

Editorial

Introducing New Open Science Practices at *EJPA*

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What Is Open Science and Why Is It Important?

The Open Science movement aims to make scientific research open to all levels of society (Woelfle et al., 2011). It involves practicing science in a manner that allows others to collaborate and contribute and that makes research data and materials freely available under terms that enable reuse, redistribution, and reproduction of the research and its underlying data and methods (Bezjak et al., 2018). While the movement is by no means new (Hesse, 2018), it was reignited by several (partly unsuccessful) attempts to replicate and reproduce research findings in psychological and behavioral science (e.g., Doyen et al., 2012; Hagger et al., 2016; Open Science Collaboration, 2012, 2015). In response to what is sometimes called the “replication crisis,” researchers were urged to exercise greater transparency in how they conduct, report, and disseminate their results to improve the reliability, efficiency, and credibility of scientific research (Chambers et al., 2014; Ioannidis, 2014; Munafò et al., 2017; Nosek et al., 2015). The successful adoption of such open science practices is, however, dependent on a coordinated effort from multiple stakeholders, including journals, funders, institutions, and researchers alike (Munafò et al., 2017). As such, we will be introducing new measures to encourage open, transparent, and reproducible science at *EJPA*.

Open Science at *EJPA*: Introducing Two New Initiatives

As one of the leading outlets in the field of psychological assessment, *EJPA*'s goal is to publish cutting-edge research

reporting on the construction of new measures or advancements on existing measures in all domains of psychology. We are cognizant of the fact that our field is not immune to the threats posed by the replication crisis and, more importantly, that we have a responsibility to address it as best we can. In 2017, *EJPA* took the first steps toward increasing openness, transparency, and accountability by making the submission of the inputs and outputs of analyses from statistical software packages mandatory (latest upon acceptance) for all submission types (Greiff, 2017). A year later, in 2018, *EJPA* introduced the registered report (RR) format (see Greiff & Allen, 2018 for a discussion of the benefits of RRs).¹ Now, as part of our ongoing process of improving the quality of science in an open and transparent way, we are excited to announce two new open science initiatives: (1) The adoption of Transparency and Openness Promotion (TOP) standards and (2) the awarding of badges for open practices. These practices take effect as of now and apply to all current and future manuscripts submitted to *EJPA*.

Transparency and Openness Promotion Guidelines at *EJPA*

The TOP Guidelines are a set of eight modular standards that aim to move scientific communication to greater levels of transparency (Nosek et al., 2015). Journals can choose which of the eight transparency standards they wish to implement and also select a level of implementation for each standard (i.e., disclose, require, or verify). *EJPA* has, together with more than 5,000 organizations and journals across disciplines, become a TOP signatory (see <https://www.cos.io/our-services/top-guidelines> for a list of signatories) to express our support for the principles of openness,

¹Keep an eye out for our upcoming special issue, *Advancing the Reproducibility of Psychological Assessment Across Borders and Populations*, which is dedicated to RRs aimed at developing novel tools and adapting/testing existing measures in novel settings.

Table 1. Summary of *EJPA*'s TOP Requirements

TOP Guideline	Number	Level Adopted by <i>EJPA</i>	Requirement
Citation Standards	TOP#1	Level 2: Requirement	If authors use existing data or materials, the appropriate citation must be provided in a manner that is consistent with our author guidelines.
Data Transparency	TOP#2	Level 1: Disclosure	Authors must state whether data are available, and, if so, where to access them.
Analytic Methods (Code) Transparency	TOP#3	Level 1: Disclosure	Authors must state whether code is available, and, if so, where to access it.
Research Materials Transparency	TOP#4	Level 1: Disclosure	Authors must state whether materials are available, and, if so, where to access them.
Design and Analysis Transparency	TOP#5	Level 2: Requirement	Authors must adhere to <i>EJPA</i> 's design transparency standards for review and publication.
Study Preregistration	TOP#6	Level 1: Disclosure	Authors are required to state whether preregistration of study exists, and, if so, where to access it.
Analysis Plan Preregistration	TOP#7	Level 1: Disclosure	Authors are required to state whether preregistration of study with analysis plan exists, and, if so, where to access it.
Replication	TOP#8	Level 3	<i>EJPA</i> encourages replication studies and offers Registered Reports for replications as a regular submission option.

transparency, and reproducibility (see Table 1). In addition, we have obtained a TOP Factor (see <https://www.topfactor.org/> for the list of TOP scores), which provides a metric of the steps we are taking as a journal to implement open science practices. We not only strongly encourage authors to implement open science practices, but we have implemented the TOP Guidelines in a manner that allows authors to exercise some degrees of freedom in how they embrace and incorporate these guidelines. Regardless of how authors choose to implement these standards, we require them to be transparent about their choices.

Table 1 provides an overview of the TOP standards and the concomitant level adopted by *EJPA*. *EJPA* requires disclosure (Level 1) for the data transparency (TOP#2), analytic methods transparency (TOP#3), research materials transparency (TOP#4), study preregistration (TOP#6), and analysis plan preregistration (TOP#7) standards. Regarding the citation (TOP#1) standard and the design and analysis standard (TOP#5), authors will, however, be obliged (Level 2) to cite existing data and materials (if used) and to report specific information regarding the design and analysis of their study. Lastly, *EJPA* encourages replications and offers Registered Reports as a regular submission option, thereby representing a Level 3 on the replication standard (TOP#8).

What Does the Implementation of TOP Guidelines Mean for Authors in Practice?

The implementation of the TOP Guidelines predominantly requires authors to disclose or provide mandatory information pertaining to the various standards in their manuscript. To assist authors with the implementation of the TOP

standards, we have included a set of questions related to each TOP standard as part of the submission process. These questions will serve as a checklist for authors and aid compliance with the various standards. In addition, to reduce the administrative load associated with the implementation of the standards, authors will only be required to complete these questions when submitting their revised manuscript after review. More information and a detailed submission checklist can be found in the author guidelines on *EJPA*'s webpage.

New Open Data and Open Materials Badges and Changes to Our Electronic Supplementary Material

Together with the implementation of the TOP Guidelines, we have implemented Open Data and Open Materials badges to recognize and reward authors for the adoption of open practices. The Open Data (OD) badge is earned by making publicly available the digitally shareable raw (and processed) data (including a codebook) needed to reproduce the reported results (see the practical editorial in this issue by Horstmann et al., 2020 on how to produce reproducible data sets and codebooks). The Open Materials (OM) badge is earned by making publicly available the components of the research methodology needed to reproduce the reported procedure and analysis (e.g., questionnaires; the scripts, code, and outputs associated with the statistical analyses; any additional analyses or explanations). Apart from awarding badges, *EJPA* further supports

open practices by now requiring all other electronic supplementary files (e.g., supplementary tables and figures) to be uploaded in a freely accessible public repository. *EJPA* will thus no longer publish such files online as Electronic Supplementary Material (ESM) alongside the article. This means that all supplemental information should be uploaded on a freely accessible public repository.

What Do the New Open Data, Open Materials, and Electronic Supplementary Materials Mean for Authors in Practice?

Although *EJPA* strongly encourages the sharing of data and materials, authors ultimately decide whether and to what extent they want to share data and/or materials. Authors who decide to share data, materials, or other supplemental information, are required to upload all Open Data, Open Materials, and other electronic supplementary files in a freely accessible public repository and cite it correctly (TOP#1). A preferred repository for *EJPA* is PsychArchives (run by a public open science institute for psychology <https://www.psycharchives.org/>), but other repositories are, of course, also acceptable as long as DOIs or accession numbers are provided and the data are at least as open as CC BY (for a list of repositories see <http://www.re3data.org/>). Authors are encouraged to provide OD, OM, and other electronic supplementary at the point of submission. However, to ease the administrative burden, authors will be allowed to submit the data and/or materials after the first review. These authors must, at the very latest, submit the information when the manuscript is accepted for publication. Those authors who currently have manuscripts under review are also eligible to apply for an OD/OM badge. Furthermore, since *EJPA* has opted for a disclosure badging system, authors are required to include a public statement stating that there is sufficient information for an independent researcher to reproduce all of the reported results (i.e., OD) and/or all of the reported methodological procedures and analyses (i.e., OM). The Editorial Office will perform cursory checks to ensure the provided links are working, but authors will ultimately be accountable to the community for disclosure accuracy and are fully responsible for the content of the Open Data and Open Materials. Here, it is important to emphasize that *EJPA* will only award an OD and/or OM badge if the complete set of data and/or materials needed to reproduce the reported results and/or procedure and analysis are made publicly available. For example, if authors of an empirical paper upload only additional tables and figures in a free, public repository (but omit the syntax and outputs used for the analyses), this would be classified as other electronic supplementary materials as the materials that are needed to reproduce the

reported procedure and analysis are not available in the repository.

Even though compliance with *EJPA*'s TOP standards will henceforth be mandatory, we realize that there may be instances where authors are unable to make the full dataset or all relevant and core materials publicly available. In these situations, we encourage authors to consider whether it might be possible to make at least parts of the data and/or material publicly available as other electronic supplementary materials. Importantly, if authors are unable to share data and/or material in a public repository, they, nevertheless, need to include a statement to this effect (as per TOP#2, #3, and #4) and, preferably, explain why the data and/or material cannot be made publicly available. In sum, while *EJPA* will always require authors to disclose whether (or not) they make data and/or materials publicly available, authors will not be penalized for not providing OD, OM, or other electronic supplementary materials and this will not have an impact on the peer review process.

To make the OD and OM badge application process easier for authors, we have included a set of questions related to OD and OM badges as part of the submission process. Although early submission of data, materials, and other electronic supplementary material is encouraged, authors can apply for a badge up until the point of acceptance. More information and a detailed checklist can be found in the author guidelines on *EJPA*'s webpage.

The Next Steps for Open Science at *EJPA*

Toward the end of 2018, *EJPA* was the first assessment journal to introduce the RR format and we recently published our first RR (Kember & Williams, 2020). Now, two years later, we join other top scientific journals in the adoption of TOP standards and the awarding of OD and OM badges. Again, in the field of psychological assessment, *EJPA* is spearheading these developments. In this, the editorial team at *EJPA* now joins the global movement aiming to increase openness and transparency in science. It is important to note that while other fields of psychology have been more openly criticized for a lack of openness and transparency, the issues associated with a lack of openness and transparency do not stop at the doorsteps of psychological assessments, but might – on the background that assessment is a part of any empirical effort in psychology (for a more thorough discussion see, for example, Flake & Fried, 2019) – be prevalent and highly relevant for authors and readers of *EJPA* as well as for the entire community of psychological assessment. With this in the back of our minds, we expect the efforts that we now take to,

in the long run, lead to an overall higher quality level of scientific knowledge in general and psychological assessment in particular. Thus, the implementation of these practices is part of our continuing strategy to increase transparency and accountability at *EJPA*, and also in the broader field of psychological assessment. In the near future, we also plan to implement and award badges for preregistration. As stakeholders of science, we trust that you will embrace these open science practices with us to ensure the reliability, efficiency, and credibility of psychological assessment science and the scientific process itself.

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Authorship

Over the last months, both the EiC (Samuel Greiff) and the editorial assistant (Lindie van der Westhuizen) of *EJPA* have worked with great enthusiasm and commitment toward implementing the new guidelines at *EJPA*. They contributed equally to this and are listed in alphabetical order in this editorial. In addition, several Associate Editors (Marcus Mund, John F. Rauthmann, Eunike Wetzel) have helped with formulating and implementing the guidelines. To acknowledge their contribution, they appear on this editorial in alphabetical order.

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