

EDITORIAL

Supporting and Enhancing Scientific Rigor

In recent years, there have been increasing calls to enhance scientific rigor in the field of psychology in general (e.g., Gilbert, King, Pettigrew, & Wilson, 2016; Open Science Collaboration, 2015) and in work and organizational psychology in particular (e.g., Cortina, Aguinis, & DeShon, 2017; Mathieu, 2016). Contributing to these important discussions, the purpose of this editorial is to provide an update on recent, ongoing, and new practices the *Journal of Applied Psychology* (henceforth, “the Journal”) has implemented to further support and enhance scientific rigor. In line with my previous editorial (Chen, 2015), the practices discussed in the following text broadly seek to enhance scientific rigor and transparency in the empirical research we publish by providing the reader sufficient information needed to (a) verify the accuracy and validity of study findings and inferences and (b) enable the accumulation of knowledge through replications and extensions of primary research as well as meta-analyses. These practices also represent important means for supporting the Journal’s broader mission of publishing articles that make meaningful contributions, which can be theoretical, practical, empirical, and/or methodological (Chen, 2015).

In the following text, I summarize the practices in chronological order, from (1) prereview practices authors are encouraged and expected to follow by the time articles are submitted, to (2) practices taken by the review team during the peer review process, and finally to (3) practices that can be taken by authors and the editor postpublication. Across these practices, I highlight areas in which authors, reviewers, action editors, and readers can contribute to enhancing the scientific rigor of research published in the Journal.

Prereview Practices

Before submitting an article for publication, authors are expected to review and be familiar with the latest American Psychological Association (APA) journal article reporting standards for both quantitative research (Appelbaum et al., 2018) and qualitative research (Levitt et al., 2018). These recently revised reporting standards provide various steps by which authors can more transparently inform the reader regarding their studies’ methods, analyses, and results. Note that we recognize that the recommended practices in these reporting standards articles are rather exhaustive and, as such, authors need to decide which specific reporting standards are applicable to their articles.

In relation to recent discussions pertaining to authors’ hypothesizing after results are known (i.e., “HARKing”; e.g., see Bosco, Aguinis, Field, Pierce, & Dalton, 2015; Hollenbeck & Wright, 2017), Appelbaum et al. (2018) and Levitt et al. (2018) have also recommended that authors (a) have a clear link between hypotheses and specific study design and purposes and (b) be transparent with respect to delineating and testing primary, secondary, and

exploratory hypotheses. For example, a priori primary hypotheses are more likely to fit deductive studies and studies in which authors can build strong theory in support of the hypotheses than are more exploratory studies that focus on theory building. Regardless, even when authors have strong a priori primary hypotheses, when possible and relevant, they can enrich their empirical findings and strengthen their inferences by also delineating and testing secondary and/or exploratory hypotheses (e.g., in the form of auxiliary analyses or robustness checks). What is critical is that authors are transparent with respect to the hypotheses that they develop and test.

In addition, under Steve Kozlowski’s editorship, the Journal implemented new data transparency procedures to enable authors to more thoroughly comply with APA policies regarding duplicate and piecemeal publication of data (see the *Publication Manual of the American Psychological Association*; APA, 2010, pp. 13–15). These procedures are meant to facilitate transparency in the review process and to clarify the unique contributions across multiple uses of the same (or overlapping) data (Chen, 2015). The current editorial team modified the instructions for authors on these data transparency practices by clarifying when and how to report multiple uses of data and providing examples for reporting multiple uses of data involving the same sample and publicly available data sets (see <http://www.apa.org/pubs/journals/apl/data-transparency-appendix-example.aspx>). Finally, to further enhance transparency in reporting of methods and results, we have changed the instructions on the article submission portal to include the following statement:

Authors are encouraged to make their data, materials, and/or preregistration plans and analyses publicly available, if possible, by providing a link to a third-party repository, such as APA’s own repository (<https://osf.io/view/apa/>), in the author note and including the data citation in your reference list. Making your data and materials publicly available can increase the impact of your research, enabling future researchers to incorporate your work in model testing, replication projects, and meta-analyses, in addition to increasing the transparency of your research. APA’s data sharing policy does not require public posting, so it is at your discretion to decide what is best for your project in terms of public data, materials, and conditions on their use. Please note that APA policy does require authors to make their data available to other researchers upon request, per the APA Ethical Principles of Psychologists and Code of Conduct, as detailed in the section on Sharing Research Data for Verification.

Review Process Practices

During the peer review process, the review team (editor, associate editors, and reviewers) serves two critical roles in regard to enhancing scientific rigor. First, the team serves as “gate keeper,” ensuring that research published in the Journal meets a sufficient

level of scientific rigor. Second, the team also provides authors with developmental feedback regarding further enhancing the scientific rigor of their work, regardless of the decision made for further revisions for the Journal. As part of the review process, and especially during the revision phases, the review team often requests that authors provide additional information pertaining to methods, analyses, and results. Examples of common requests made during revisions include (a) greater detail regarding sample and sampling procedures, (b) inclusion of sample items and validity evidence for measures or greater details pertaining to manipulations, (c) providing details regarding study-level effects and corrections used for meta-analyses, (d) clarification of various analytical details (e.g., what aggregation statistics were reported, structural equation models specifications, centering decisions), (e) robustness checks and sensitivity analyses (e.g., examining models with and without control variables or using different operationalizations of variables), and (f) more complete statistical reporting (e.g., requests for estimates of effect sizes, and standard errors along unstandardized estimates).

Postpublication Practices

Although the preceding set of practices are meant to ensure consistent and high levels of scientific rigor in articles published in the Journal, we recognize that mistakes and errors can occur and that science is ultimately self-corrective and cumulative. As such, the Journal also seeks to enhance scientific rigor through four postpublication means and practices. First, the Journal occasionally issues corrections. These are meant to correct relatively small and specific issues that are important yet would not generally affect key inferences and conclusions of an article (e.g., mistakes involving description of analyses or some reported statistics).

Second, in rarer cases, the Journal also publishes retractions of previously published work. Retractions occur only in cases in which a published study is found to contain serious errors—that is, ones that go beyond corrections and likely affect substantive inferences and conclusions made in the article in nontrivial manner. Such instances occur after the original authors or readers inform the editor of the errors and after the editor (typically with input from the original authors and/or expert reviewers) thoroughly examines the issues. Note that decisions regarding whether to correct or retract published studies are ultimately at the editor's discretion; however, an appeal process can be initiated in cases in which authors do not agree with the editor's decisions regarding corrections or retractions.

Third, the Journal also publishes comments, either as standalone articles or along with replies. Kozlowski (2011) delineated the Journals' comment policy and noted that a comment article contributes to the literature when it "(a) brings to light critical controversies, (b) identifies important misconceptions or errors of inference, and/or (c) clarifies the implications of findings" (p. 231). Examples of comments published in the Journal include Bandura and Locke (2003); Ones, Viswesvaran, and Schmidt (2012); and Zigerell (2017).

Finally, as I previously noted (Chen, 2015, p. 2), the Journal "also encourages replication studies—particularly constructive replications that build on and provide useful extensions of prior findings" (emphasis added). As one example, Schmidt and DeShon (2010) found that previous findings regarding negative

within-person relationships between self-efficacy and task performance (e.g., Vancouver, Thompson, & Williams, 2001) are more likely to replicate when performance ambiguity is high; conversely, Schmidt and DeShon found a positive within-person relationship between self-efficacy and performance when performance ambiguity was low. In another article, Schultze, Pfeiffer, and Schulz-Hardt (2012) reported two experiments that failed to directly and constructively replicate previous findings by Conlon and Parks (1987), who proposed biased information search as a mechanism explaining escalation of commitment; in contrast, in two additional experiments, Schultze et al. proposed and found that biased information evaluation better explains escalation of commitment.

In summary, in this editorial, I have listed a number of the Journal's practices and steps that authors, reviewers, and editors can take to support and enhance greater scientific rigor in studies published in the Journal and more broadly in our scientific field. It should be evident that there is no one practice or "silver bullet" when it comes to ensuring and enhancing scientific and methodological adequacy in published articles. Rather, it takes a collective effort by multiple constituents and a broader scientific climate that values and supports the importance of conducting and publishing scientifically rigorous research. Finally, it is also important to recognize that scientific rigor is not the only reason why articles get published (or rejected) from this and many other journals. Other issues, such as addressing important phenomena and contributing meaningfully to extant research in a given area, also play important roles in whether articles get published. Ultimately, though, more scientifically rigorous research plays an important role in enhancing the theoretical, empirical, practical, and/or methodological contributions of published empirical research.

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