vigilant when presenting tables and figures. As a reader, I appreciate authors who take me step by step through univariate descriptions of the sample, particularly when these descriptions are accompanied with relevant measurement information. For example, with one well-constructed table, Anong and DeVaney (2010) provide information about the independent and dependent variables used, how each of the variables is measured, and weighted estimates of the population parameters. Tables are efficient alternatives to lengthy text and can stand on their own when authors have provided the information necessary for readers to develop an understanding of the participants, constructs, and variables represented.

For unambiguous recommendations about the purpose, design, and layout of tables; the balance of tabular versus textual information; titles, headings, and notes in tables; conventions for the inclusion of information about the precision of the estimates; and more, see Chapter 5 of the *Publication Manual of the American Psychological Association*. Following these simple prescriptions allows readers to focus on the extent to which the information contributes to the scientific literature rather than having to search for relevant cues of research credibility. Whether in text or in tables, clarity is necessary if one wants the contribution of the research to be properly evaluated.

CITIZENSHIP

Evidence that the research was undertaken in an ethical way and that the process is described in enough detail that fellow researchers may assess the veracity of the research through replication or extensions of the work comprise the third criterion.

Replication

Science advances through the best practices of citizen-researchers who engage in practices that allow us to replicate, then build upon, one another's findings. For this to occur, authors must include all relevant information that will help others replicate the analyses and, when appropriate, test alternative or competing hypotheses. In the case of publicly available data, this responsibility is to simply report the research process in full so others may replicate or build upon the research. In the case of proprietary data, responsible members of the research community should share as much information as possible. This may involve written agreements that cover how the data may and may not be used by others, or in the case of many types of research, it may be as simple as providing a variance/covariance matrix that others may use to test the same, or similar, relationships that are reported. Regardless of the procedures, we have an obligation to report our work as well as possible so that others may further contribute to our collective understanding of the ideas investigated. For guidance on how this sharing might proceed, see pages 12–20 of the *Publication Manual of the American Psychological Association*.

Ethics

A critical component of being a responsible quantitative researcher is fulfilling our ethical obligations to both the research participants and the consumers of our research. The APA manual describes these responsibilities as ensuring the accuracy of scientific knowledge, protecting the rights and welfare of research participants, and protecting intellectual property rights (APA, 2010). FCSRJ, like many other journals, requires authors to provide evidence of approval from a human subjects or institutional review board prior to proceeding with a review of the manuscript.

In addition to our responsibilities to research participants, we have an ethical responsibility to the research community to report findings fully, responsibly,

and truthfully. This responsibility is best met by exercising due diligence when operationalizing constructs, fully reporting all relevant indicators of how well the variables represent these constructs (e.g., reliability coefficients, confidence intervals), ethically interpreting the numbers generated, and then reporting the results with an abundance of care.

I believe that the 3-Cs (Contribution, Clarity, and Citizenship) can help each of us assess our own quantitative research, as well as the research published by others. Working toward these should move each of us toward our goal of producing well-conceptualized, skillfully presented, and responsible quantitative research that makes a significant contribution in our respective fields.

REFERENCES

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: American Psychological Association.

Anong, S., & DeVaney, S. (2010). Determinants of adequate emergency funds including the effects of seeking professional advice and industry affiliation. *Family & Consumer Sciences Research Journal*, *38*(4), 405–419.

Fisher, P. J. (2010). Income uncertainty and household savings in the United States. *Family & Consumer Sciences Research Journal*, *39*(1), 57–74.

Gutter, M. S., Garrison, S., & Copur, Z. (2010). Social learning opportunities and the financial behaviors of college students. *Family & Consumer Sciences Research Journal*, *38*(4), 387–404.

Nielsen, R. B., Garasky, S. B., & Chatterjee, S. (2010). Food insecurity and out-of-pocket medical expenditures: Competing basic needs? *Family & Consumer Sciences Research Journal*, *39*(2), 138–152.

Seock, Y. K., & Hathcote, J. M. (2010). A cross-cultural comparison of Hispanic American and White American adolescents' use of reference agents for apparel shopping. *Family & Consumer Sciences Research Journal*, *39*(1), 45–56.