# EDITORIAL

# Further Action Toward Valid Science in *Law and Human Behavior*: Requiring Open Data, Analytic Code, and Research Materials

Bradley D. McAuliff[1], David DeMatteo[2], Jennifer Cox[3], Jennifer S. Hunt[4],
Lora M. Levett[5], and Kyle C. Scherr[6]

[1] Department of Psychology, California State University, Northridge
[2] Department of Psychological & Brain Sciences and Thomas R. Kline School of Law, Drexel University
[3] Department of Psychology, The University of Alabama
[4] Department of Gender and Women's Studies, University of Kentucky
[5] Department of Sociology and Criminology & Law, University of Florida
[6] Department of Psychology, Central Michigan University

Over the past decade, psychology has experienced an unprecedented emphasis on the transparency and accessibility of science. This movement has challenged the scientific community to evaluate and improve how we design, conduct, and report research. *Law and Human Behavior* has not been exempt from this trend. In 2017, Editor-in-Chief Margaret Bull Kovera introduced open science badges to recognize and incentivize the public sharing of data, materials, preregistration plans, and analyses. To date, *Law and Human Behavior* has published 53 articles that earned at least one badge. In 2019, the incoming editorial team implemented the first phase of the Transparency and Openness Promotion (TOP) Guidelines, focusing on data and research design transparency (McAuliff et al., 2019). They emphasized that findings from applied research on law and human behavior

> have the potential to meaningfully affect the lives of the many individuals involved in the legal system, as well as the judgments and behaviors of professionals who practice in law enforcement, corrections, and legal settings. Justice, in a very real sense, is often at stake in the work we do. (p. 2)

The inaugural editorial promised a measured approach to increasing transparency, openness, and replicability practices in *Law and Human Behavior*. Now, 3 years later, and on the brink of our last year as the editorial team, it seems only fitting that we take further action to bolster the validity of science published in the journal by *requiring* that authors openly report data, analytic code, and research materials. The purpose of this editorial is to briefly outline *Law and Human Behavior*'s new requirements.

Bradley D. McAuliff https://orcid.org/0000-0003-0237-4703
David DeMatteo https://orcid.org/0000-0002-0266-5749
Jennifer Cox https://orcid.org/0000-0001-6267-5714
Jennifer S. Hunt https://orcid.org/0000-0002-7591-4208
Lora M. Levett https://orcid.org/0000-0002-8454-8289
Kyle C. Scherr https://orcid.org/0000-0002-9694-0624
Correspondence concerning this article should be addressed to Bradley D. McAuliff, Department of Psychology, California State University, Northridge, 18111 Nordhoff Street, Northridge, CA 91330-8255, United States. Email: bradley.mcauliff@csun.edu

## TOP Guidelines and Open Data, Analytic Code, and Research Materials

The TOP Guidelines consist of eight standards for journals regarding citation standards, data transparency, analytic methods (code) transparency, research materials transparency, design and analysis transparency, study preregistration, analysis plan preregistration, and replication (see Nosek et al., 2015a). Each standard has increasingly stringent requirements for what journals should describe, recommend, or require for publication. In 2019, *Law and Human Behavior*'s editorial team focused on the data and research design standards by requiring authors to report the following information (McAuliff et al., 2019, p. 2):

- All independent variables (predictors or manipulations), including all levels of each variable, that are relevant to the target research question, whether successful or failed.

- All dependent variables or measures collected for the target research question.

- The total number of excluded observations and the reasons for making those exclusions.

- All relevant statistical information for inferential tests, whether significant or not. This includes exact $p$ values (rounded to two or three decimal places except for $p < .001$; see American Psychological Association, 2010, pp. 113–114), effect size estimates, and 95% confidence intervals around the effect size estimates.

For secondary data analyses, the journal required authors to fully describe the data source in the article. We advised authors to consult the American Psychological Association's Journal Article Reporting Standards (JARS) for quantitative (Appelbaum et al., 2018) and qualitative research (Levitt et al., 2018) to improve transparent reporting and to ensure that articles contain all the information necessary for readers to evaluate research quality and replicate the study.

Beginning on March 1, 2023, *Law and Human Behavior* will raise its standard for data reporting and expand its focus to include analytic code and research materials. Adopting the recommended

language from the TOP Guidelines (Nosek et al., 2015b), the journal will publish articles only if the data, analytic code, and research materials are clearly and precisely documented and are fully available to any researcher who wishes to reproduce the results or replicate the procedure.

Accordingly, authors using original data who seek to publish their research in the journal must make the following items publicly available:

- The data, including all variables, treatment conditions, and observations described in the article.

- A full account of the procedures used to collect, preprocess, clean, and/or generate the data.

- Program code, scripts, codebooks, data dictionaries, and other documentation sufficient to precisely reproduce all published results.

- Research materials and metadata necessary to conduct an independent replication of the research.

Authors reusing data from public repositories who pursue publication in *Law and Human Behavior* must provide program code, scripts for statistical packages, and other documentation sufficient to allow an informed researcher to precisely reproduce all published results.

To meet these requirements, authors must use a trusted digital repository (e.g., Open Science Framework osf.io, the Interuniversity Consortium for Political and Social Research icpsr.umich.edu) that adheres to policies ensuring all data, analytic code, research materials, and other documentation are discoverable, accessible, usable, and preserved for the long term by assigning unique and persistent identifiers. Author-maintained websites *do not* satisfy this requirement. The editorial team will not assign a publication date for accepted articles until these conditions have been met. Authors are responsible for ensuring that their articles continue to meet these conditions.

*Law and Human Behavior* recognizes that, in rare cases, some or all data or research materials cannot be shared for legal or ethical reasons. Authors should make this decision and its underlying rationale clear upon submission. The editorial team may grant exceptions to the data and research material access requirements if authors explain the restrictions and how they preclude public access, publicly describe the steps to request access to data and/or research materials, provide software and other documentation that will precisely reproduce all published results, and provide access to all data and research materials for which the constraints do not apply.

## Current Challenges and Future Directions

Adopting further open science practices in *Law and Human Behavior* will require patience, persistence, and planning on behalf of authors, reviewers, and editors. The field of psychology and law has unique limitations that we all must account for, such as working with vulnerable populations (e.g., patients, people with prior criminal justice and legal system involvement, children, survivors of crime, undocumented immigrants) and identifiable data (e.g., forensic files, criminal records, police reports, video recordings) that may present obstacles for publicly sharing data (McAuliff et al., in press).

Moreover, the decision to share data and research materials does not rest solely with researchers—participants should have the opportunity to evaluate the potential risks involved and must explicitly provide permission to share their data. These steps typically occur during the informed-consent process governed by an institutional review board or other ethics board and thus require researchers to create a plan for sharing before data collection begins. In some instances, permission to share data and/or materials may be required from the researcher's institution or the government as well.

We also acknowledge that making data and analytic code openly available can be more difficult than providing research materials because the former must be transformed into a shareable format (McAuliff et al., in press). Researchers must clearly label and describe data variables and analytic code in a way that people who are not directly involved in the research can understand and use. Without a doubt, this process is taxing and resource-consuming. However, given the high potential for our field's science to directly affect criminal justice/legal outcomes, policy, and law in very tangible ways, the benefits associated with producing more valid science cannot be overstated.

As the broader scientific community grapples with these issues, it has begun to develop best practices for how to properly share data, analytic code, and research materials (Campbell et al., 2019; El Emam et al., 2015). One general guideline is that they must be findable, accessible, interoperable, and reusable (FAIR; Wilkinson et al., 2016). There are also articles outlining storage services/repositories and resources for seeking permission to share identifiable data (Gilmore et al., 2018). *Law and Human Behavior* will draw on these emerging assets to develop standard practices and templates for sharing data, analytic code, and research materials in the journal. We will incorporate these updates on *Law and Human Behavior*'s website (https://www.apa.org/pubs/journals/lhb), so please periodically check there for the latest information. No matter what challenges lie ahead, rest assured that we remain committed to increasing the validity of scientific research published in *Law and Human Behavior*, and we look forward to working with you to implement these important and necessary changes in the new year.

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