Open Science and Multicultural Research: Some Data, Considerations, and Recommendations

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Positionality statement: Lui is an East Asian American clinical psychologist with research expertise on ethnic minority mental health. Lui has been using open science practices since 2017. Gobrial and Pham are/were graduate students in clinical psychology under the supervision of Lui. Gobrial identifies as an Egyptian American and White mixed-heritage person, and Pham is a Southeast Asian American. Giadolor and Adams are/were undergraduate students in psychology under the supervision of Lui. Giadolor identifies as a Black person. Adams identifies as a White person. Rollock is an African American clinical psychologist of Caribbean heritage, with research expertise on ethnic minority health and intergroup adjustment.

The preregistrations for the overall investigation (<https://osf.io/vjwxn>), Study 1 (<https://osf.io/sp3t4>), Study 2 (<https://osf.io/sgdrt>), and Study 3 (<https://osf.io/an3cg>) are archived in the Open Science Framework repository. Author contribution determination agreement, study materials, results of journal audit in Study 1, and deidentified survey data in Study 2 and Study 3 are made publicly available on the Open Science Framework at <https://osf.io/enm74/>. The authors have no conflicts of interest to disclose. The authors thank Drs. Stanley Sue, Jennifer Tackett, and Byron L. Zamboanga for providing helpful feedback to an initial draft of the manuscript, and Dr. Monica C. Skewes for rich discussions about open science, researcher practices, and epistemology of science.

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Abstract

Objectives: There are two potentially useful but nonintersecting efforts to help ensure that psychological science produces valid and credible information and contributes to the understanding of diverse human experiences. Whereas North American ethnic minority psychology research/cultural diversity science (EM/D) emphasizes cultural competency to yield contextualized psychological understanding of understudied and underserved minority populations, current open science (OS) approaches emphasize material and data sharing, and statistical proficiency to maximize the replicability of mainstream findings. To illuminate the extent of and explore reasons for this bifurcation, and OS's potential impact on EM/D, we conducted three studies. **Methods and Results:** In Study 1, we reviewed editorial/publishing policies and empirical articles appearing in four major EM/D journals on the incentives for and use of OS. Journals varied in OS-related policies; 32 of 823 empirical articles incorporated any OS practices. Study 2 was a national mixed-methods survey of EM/D scholars' ($N=141$) and journal editors' ($N=16$) views about and experiences with OS practices. Emerged themes included beliefs about the impact of OS on scientific quality, possible professional disadvantages for EM/D scholars, and concerns about the welfare of and ethical risks posed for communities of color. In Study 3, we explored community research participants' beliefs about data sharing and credibility of science/scientists ($N=1,104$). Participants were receptive of data sharing and viewed psychological science favorably. **Conclusions:** We provide data-driven recommendations for researchers to assemble the best tools for approaching the knowledge-production process with transparency, humility, and cultural competency.

Keywords: diversity science; metascience; replication; reproducibility; rigor

Public Significance Statement

Ethnic minority psychology research/cultural diversity science (EM/D) emphasizes empirical approaches that are responsive to the needs and experiences of people of color, whereas the current mainstream open science movement encourages open communications, democratic review process, and transparency of methods and data for critical scrutiny by other researchers. Findings from three studies showed that open science practices such as preregistrations, material and data sharing, and open-access publishing are not commonly adopted in EM/D, likely because of concerns about possible risks to ethnoracial minority scholars and study populations. We offer practical recommendations to bridge these gaps, and suggest future directions to connect EM/D and mainstream open science movement to better understand the experiences of ethnoracial minority communities and benefit the lives of the diverse human population.

Open Science and Multicultural Research: Some Data, Considerations, and Recommendations

Psychological science is aimed to understand and optimize human conditions and functioning through systematic observations and manipulations. Across philosophical approaches (e.g., postpositivist, participatory), psychological science is used to describe, predict, explain, prevent/modify, advocate for, and/or enhance people's adjustment (Gordon & Meroë, 1991; Gordon et al., 1990; Kazdin, 1998). Despite some inherent economic and egoistic benefits to the researchers (Boykin, 1978), ultimate benefactor of science should be the people across backgrounds/experiences. Multicultural research—specifically North American ethnic minority psychology research/cultural diversity science (EM/D)—embodies the general goals of psychological science and focuses on advancing scientific understanding and ways to help specific populations from diverse socio-environmental contexts. To achieve such goals, “open science” (Munafò et al., 2017; Nosek et al., 2015) comprises a set of tools that can promote researchers' accountability to the scientific community and subsequently enhance the quality and impact of EM/D.

The current mainstream open science (OS) movement has focused primarily on methodological and statistical threats to the credibility and impact of research, and ways to address the “replication crisis” (Ioannidis, 2005; Tackett et al., 2017). Hence, OS practices have the potential of not only advancing psychological science broadly, but also improving its credibility in understanding and helping ethnoracial minority and other populations. Then, barriers to implementing OS practices will hinder the advancement of EM/D specifically, and psychological science generally. There may be several reasons for a limited crosstalk between EM/D and the mainstream OS movement, however. For example, narrow perceptions of OS practices (e.g., restricting to enhanced communication with other scientists about the research

process and free-access to scientific knowledge) (e.g., Nosek & Bar-Anan, 2012) may have discouraged EM/D scholars from engaging with the movement. Our current goals were to:

- (1) evaluate the use of OS practices in published EM/D journals,
- (2) consider EM/D scholars' and editors' perspectives on OS, and
- (3) explore research participants' perspectives on data sharing and credibility of science/scientists.

Based on these data, we aimed to discuss and offer some practical recommendations on how EM/D may intersect with the OS movement.

Knowledge-Production Process, Reproducibility, and Impact of Ethnic Minority Psychology Research/Cultural Diversity Science

To maximize impact and achieve the basic goals of psychological science, research must be credible—that is, to convince others of the truths about human psychology (Sue, 1999). Credible research can promote the public's confidence in science and scientists; it also marks the greatest defense against disinformation. Credibility is reinforced by the validity (i.e., accuracy) of research findings on any given psychological phenomenon/experience in some segments of the human population, at any given time, and in some socio-environmental contexts. One aspect of credibility concerns reproducibility of scientific findings: how well observations from one investigation can be repeated in another investigation using identical or similar methods and a different sample drawn from the same relevant population.

Reproducibility Problem in Psychological Science

Unfortunately, publicized failures to reproduce prominent psychological findings have raised a wave of concerns about generating credible knowledge in the field (Munafò et al., 2017;

Open Science Collaboration, 2012, 2015).¹ Because other articles have detailed the various threats to reproducible (quantitative) psychological research (Shrout & Rodgers, 2018), we highlight only some examples:

- sample sizes too small for adequate statistical power to detect robust effect sizes;
- generating hypotheses after results are known;
- researchers' flexibility in conducting the study and collecting data;
- analysts' choices (e.g., data cleaning methods, include covariates and moderators) that yield positive findings and inflate readers' confidence in exploratory results as if they were confirmatory findings;
- reporting selectively study outcomes or results that are positive and statistically significant; and,
- undisclosed researcher errors.

These research practices threaten reproducibility because of closed communication about the knowledge-production process and/or limited degree of material and data sharing; the lack of transparency impedes public verification of scientific findings. Many of these potentially-problematic researcher practices must be contextualized in the broader incentive structure surrounding knowledge-production—one that rewards publishing positive and novel findings in prestigious and mainstream peer-reviewed journals. Researchers' abilities to compete for grants, gain/maintain employment, and succeed in tenure and promotion all are linked to their publication records (Lilienfeld, 2017; Nosek et al., 2012).

The reproducibility problem has directed many researchers' attention to the complexities

¹ Direct replications using original study materials—whenever available—and in consultation with the original researchers were randomly selected from 100 investigations published during 2008 in *Psychological Science*, *Journal of Personality and Social Psychology*, and *Journal of Experimental Psychology: Learning, Memory, and Cognition*.

and contexts of the knowledge-production process. How research is conducted is influenced not only by researchers' ideas, feelings, motives, and personal experiences but external structure and consensus of "normal science" (Kuhn, 1996). Unfortunately, in mainstream psychological science, researchers' philosophical frameworks, positionality, and assumptions are seldom disclosed. Thus, communi-centric (e.g., colorblind) perspectives and closed communications about the knowledge-production processes risk generating findings that mischaracterize the psychology of certain populations; these findings subsequently would fail to contribute positively to people's adjustment (Boykin, 1978; Gordon et al., 1990).

In EM/D, scientists systematically examine whether theories and results apply to particular populations and focus on underrepresented and underresourced groups (Quintana et al., 2001). Multiculturalism underscores the importance of making transparent researchers' epistemological assumptions, expectations, and disciplinary or institutional contexts/norms; such transparency can help other scientists appreciate the choices of the phenomena being studied, the rationale for and nature of data collected from specific populations, instruments and methods/contexts used in data collection, and the frameworks for interpreting results (Awad et al., 2016; Quintana et al., 2001). Hence, EM/D approaches may be quite compatible with the transparency and methodological specificity advocated by those seeking to address the shadows of the reproducibility problem.

Applicability of Mainstream OS in EM/D

The current mainstream open science (OS) is promoted to enhance transparency across stages of the research process to reduce undisclosed researcher flexibility (Nosek et al., 2012, 2015). There are a range of OS practices. For example, researchers are encouraged to register their study designs, procedures, and analytic decisions prior to observing data patterns.

Relatedly, registered reports constitute a new publication format, in which scholars are incentivized to address important empirical questions using rigorous methods and disincentivized to engage in questionable research practices (e.g., selectively reporting positive results). Additionally, proponents of OS encourage investigators to share their study materials (e.g., interview scripts, survey items, experimental stimuli), data files, and analytic schemes; these facilitate independent evaluation, replication, and extension of study findings. Other OS practices include archiving pre-review manuscripts (i.e., preprints) and pre-proof-edited postprints. Preprints and postprints can improve public access to scientific information (Nosek & Bar-Anan, 2012). With preprints, researchers control what information to share with the scientific community and beyond. Further, peer-reviews can occur on public-access platforms, hence separating evaluation and dissemination of research. With postprints, researchers can disseminate widely scientific knowledge to those who lack resources to pay for journal subscriptions or purchase closed-access articles.

To facilitate coordinated efforts and establish norms across professional societies, journals, and funders, the Center for Open Science provides training and resources, and offers free products supporting OS practices. Specifically, products on the Open Science Framework (OSF) (e.g., Registries, Preprint Services) support researchers' workflow. Badges are available for journals to recognize researchers who (pre)register their study plans/analytic decisions and share their data and materials.² The Center also developed the Transparency and Openness Promotion (TOP) Guidelines that summarize key OS practices promoted by scientific journals (Nosek et al., 2015).

Initial discussions of OS in psychology largely occurred in subdisciplines that rely

² One of the best-known EM/D journals, *Cultural Diversity and Ethnic Minority Psychology*, was among the first ones managed by the American Psychological Association (APA) to offer open science badges.

heavily on experimentation. Some metascience investigations have revealed researchers' shared concerns and perceived barriers to adopting OS practices (Abele-Brehm et al., 2019; Houtkoop et al., 2018; Walsh et al., 2018). Still, apart from limited broad statements about its potential (e.g., Nosek, 2017), the current OS movement has not systematically or explicitly reflected interests and issues pertinent to EM/D (e.g., potential ethical concerns when working with underrepresented minority populations). In fact, cultural researchers have highlighted that the mainstream OS movement has not made diversity of samples or researcher representations a core consideration (Syed & Kathawalla, 2020). Further, mainstream OS practices do not appear to have been adopted widely in published EM/D studies; yet no systematic data are available to support our impression.

This lack of intersection between mainstream OS and EM/D may reflect three key issues. First, people from ethnoracial minority and other historically marginalized communities may be reluctant to participate in research. For example, conclusions about ethnoracial differences as suggested by ability assessments and high-stake tests have unfairly painted some groups in a negative light (Donna & Janet, 2012; Helms, 2005; Helms, 2006). Second, EM/D scholars who use small-sample methods to reveal the richness of individuals' experiences may reflect their research participants' potential concerns about the risk of privacy violation; these scholars may hesitate from engaging in OS practices that emphasize data sharing. Engaging with OS approaches requires buy-in from stakeholders in EM/D—including scholars who conduct the research, institutional gatekeepers (e.g., publishers, journals, editors), and research participants. The lack of buy-in from these stakeholders may reflect concerns pertinent to this research area, such as navigating ethics boards in Native Tribes and issues related to data ownership (Lui et al., 2021). Third, EM/D scholars tend to conduct research with ethnoracial groups that are or

historically have been underrepresented, underserved, or subordinated. With a focus on understanding groups on their own terms as a key to addressing their need, generalizability of theories, concepts, or patterns from other populations to ethnoracial minority groups typically is not a key motivation. In fact, many EM/D researchers undertake their work specifically out of recognition that scientific knowledge generalized beyond the communities in which it is produced risks mischaracterizing lived experiences in ethnoracial minority communities.³ Thus, when generalizability is conflated with reproducibility, some EM/D scholars may consider OS practices to be irrelevant for their scientific interests and goals.

Here, we aimed to characterize the state of the OS in EM/D, and examine EM/D scholars', editors', and research participants' reactions to key OS practices. We expected the results to illuminate how to promote crosstalk between EM/D and mainstream OS.

Preregistrations, materials, and data were archived in the OSF repository.

Study 1: Audit of EM/D Journal Publications

Describing the state of OS in EM/D makes an important first step to understanding the non-intersection between these two sets of tools for scientific advancement. We reviewed editorial/publishing requirements and recommendations as they pertained to the promotion of credible and transparent research, and surveyed the extent to which OS was implemented in existing EM/D investigations. We selected four journals published by the largest national ethnic

³ Mainstream psychological science tends to presume generalizability—attempting to uncover universal laws of behavior based on patterns observed in dominant ethnocultural groups. Such knowledge-production approaches historically have treated patterns that diverge from the “mainstream” as deficits (cf. Boykin, 1986; Valentine, 1971), or inadequately examined their potential to understand or benefit understudied populations (Hall et al., 2016; Quintana et al., 2001). Generalizability typically is questioned when research focuses on ethnoracial minority and other marginalized populations and rarely when research involves people from dominant groups (Sue, 1999). In fact, research publications featuring ethnoracial minority samples tend to identify the populations of interest in the titles, and explicitly justify investigating the particular populations in the abstracts and introductions/overviews. By contrast, those with “mainstream” samples rarely describe or justify the demographic characteristics in the titles or abstracts, or discuss in detail the limit of generalizability of findings (Rad et al., 2018).

minority psychological associations and specializing in EM/D:

- *Asian American Journal of Psychology (AAJP)*;
- *Cultural Diversity and Ethnic Minority Psychology (CDEMP)*;⁴
- *Journal of Black Psychology (JBP)*; and,
- *Journal of Latinx Psychology (JLP)*.⁵

Method

Using the TOP Guidelines,⁶ we extracted information on key OS practices that were recommended or available to authors in the four journals. Review was conducted during December 2020-January 2021 and focused on policies outlined in journals' author instructions or other guidelines available on their websites.

Next, we audited articles published during 2015-2020, and appeared as advance online publications as of November 10, 2020 in these journals. Descriptive information was recorded for each article: journal name, volume, issue, year of publication, title, and authors. For each empirical article, we reviewed information in author note/acknowledgement, method section, supplemental materials, and authenticated links to online repositories. We coded evidence for each of the seven common OS practices: material sharing, data sharing, (pre)registration of study aims and approach, registration of analysis plan, open-access preprint, replication, and registered report (**see Supplemental Text for details**). Auditors reviewed the definition and examples of each OS practice to facilitate coding consistencies. Two primary auditors independently coded empirical articles across the four journals.⁷ Another researcher randomly selected and

⁴ Formerly *Cultural Diversity and Mental Health*

⁵ Formerly *Journal of Latino Psychology*

⁶ See <https://www.cos.io/initiatives/top-guidelines>. TOP Guidelines do not reflect any journal's publishing priorities or valid research that might be publishable. Nevertheless, the summative TOP Factor can be used to compare editorial requirements/recommendations as they pertain to the promotion of openness and transparency in journals.

⁷ Our audit did not apply to commentaries, editorials, book reviews, and/or clinical case summaries.

independently audited 20% of the articles (intercoder agreement=96.79%) The principal investigator (PI) randomly selected and audited another 10% of the articles (intercoder agreement=92.33%) and adjudicated discrepancies across auditors. The PI independently reviewed all articles that were marked as having incorporated OS practices.

Results

Editorial Requirements/Recommendations

Table 1 summarizes the variability in relevant OS practices available to authors in *AAJP*, *CDEMP*, *JBP*, and *JLP*.⁸ All four journals request manuscripts conform to APA style (2019). Consequentially, three elements relevant to OS practices are advised. First, APA writing style and publication standards call for adherence to APA's Ethical Principles of Psychologists and Code of Conduct (2017); standards are designed to maximize accuracy and comprehensiveness in reporting research results. Standards also emphasize proper handling and retention of data for sharing and verification while explicitly enjoining against data sharing that may violate research participants' consent and/or confidentiality. Also relevant are proper assignment of authorship/publication credits and prohibitions against duplicated and piecemeal publications. Second, to facilitate critical review of research results, APA Style Journal Article Reporting Standards specify how to report qualitative, quantitative, and mixed-methods findings.⁹ Finally, although none of these four are open-access journals, each outlet recommends that potential authors check on OS practices that might be mandated by their funders or institutions (e.g., allow free-access to manuscripts, deposit data openly). Our audit showed more OS practices available

⁸ *AAJP*, *CDEMP*, and *JLP* are covered by the APA Journals Program, which specifically endorses OS practices that align with the TOP Guidelines. According to APA, "We offer a range of resources to support our authors and advance open science practices in psychological science. Authors may choose to engage in a variety of open science practices, depending on their study type, research focus, or the journal that they wish to submit to."

⁹ See <https://apastyle.apa.org/jars>. We found that differences in data reporting across research methods were acknowledged in JARS. For example, to promote transparency and protect participant privacy and confidentiality, qualitative data may be unsuitable for some forms of unrestricted public archives.

to authors by *CDEMP* than the other three journals. This difference is the basis of the higher TOP Factor earned by *CDEMP* than *AAJP*, *JLP*, and *JBP*.

OS in Journal Articles

We identified 897 published and online-first articles across all four journals. As shown in Table 2, OS practices were represented in 32 (3.89%) of the 823 audited empirical articles. There was limited evidence of OS practices prior to 2018; half of the studies incorporating OS practices were published in 2020 or available for online view. Material sharing was the most common practice, followed by data sharing, then (pre)registrations and open-access preprints/postprints. No replication studies or registered reports were identified. The 32 studies incorporating OS practices were conducted by 28 unique research teams.

Twenty-eight empirical articles—24 of which used qualitative methods—were accompanied by material sharing. Study information (e.g., interview scripts used in qualitative research or survey items in quantitative investigation) were archived in online repositories, or presented in appendices or online supplemental materials. Research data were shared publicly for nine articles. Finally, we identified two (pre)registered studies, in which study aims, hypotheses, and analytic strategies were archived in the OSF repository before analyses were performed. These two studies conducted by the same research team also incorporated material and data sharing, and open-access postprints.

Discussion

OS was neither well incentivized nor commonly adopted in prominent EM/D journals. Despite APA Journal Program's endorsement of OS, OS practices are not mentioned explicitly in most EM/D journals' author guidelines. Nevertheless, we observed an increase in these practices represented in published articles since 2019. Journal impact factors (IFs) calculated by Clarivate

Analytics are commonly used to indicate the journals' relative importance and prestige in their respective fields. Compared to top journals in multidisciplinary psychology (e.g., *Psychological Bulletin*, TOP Factor=2) and journals with similar IFs in clinical (e.g., *Assessment*, TOP Factor=5), social (e.g., *Journal of Social and Personal Relationships*, TOP Factor=0), and experimental psychology (e.g., *Psychology of Addictive Behaviors*, TOP Factor=12), we observed greater alignment between the mainstream OS movement and the editorial recommendations in *CDEMP* (TOP Factor=15). The editorial recommendations in *AAJP*, *JBP*, and *JLP* were consistent with other journals of similar IFs.

It is possible that our journal audit underestimated the percentage of studies that incorporated OS practices. Some authors might not have included Web-links to their open-access preprints/postprints in their published articles. Researchers who used publicly-available datasets might not have documented the online repository in which data were archived. Nevertheless, our audit supported that there was limited integration between OS and EM/D.

Study 2: Researcher and Editor Beliefs about Reproducibility Crisis and OS

Building on descriptive results from Study 1, Study 2 was aimed to explore the beliefs about the reproducibility crisis and OS movement among EM/D scholars and journal editors. Surveying the reasons for endorsing, or perceived barriers to the implementation of, OS practices in EM/D would be critical in contextualizing the status quo—and if relevant, pointing to possible directions for change.

Method

Recruitment and Participants

Scholars. Researchers whose primary expertise focused on EM/D were recruited through listservs of six academic organizations:

- *American Arab, Middle Eastern, and North African Psychological Association;*
- *Asian American Psychological Association;*
- *National Latinx Psychological Association;*
- *Society for the Psychological Study of Culture, Ethnicity and Race;*
- *Society of Indian Psychologists;* and,
- *The Association of Black Psychologists.*

Participants were eligible to participate in the anonymous survey if they were 18 years or older, and published at least one peer-reviewed empirical study as primary author, or completed and archived at least one independent research project (e.g., undergraduate honors, master's thesis).

Data were collected in November 2020 from 141 doctoral, master's, or postbaccalaureate researchers (age range=22-83, $M_{\text{age}}=38.88$, $SD_{\text{age}}=12.95$, 68.6% women). Participants reported diverse ethnoracial backgrounds (80.1% from communities of color): 30 Asian/Asian American, 12 Black/African American, 42 Hispanic/Latino/a/x, 12 Middle Eastern or North African, 17 Native Americans/American Indian/Native Alaskan, and 28 White/Euro American. **See Supplemental Text for additional participant information.**

Editors. We identified 38 researchers who currently or formerly served as (associate) editors in *AAJP*, *CDEMP*, *JBP*, and *JLP* during 2015-2020. In November-December 2020, a survey similar to but separate from the researchers' survey was distributed to these individuals. Among 16 respondents (response rate=42.11%), there were nine former editors and six current editors in *AAJP* ($n=3$), *CDEMP* ($n=5$), *JBP* ($n=2$), and *JLP* ($n=1$).¹⁰ Participants received their doctorates between 1994 and 2007, and held the editorial role for an average of 4.33 years

¹⁰ One editor did not respond to the question about current or former editorship, and six individuals did not provide information about the journals they edited.

($SD=2.18$).¹¹

For both sets of data collection, our investigation was advertised as brief surveys about scholars' beliefs and practices in conducting research or editing journals in EM/D. Participants received three recruitment emails over a three-week period. Surveys took 5-10 minutes. For each participant who completed the survey, a monetary donation of \$5 was made on respondent's behalf to one of the six aforementioned psychological organizations of their choosing.

Questionnaires

The PI and the last author developed 20 open- and closed-ended items assessing EM/D scholars' opinions about and use of OS practices. An 18-item survey consisted of similar questions assessing individuals' opinions about OS in their capacity as journal editors (i.e., making decisions to accept or decline publishing research in the four key EM/D journals). Both scholars and editors responded to questions about awareness of the reproducibility crisis and OS movement, concerns about OS in psychological science generally and EM/D specifically. Unique to the scholar surveys, items included importance of rigor, reproducibility, and transparency in their own research, experiences in and reasons for using OS practices, and reasons for (not) engaging in these practices. Unique to the editor surveys, items included importance of rigor, reproducibility, and transparency in the research articles they edited, and reasons for supporting OS practices or not. Items were rated on a scale from 1(*not at all*) to 5(*very much*). **See Supplemental Text for details.**

Data Analyses

Descriptive statistics were used to summarize ratings on close-ended survey questions. To analyze open-ended responses, we used the consensual qualitative research method-modified

¹¹ Given the small sample size and to reduce the likelihood of personally identifying the editor respondents, other demographic information (e.g., age, ethnoracial background, gender) was not collected.

(CQR-M)—an inductive approach that allows meaning to emerge from our data. Like CQR typically used with in-depth interview data, CQR-M is a simplified set of procedures for less complicated datasets (Hill, 2015; Hill et al., 2005; Spangler et al., 2012). The first, second, and last authors were involved in the analyses. Coders reviewed responses to questions about scholars' or editors' reasons for or not using/supporting OS practices, and concerns about implementing OS in EM/D specifically and psychological science generally. Each coder independently developed a list of possible themes. The coding team then built consensus around thematic categories that emerged from the responses; excerpts were grouped into relevant categories for interpretation. To facilitate results' trustworthiness and completeness, the third author served as an auditor, who independently inspected themes generated by the coding team, and converged on the findings.

Results

Understanding of Reproducibility Crisis and OS

Table 3 summarizes the descriptive statistics of scholar and editor participants' responses to close-ended survey questions, and exploratory *t*-tests comparing the responses from these two groups. Overall, scholars were somewhat-to-moderately familiar with the replication/reproducibility crisis ($M=3.69$, $SD=1.09$). Scholars also believed that the reproducibility crisis was a problem in psychological science generally ($M=3.88$, $SD=0.92$), and in EM/D specifically ($M=3.68$, $SD=1.09$). Familiarity with the OS movement varied across scholars ($M=3.39$, $SD=1.34$). Nevertheless, scholars considered rigor ($M=4.75$, $SD=0.47$), reproducibility ($M=4.17$, $SD=0.97$), and transparency ($M=4.76$, $SD=0.48$) to be very important in their research. Scholars were moderately confident that their published and completed research was rigorous ($M=4.17$, $SD=0.68$), reproducible ($M=4.01$, $SD=0.82$), and transparent ($M=4.35$,

$SD=0.71$). Scholar participants only were somewhat-to-moderately likely to use OS practices in their future research ($M=3.50$, $SD=1.02$).

Relative to scholar participants, editor participants were more familiar with the reproducibility crisis ($M=4.25$, $SD=0.68$) and OS movement ($M=4.06$, $SD=1.00$). Yet, editors on average rated reproducibility to be less important than scholar participants. Editors were somewhat inclined to believe that there was a reproducibility problem facing psychological science ($M=3.69$, $SD=1.01$) and EM/D ($M=3.25$, $SD=1.39$). Editors rated rigor ($M=4.92$, $SD=0.28$) and transparency ($M=4.85$, $SD=0.55$) to be very important in the research reports that they handled, and rated reproducibility to be somewhat-to-moderately important ($M=3.62$, $SD=0.65$). Current editors were moderately likely to encourage OS practices as they continued in this role ($M=3.80$, $SD=0.84$).¹²

Researchers' OS Practices

Approximately half of our scholar participants ($n=71$) had used at least one OS practice. They estimated that 38.4% of their studies involved OS practices ($SD=31.58$). As shown in Figure 1A, most common reasons for using these practices were ensuring transparency in research procedures, sharing results openly with participants, getting research into the best possible outlets, and improving rigor in research design. Specific OS practices used in past and current research included sharing postprints and preprints, (pre)registering study aims and procedures prior to conducting the research, material sharing, data sharing, registering data analytic plan, sharing analytic schemes, conducting direct or conceptual replication studies, and

¹² Exploratory t -tests showed no statistically significant differences between current and former editors in their ratings. Specifically, we did not observe differences in the recognition of a reproducibility problem in psychological science ($t[13]=-0.66$, $p=.522$) and EM/D ($t[13]=-0.37$, $p=.721$). Current and former editors also did not vary in their rated importance of rigor ($t[11]=-0.78$, $p=.453$), reproducibility ($t[11]=-1.85$, $p=.092$), or transparency ($t[11]=-0.78$, $p=.453$) in psychological research.

conducting registered report studies. As shown in Figure 1B, among researchers who never used any OS practices ($n=67$), common reasons for not engaging in OS were: unfamiliarity with the practices, added financial costs, OS uncommon in (sub)fields, and lack of incentives.

Editors' Opinions

Across current or former editors in *AAJP*, *CDEMP*, *JBP*, and/or *JLP*, nine individuals considered OS practices beneficial to EM/D ($n=5$ and $n=4$ for current and former editors, respectively). Editors' common motivations for endorsing OS were: ensuring transparency in research procedures for public verification, sharing results openly with participants, getting research into the best possible outlets, improving rigor in research design, and being accountable to/required by research funders (see Figure 1A). By contrast, four former—and zero current—editors considered OS practices to be harmful or irrelevant to EM/D. Their reasons for not supporting were: added costs, concerns about researchers being disadvantaged or scooped in findings or methods, constraints imposed by collaborators/funders/institutions (see Figure 1B).

Themes Emerged from Open-Ended Responses

See Supplemental Text for relevant supporting quotes from respondents.

Reasons For OS: Accessibility. Enhancing accessibility emerged as a key motivation for engaging with OS practices among scholars with relevant prior experiences and among editors who supported these practices. Respondents considered OS practices to be instrumental in making scientific findings available to society broadly. Two subthemes were identified. First, participants believed that OS would enhance access to knowledge by nonscientists (e.g., practitioners, the public) and could foster translational research and improve human conditions. Second, participants believed that broad dissemination of information was important in promoting social and economic justice. Specifically, elements of OS can help eliminate paywalls

and financial barriers to accessing published knowledge.

Reasons For Not Using, and Concerns about, OS. Five themes emerged from open-ended responses by scholars who did not use OS practices, editors who did not endorse OS, and participants who provided written comments about their concerns.

Unfamiliarity. One emerged theme highlighted scholars' limited knowledge or familiarity with the OS movement. Some respondents were unaware of the OS movement until they participated in our study. Participants also did not believe that they had sufficient information or guidance on how to implement OS practices.

Lack of Opportunity. Another theme indicated that a lack of opportunity for researchers to implement OS practices. Students noted that they were not exposed to knowledge on relevant best practices in their training program or from their faculty mentors, nor were they given the opportunity to implement these practices. Researchers also indicated that OS was uncommon in their respective subfields. Some respondents expressed interest and intention in adopting OS practices; however, they noted that they simply had not the chance to explore these approaches.

Harmful Consequences against Participant Interests. A third theme highlighted scholars' and editors' concerns over how OS might inadvertently harm research participants—particularly those of marginalized backgrounds. When raw data were shared openly with the public or selectively with scientists who did not specialize in EM/D, respondents raised issues pertaining to violation of research participants' privacy and confidentiality and were concerned that results about marginalized and underserved populations might be misinterpreted and taken out of context. Finally, among EM/D scholars who collaborated with community partners, they believed that implementing OS practices might be incompatible with community-based participatory research (CBPR) approach.

Disproportionate Impact on EM/D Scholars. EM/D scholars were concerned that the mainstream OS movement might disproportionately hurt their productivity and disadvantage their chances for success. Practical concerns included monetary burden associated with publishing in open-access journals and onerousness associated with implementing OS practices. One key issue pertained to disadvantages in researchers' academic advancement. Because scholarly success traditionally has favored research represented in journals with high IFs or prestige, respondents stated that OS practices often were incongruent with emphasis on these outlets. There also were concerns about scholars' openly-shared records being misused by other researchers or judged unfairly in considerations for publication or tenure/promotion. Additionally, respondents noted that EM/D scholars often did not have the financial and time resources to engage in OS practices. For example, scholars with limited funds may have to prioritize monetary incentives for minority participation over publishing fees in open-access journals. Respondents also believed that beyond minority tax (e.g., being asked to mentor students from underrepresented minority groups, serving on committees in service of their institutions/profession) that disproportionately burdened many EM/D scholars, OS practices might further hinder their research productivity.

Epistemological Considerations. Participants described OS practices as suitable for certain research questions and methods but limited in applicability for others. Comments tended to revolve around qualitative inquiry or mixed-methods designs. Responses recognized that few conversations or empirical investigations have focused on how OS might align with values in EM/D. Some participants believed that the current knowledge-production structure was maintained by capitalism and colonialism, and they were apprehensive that OS might continue such status quo.

Discussion

Relative to other scholars, those who served as editors were more familiar with current discourse on the reproducibility crisis and OS. Whereas scholars were moderately concerned about reproducibility in psychological science and EM/D, editors were relatively more apprehensive about the reproducibility problem in psychological science than in EM/D. Both scholars and editors rated rigor and transparency to be very important, scholars considered reproducibility to be moderately important whereas editors considered reproducibility to be somewhat important. We found that respondents had different ideas of what reproducibility and rigor meant, respectively.

We observed divergence in respondents' beliefs about OS. On the one hand, those who had engaged in OS did so because they valued transparency in the knowledge-production process. On the other hand, respondents who had not used OS practices might have been deterred by possible unintended negative consequences, or felt uninformed or unequipped to adopt OS practices. Reported deterrents included the potential misuse of openly-shared data and the potential harm against researchers and ethnic minority research participants. Scholars and editors underscored onerousness (i.e., extra time, financial burden) as a barrier to implement OS practices. They believed that an equitable knowledge-production structure might alleviate this concern—a system that compensates “minority tax” fairly and recognizes challenges faced by many EM/D scholars.

Additionally, respondents highlighted that violation of participants' privacy and confidentiality was particularly concerning when working with marginalized and underrepresented populations. Our qualitative inquiry suggested the concern over misinterpretation (e.g., affirming harmful stereotypes about people of color) by researchers who

were not well-trained to work with EM/D data—underscoring the importance of cultural competency in research.

Study 3: Participant Opinions about Data Sharing and Credibility of Science

As shown in Study 2, there were clear reasons for OS hesitancy among many EM/D scholars and editors, it was unknown whether their and their research participants' opinions aligned. Particularly, it was unclear if ethnoracial minority participants would be concerned about privacy/confidentiality violation with data sharing. Understanding participants' perspectives would help inform EM/D scholars' perspectives on OS. Thus, we aimed to assess research participants' beliefs about data sharing, credibility of science, and trustworthiness of researchers.

Method

Participants and Procedures

Data were collected as part of two online surveys that involved Hispanic/Latino/a/x Texans, and individuals from across the US. Each study received approval from the PI's university institutional review board. Across both data collections, individuals were eligible to participate if they were 18 years or older and spoke English. Participants ($N=1,104$; $M_{\text{age}}=43.58$; $SD_{\text{age}}=15.85$; 48.5% women) came from diverse ethnoracial backgrounds (36.5% Asian American, 34.1% Hispanic/Latino/a/x, 10.9% Black/African American, 10.9% White/Euro American, 0.8% Native American/Alaska Native/Indigenous, 0.1% Arab, Middle Eastern, North African, and 6.8% other/mixed heritage/multiracial). Participants resided in all regions of the US (47.5% South, 28.4% West, 14.3% Northeast, 9.8% Midwest). Median household income ranged from \$60,001 to \$80,000. Most respondents reported at least some college education or beyond (88.1%). **See Supplemental Text for additional information on participants and data**

collection, and Table S1 for demographic data by ethnoracial groups.

Questionnaire

Participants were asked two questions about data sharing; items were modified from unpublished research by Bottesini and Vazire (2019ab). Participants read that the OS movement and related practices were intended to make scientific research process and data transparent and accessible. They also were informed that some individuals—especially those from historically disadvantaged and underrepresented backgrounds—might be concerned that sharing data publicly would breach privacy and confidentiality. Participants then were presented with reasons for why researchers would or would not share their deidentified datasets (e.g., “give other researchers the chance to verify their results,” “concerned about the remote possibility that someone will be able to figure out the participants’ identity”). Participants rated their agreement with the item, *“Do you think the researchers should share the dataset when they publish their results?”* on a scale from 0(*strongly disagree*) to 7(*strongly agree*). They also were asked to consider what researchers could do with their survey responses; they ranked from most to least preferable three options on data sharing (no sharing, restricted sharing, open public sharing).¹³ Additionally, participants were asked about their confidence in science. They rated the two items on a scale from 1(*not at all*) to 6(*very much*): *“To what extent do you find scientific information credible,”* and *“To what extent do you find scientists/researchers trustworthy.”* The order by which items were presented to participants was randomized.

¹³ Options were:

- (1) *“The dataset containing the data you just provided, without any identifying information, is held privately by the researchers and could not be accessed by anyone else,”*
- (2) *“The dataset containing the data you just provided, without any identifying information, is kept by the researchers and shared with other scientists who request it in order to verify the validity of the published findings,”* and
- (3) *“The dataset containing the data you just provided, without any identifying information, is posted publicly for anyone to see, including other scientists who wished to verify the validity of the published findings or reuse the data for new analyses.”*

Results

Participants moderately—but not strongly—supported researchers sharing their data with the public ($M=5.02$, $SD=1.51$). We took two approaches to examining participant's preferences for data sharing. First, we calculated the percentage of individuals who ranked each option as their top preference. Using generalized linear mixed model analysis, we found significantly different ratings for the most preferable data sharing option, $F(1,2736)=10.07$, $p<.001$. Two-tailed pairwise comparisons with least significant difference (LSD) adjustment revealed that fewer participants rated public data sharing to be the most preferred option (27.6%) than the other two options, $t(2736)=3.88$ and 4.03 , $ps<.001$. Similar proportions of participants preferred a restricted data sharing approach (36.4%) and no data sharing (36.0%), $t(2736)=-0.15$, $p=.884$. Second, values for each option were averaged across participants; higher sample scores indicated greater preference for the specific approach to data sharing. Within-groups analysis of variance (ANOVA) revealed statistically significant differences in participants' endorsement of data sharing approaches. Sharing data with other scientists who requested the data was the most preferred option ($M=2.20$, $SD=0.69$), followed by no data sharing data at all ($M=2.03$, $SD=0.83$), and making data publicly available ($M=1.77$, $SD=0.85$), Wilks' Lambda=0.90, $F(2,911)=50.31$, $p<.001$. Post-hoc comparisons with LSD adjustment indicated statistically significant pairwise differences. Across the full sample, participants rated scientific information to be largely credible ($M=4.55$, $SD=1.14$) and judged scientists/researchers to be considerably trustworthy ($M=4.53$, $SD=1.10$).

Given historical episodes of unethical treatment of research participants of color, misuse of their data, and misinterpretation of their lived experiences, we expected participants' confidence in research(ers) and opinions about data sharing to vary by ethnoracial backgrounds.

White/Euro American participants ($M=4.76$, $SD=1.25$) were more likely to consider scientific information to be credible than participants of color ($M=4.51$, $SD=1.12$), $t(826)=2.24$, $p=.026$, $d=.21$. Yet, follow-up one-way ANOVA did not reveal differences across Asian American, Black/African American, Hispanic/Latino/a/x American, White/Euro American, Native American/Native Alaskan/Indigenous participants, $F(4,766)=1.26$, $p=.283$.¹⁴

Independent samples t -tests did not reveal different opinions about researchers' trustworthiness ($t[825]=1.78$, $p=.076$) and data sharing ($t[989]=1.74$, $p=.082$) between participants of color and White/Euro American participants. Still, exploratory one-way ANOVA showed finer-grained ethnoracial differences in participants' beliefs about data sharing, $F(5,985)=3.52$, $p=.004$, $d=.23$. Asian American ($M=5.09$, $SD=1.34$), Black/African American ($M=5.23$, $SD=1.50$), and White/Euro American ($M=5.24$, $SD=1.54$) participants were more inclined to endorse researchers sharing their data than Hispanic/Latino/a/x American ($M=4.75$, $SD=1.68$) and Native American/Alaska Native/Indigenous ($M=4.11$, $SD=2.52$) participants. Post-hoc comparisons with LSD adjustment revealed that the omnibus results were attributed to differences between the Hispanic/Latino/a/x American group and Asian American ($p=.005$), Black/African American ($p=.004$), and White/Euro American ($p=.003$) groups, and between the Native American/Alaska Native/Indigenous group and the Black/African American ($p=.032$) and White/Euro American ($p=.030$) groups.

Discussion

Data offered insight into research participants' opinions about data sharing and attitudes toward science and scientists. Participants—predominantly respondents of color—considered data sharing generally acceptable. Slightly more participants favored restricted or no data sharing

¹⁴ One participant identified as Arab, Middle Eastern, North African. Their data along with participants who reported other ethnoracial backgrounds (e.g., mixed heritage) were not included in these pairwise comparisons.

to completely-open sharing. Compared to only 10% of a predominantly-White sample (Bottesini & Vazire, 2019b), about 30% of our participants believed that their data should not be shared. The discrepancy in our and previous findings might be attributed to the way our study was designed. Our participants were informed that some individuals—particularly those from historically disadvantaged and underrepresented communities—might be worried about the risk of confidentiality breach and privacy violation. Thus, our participants might have been primed to be more conservative in their belief about data sharing than in other studies.

Similar to existing national survey results since the 1950s, we found that most American participants considered scientists to be trustworthy (Krause et al., 2019). Still, our data revealed differences from some previous findings. Although participants generally trusted scientists and believed empirical information to be credible, there appeared to be more pronounced distrust of the science community and hesitation in data sharing in some communities of color than Whites. Omnibus differences in the appraised credibility of science between participants of color and White participants but not finer-grained ethnoracial group differences likely was a function of limited power to detect very small systematic within-group variations among research participants of color. These results warrant further research and careful considerations when working with ethnoracial minority populations.

General Discussion

This investigation was the first to systematically describe and understand various stakeholders' perspectives in researcher practices—specifically as they pertained to the mainstream OS movement and the North American EM/D. Despite the importance and potential utility of cultural competency and OS in enhancing rigor, generalizability, and credibility of psychological science, our investigation suggested a bifurcation in the use of these research

tools. EM/D published in the past five years infrequently employed some of the mainstream OS practices. Scholars and editors strongly emphasized the importance of empirical questions addressed in EM/D and the value of using science to serve and empower communities of color. Simultaneously, these individuals who conduct, evaluate, and gatekeep EM/D publications were concerned about inequities built into the knowledge-production structure for expecting the implementation of OS practices. EM/D scholars appeared especially worried about exposing the identities of participants of color and about outsiders mischaracterizing communities of color. Participants of color and White participants largely considered scientists to be trustworthy and psychological research to be credible, and they generally supported some degree of data sharing.

Limitations

Our findings should be interpreted with some limitations in mind. First, we selected four key EM/D journals in Study 1. Results on journal instructions and use of OS practices may not represent experiences with other psychology journals—including those that routinely publish diversity-related topics and that focus on cross-cultural/international psychology.

Second, we surveyed editors from these same journals who served in the past five years and recruited via six major North American ethnic minority psychological organizations in Study 2. There was a 40% response rate among the journal editors, and likely a much lower response rate among EM/D scholars. It was unclear if the timing of data collection during the coronavirus disease pandemic influenced response rates or representativeness of the respondents within the EM/D community. Although our recruitment materials emphasized researcher—and not OS—practices, there likely were some self-selection biases in our respondents. Our recruitment likely did not reach professionals and trainees who routinely conducted EM/D but were not members of these major ethnic minority psychological organizations. In Study 2, EM/D scholars were asked

whether they had practiced OS, and their subsequent responses on their reasons for using OS practices or not depended on their self-reported behavior. That sequence of questions may not have identified authors who supported OS in principle but had not yet engaged in OS practices—given lack of opportunity or other constraints. It also was possible that scholars who have used OS practices nevertheless had strong concerns over the implementation—particularly in the context of EM/D. Our present data do not permit critical analyses of such dialectical perspectives. Additional research is needed to broaden the understanding of how EM/D and the mainstream OS movement intersect.

Third, views of research participants in Study 3 might not represent those across communities (of colors). Our two community samples were collected via crowdsourced commercial internet panels and social media platforms; participants were generally well-educated and well-resourced. More research is needed to understand individuals' perspectives in socially disadvantaged communities. Finally, it was unclear whether researchers and community participants of diverse ethnoracial backgrounds varied in their response style (e.g., tendencies to use extreme response options) and how it might have affected group differences in survey ratings.

Connecting Mainstream OS Movement and EM/D

The current mainstream OS movement is intended to open the knowledge-production process to scrutiny by the scientific community, and ultimately broaden and democratize contributions to it. This scrutiny should serve to not only identify biases and inadequate methods, but also provide opportunities (e.g., sharing resources in team science) to level the field for scholars with systemic disadvantages and limited resources. EM/D emphasizes validity in understanding populations in their distinctive lived experiences and contexts. Because EM/D

scholars and proponents of the OS movement share the objective of producing high quality and impactful research, we believe in and outline their mutual utility (see Table 4, and to compare OS and EM/D).

Whereas OS practices can promote transparency, credibility, and impact of EM/D—and ultimately advance critical generalizability of research—practical recommendations for further exploring the potential utility of OS practices should address three key issues: (narrow) framing of OS practices, ethical concerns for research participants, and professional concerns for researchers. Specifically, responses from some EM/D scholars in our investigation suggest that hesitancy toward OS approaches reflects understanding them as restrictive sets of behaviors that are designed to address narrow concerns with (experimental) replicability (cf. Tackett et al., 2017). Furthermore, EM/D scholars expressed concerns that OS practices are exceptionally burdensome and incongruent with research questions and methods best suited for their populations of interest. Addressing EM/D scholars' concerns thus should involve (1) illuminating the professional benefits (and protections) of OS, (2) continuing education in OS methods, (3) highlighting the applicability of specific practices to a broader range of research designs, (4) emphasizing options for the ethical treatment of research participants, and (5) broadening the potential for shared scientific efforts.

Practical Recommendations for Using OS Practices in EM/D

Who May Use (and Benefit From) OS Practices?

Scholars focusing on different research topics, using diverse methods, working with various communities and across professional levels all can engage with and benefit from OS. The concerns that drive the OS movement are being explored and implemented in a broadening array of psychology disciplines—including clinical science, addiction psychology, assessment,

health psychology, and identity research (Munafò, 2016; Syed, 2020; Tackett et al., 2019ab; Tamminen & Poucher, 2018). Important EM/D outlets already recognize and incentivize certain OS practices (Lee, 2017). Specific practices (e.g., (pre)registration, material sharing, archiving preprints) are applicable to most investigators using experimental designs, original and archival observational research, qualitative inquiry and mixed-methods, and CBPR (Haven et al., 2020; Lui et al., 2021; Reischer & Cowan, 2020; van't Veer & Giner-Sorolla, 2016). Transparency in the knowledge-production process and equitable access to data/findings allow researchers to make contributions beyond the limits of their own resources. Because the mainstream OS movement may be driven by senior scientists thus far, these individuals should advocate for trainees and early-career colleagues in their engagement with OS to advance equity.

Training and Continued Education

We believe that the mainstream OS movement is best construed within broad training of good research practice (Quintana et al., 2001; Sue & Sue, 2003; Tackett et al., 2020). Students may be most receptive to incorporating OS in their work because their skills are in development (Munafò et al., 2017; Tackett et al., 2020). By emphasizing open workflow and transparent research process early in their training, students will save time to (un)learn “traditional” and communi-centric researcher practices. Furthermore, when students propose their program-required projects (e.g., honors thesis, dissertations) to faculty advisory committees, proposals often are treated as time-stamped agreements for conducting and reporting results from the investigations. In essence, student project proposals can take the form of Stage 1 Registered Reports and completed manuscripts summarizing results and conclusions take the form of Stage 2 Registered Reports (Lui, 2020). As indicated by many EM/D students and professional scholars in Study 2, training opportunities to familiarize with OS principles and practices would

reduce barriers to engaging with the movement. Workshop-style courses or seminars held in academic units and during scientific conferences can offer useful tutorials to provide introduction and continuing education to in-training and seasoned researchers on the goals, elements, process, and resources in conducting reproducible, culturally competent, and transparent research (e.g., Tackett et al., 2020). Academic institutions and units that reinforce the value of transparent workflow may consider formal policies that not only incentivize students and professionals to use OS practices but emphasize and reward cultural competency in research.¹⁵

(Pre)Registrations

(Pre)Registering designs and plan prior to original data collection and registering analytic strategies for research with archival data encourage scholars to be thoughtful during idea conception and planning. (Pre)Registrations are most helpful when study protocols and necessary resources are in place. In these instances, researchers will engage in streamlined and efficient workflows; upfront investment in registrations can save time in the back end of any projects (Benning et al., 2019; Tackett et al., 2019b). Although qualitative studies often do not test hypotheses by deductive, quantitative analyses, researchers still can establish credibility of findings by prespecifying their research aims, anticipated duration of the investigation, details regarding study design, recruitment methods and justification for stopping criteria for data collection, and process of data analysis (Haven et al., 2020).

To reduce researcher onerousness, (pre)registration templates and recommendations are available—and rapidly growing—for diverse methods, including clinical trials (see [ClinicalTrials.gov](https://www.clinicaltrials.gov)), social psychology experiments, qualitative and mixed-methods research,

¹⁵ An example from Southern Methodist University Department of Psychology website: <https://www.smu.edu/-/media/Site/Dedman/Academics/Departments/Psychology/2018/Policy-on-Open-Science-032218.pdf?la=en&hash=81AC2C5C64A648B7D09E137F6AEFB8930E84CA48>.

secondary data analyses, experience sampling methods/ecological momentary assessment research, and evidence syntheses (Haven et al., 2020; Kirtley et al., 2021; Kryptos et al., 2019; van't Veer & Giner-Sorolla, 2016; Weston et al., 2019). Many of these templates are stored in [Open Science Framework](#) or [PROSPERO](#). Scholars also may answer simple questions that characterize the parameters of their planned research on [AsPredicted.org](#). By embargoing the study (pre)registrations and giving restricted access to certain stakeholders (e.g., editors, reviewers) before publications of findings, concerns over their ideas being “scooped” may be reduced substantially (Toth et al., 2020).¹⁶

Material and Data Sharing

Availability of online repositories makes it easy for researchers to share all their research materials. We observed that one common perception held among EM/D scholars was that material sharing applied only to quantitative observational or experimental studies. Yet, our audit revealed that many more qualitative than quantitative studies in published EM/D journals shared their materials. As shown in Study 3, community research participants did not categorically support or oppose data sharing. Rather, two-thirds of our sample endorsed some methods of data sharing even when prompted to consider its potential negative consequences. EM/D scholars' hesitancy might not match fully their participants' perspectives.¹⁷

¹⁶ In our research, we have found study (pre)registrations to be helpful for reviewing a priori research rationale and preplanned analytic strategies, and minimizing the likelihood of making decisions after having observed data patterns. This has promoted our confidence in our procedures and confirmatory results. We have not found it burdensome to (pre)register research plans because much effort and time were moved from latter to earlier stages of investigations. In fact, executing data collection and analyses was expedited. Additionally, (pre)registrations did not hinder our ability to conduct and report exploratory analyses, and to develop new insight throughout the research process. Having documented the research plan not only can facilitate execution of such plan but differentiate confirmatory and exploratory results. Even when we had to alter procedures given unexpected challenges, we were able to revise the registrations easily and document changes in manuscripts.

¹⁷ Alternatively, it is possible that community participants are unfamiliar with the OS movement and have not had the chance to consider thoroughly the benefits and possible negative consequences of OS practices for EM/D scholars and ethnoracial minority communities.

Certainly, concerns related to data sharing are not unique to EM/D scholars. Houtkoop et al. (2018) reported that most psychology researchers did not share their data. Researchers who conduct evidence syntheses (e.g., meta-analyses, qualitative reviews) typically can archive their secondary data without worries of being scooped on their unanalyzed data. When working with primary participant data, researchers who “own” their data can archive these files and protect their intellectual copyright by using licenses that align with their needs. Similar to researchers working with clinical psychology and biomedical data (Walsh et al., 2018), EM/D scholars may guard against confidentiality breaches in two ways: strip identifying information from publicly shared data to restrict disclosure of sensitive data, and restrict access to such data (NIH, 2020). Independent repositories (e.g., Inter-university Consortium for Political and Social Research, Qualitative Data Repository, National Institute of Mental Health Data Archive) offer resources and models for open and protected data sharing—which also allow possible secondary analyses.¹⁸ The Findable, Accessible, Interoperable, Reusable Guiding Principles offer additional suggestions on how to manage public metadata and restricted data access (Wilkinson et al., 2016).¹⁹ Still, scholars and their community partners engaging in CBPR may see unique constraints and challenges associated with material and data sharing. To these ends, negotiations among stakeholders and contractual agreements specific to certain studies and populations may be warranted (Lui et al., 2021).

Team Science

Promoting a communal and collaborative culture for research is a signature goal of the mainstream OS movement. As with CBPR, active, inclusive, and horizontal collaborations

¹⁸ See evolving list of protected access repositories:

<https://osf.io/tvyxz/wiki/8.%20Approved%20Protected%20Access%20Repositories/>

¹⁹ In some of our own work, we intentionally have included language in the informed consent to seek participants’ approval for sharing their deidentified data in responsible ways and to explain the rationale for doing so.

democratize research. Whereas small research teams tend to yield smaller-sample studies, (large) team science enables crowdsourcing data and curating diverse expertise and perspectives (Uhlmann et al., 2019). Scholars with limited resources can expand their recruitment efforts and consequentially sample sizes. Relevant to quantitative studies, larger sample sizes curated in crowdsourced data collections can enhance power and precision in statistical analyses (Button et al., 2013; Fraley & Vazire, 2014). Importantly, team science can facilitate a reflexive process in which scholars are held accountable to one another—regardless of their philosophical framework and research methods (Pardee et al., 2018).

Lessons that Mainstream OS Can Learn from EM/D

Reflected in EM/D scholars' responses regarding epistemological considerations in Study 2, the current language of the mainstream OS may underestimate best practices already in place in EM/D. Given that the identities and expertise of both researcher and participants/community stakeholders influence the knowledge-production process (England, 1994; Nzinga et al., 2018), repertoires promoted in EM/D can complement, support, and extend the approach and goals of mainstream OS practices. First, EM/D scholars long recognize the danger of an illusion of objectivity in social sciences, and for ignoring the “unscientific nature of the scientific enterprise” (Boykin, 1978, p. 59; Sue, 1999).

Second, in seeking contextualized understanding of their populations of interest, EM/D scholars frequently conduct qualitative and mixed-methods investigations (Creswell & Clark, 2011); such methods can complement the reliance on large-sample methods designed to yield statistical power for reproducibility (Fraley & Vazire, 2014; Munafò et al., 2017). EM/D thus supports explicit articulation of the boundaries of results' generalizability to new and different populations, beyond the emphases on internal validity and replicability.

Third, the philosophical perspectives and norms in EM/D already embrace the spirit of “opening” the scientific enterprise to broad community participation. For example, it is standard—and often required—to use CBPR (Wallerstein et al., 2018; Wallerstein & Duran, 2006) in working with Native American/Alaskan Native communities. CBPR emphasizes collaboration and transparent communication among investigators, research participants, and others in their communities to consider group-specific ways of knowing, identify mutually acceptable research methods and interpretations of results, and disseminate findings to maximize community benefits (Cochran et al., 2008; Lui et al., 2021). In fact, we challenge the notion that knowledge belongs to the scientific community; researchers ultimately are less accountable to other members of the scientific community than to the members of the communities whose data they extract and whose well-being they seek to improve.

Regardless of research methods, we believe in the importance of making transparent the investigators’ position in why and how they approach their investigations and the researched (Pardee et al., 2018; Roberts et al., 2020; see also Author Note for an example of positionality and contribution statements). Such disclosure can help consumers of the science contextualize the study conclusions. As we observed in this investigation, many EM/D scholars are concerned about the communi-centric biases built into mainstream psychological science when theories, conclusions, and interventions developed exclusively with the dominant populations are generalized to minority populations. Such generalizations not only risk setting back knowledge about the full range of human experiences but ultimately may harm the interests of communities of color.

Shared Challenges Forging Ahead

The aim of developing a comprehensive psychological science is subverted without

intentional consideration of human diversity (e.g., Rad et al., 2018). OS practices are additional tools used to strengthen the ways that psychological research is conducted, and to broaden research's impact on diverse populations. Still, OS practices do not replace the importance of general standards for ethical research—such as those outlined in the APA Ethical Guidelines. Existing and present recommendations on OS practices are intended to offer extra levels of assurance and to further encourage a transparent knowledge-production process. Whereas we center our discussions on how mainstream OS movement can better connect with EM/D, many of these considerations likely are relevant in the study of other dimensions of human experience garnering new and extended attention (e.g., sexual and gender minority psychology). There is a need to ascertain how other psychology areas intersect with the mainstream OS movement and evaluate the challenges in—and opportunities brought on by—examining intersectional identification and within-group heterogeneity.

Beyond individual investigators, research clearly does not take place in a vacuum and is influenced and supported by the roles of other stakeholders in the knowledge-production process. For example, the publishing process, likelihood of securing grants based on prior positive results, and institutional practices that confer prestige on and promote researchers all may reinforce investigators' biases, reward narrow self-interests, and privilege those with existing resources. Thus, the incentive structure of “normal science” discourages change.

As illuminated in present results, influencing the existing incentive structure requires the collective actions of the full range of stakeholders (Munafò et al., 2017). For example, to promote transparency of the peer-review process, journals such as *PLOS ONE* and *Collabra* publish reviewer comments or allow individuals to sign their reviews. Some EM/D and mainstream journals (e.g., *CDEMP*, *Clinical Psychological Science*) explicitly require

researchers to report data on the samples' demographic backgrounds and consider cultural diversity issues in their designs and interpretations of results. Per results from our audit, journals including *JBP* and *JLP* may offer OS badges that align with cultural competency in research or provide guidance on how EM/D scholars may use relevant practices to further democratize the knowledge-production process. These policies not only will shape scholars' practices, but also socialize reviewers in their appreciation for OS and cultural humility in research. When it comes to tenure and promotion considerations, academic institutions can reward scholars for using appropriate OS practices, and for critically addressing cultural diversity issues in their research.

Our findings corroborate those in some existing surveys: despite having concerns about barriers to implementing OS practices (e.g., financial burden, being “scooped”), (psychology) researchers generally view data sharing, open-access publishing, and open reviews positively as means to improve the transparency and rigor of empirical investigations (e.g., Abele-Brehm et al., 2019; Lynam et al., 2019; Rowley et al., 2017). Similar to rates in other psychology disciplines (e.g., clinical psychology, addiction medicine), our investigation revealed small degree of OS implementation in published EM/D (Nutu et al., 2019; Vassar et al., 2020). The use of OS practices in these disciplines lags behind that in biomedical research (Siebert et al., 2020). To move toward broad inclusion, credibility, and engagement of all stakeholders, it would be useful to know whether our findings are unique or similar to those in other subdisciplines, or mainstream psychology generally. Not only is there a critical need to understand comprehensively how other psychology subdisciplines connect with the mainstream OS movement, but also the degree to which non-EM/D scholars engage in thoughtful cultural diversity considerations in their work (Arnett, 2008; Graham, 1992; Thalmayer et al., 2021).

EM/D scholars and proponents of mainstream OS practices must work together to

influence the existing knowledge-production structure to further advance the shared goal of improving psychological science. Used wisely and collaboratively, OS practices can equip researchers with additional tools to explore the range of diverse human experiences with integrity and transparency. The expertise of EM/D scholars can address the desire of many mainstream researchers for rigorous and reproducible, valid knowledge. Bringing these together intentionally will be a key step in putting psychological science at the service of all communities.

References

- Abele-Brehm, A. E., Gollwitzer, M., Steinberg, U., & Schönbrodt, F. D. (2019). Attitudes Toward Open Science and Public Data Sharing. *Social Psychology, 50*(4), 252-260. <https://doi.org/10.1027/1864-9335/a000384>
- APA. (2017). *Ethical principles of psychologists and code of conduct (2002, amended effective June 1, 2010, and January 1, 2017)*. <http://www.apa.org/ethics/code/index.html>
- APA. (2019). *Publication Manual of the American Psychological Association* (7th ed.). American Psychological Association.
- Arnett, J. J. (2008). The Neglected 95%: Why American Psychology Needs to Become Less American. *American Psychologist, 63*(7), 602-614. <https://doi.org/10.1037/0003-066X.63.7.602>
- Awad, G. H., Patall, E. A., Rackley, K. R., & Reilly, E. D. (2016). Recommendations for culturally sensitive research methods. *Journal of Educational and Psychological Consultation, 26*(3), 283-303. <https://doi.org/10.1080/10474412.2015.1046600>
- Benning, S. D., Bachrach, R. L., Smith, E. A., Freeman, A. J., & Wright, A. G. C. (2019). The registration continuum in clinical science: A guide toward transparent practices. *Journal of Abnormal Psychology, 128*(6), 528-540. <https://doi.org/10.1037/abn0000451>
- Bottesini, J. G., & Vazire, S. (2019a). *Do participants care if we p-hack their data? A registered report*. Metascience 2019 Symposium, Stanford, CA. <https://osf.io/3f9ba/>
- Bottesini, J. G., & Vazire, S. (2019b). *Do participants want their data to be shared?* 2019 Society for Personality and Social Psychology Convention, Portland, OR. <https://osf.io/8x5d9/>
- Boykin, A. W. (1986). The triple quandary and the schooling of Afro-American children. In U.

- Neisser (ed.), *The school achievement of minority children* (pp. 57-92). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Boykin, A. W. (1978). Black psychology and the research process: Keeping the baby but throwing out the bath water. *Journal of Black Psychology*, 4(1-2), 43-64.
<https://doi.org/10.1177/009579847800400105>
- Button, K. S., Ioannidis, J. P. A., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S. J., & Munafò, M. R. (2013). Confidence and precision increase with high statistical power. *Nature Reviews Neuroscience*, 14(8), 585-585. <https://doi.org/10.1038/nrn3475-c4>
- Cochran, P. A., Marshall, C. A., Garcia-Downing, C., Kendall, E., Cook, D., McCubbin, L., & Gover, R. M. S. (2008). Indigenous ways of knowing: Implications for participatory research and community. *American Journal of Public Health*, 98(1), 22-27.
- Creswell, J. W., & Clark, V. L. P. (2011). *Designing and conducting mixed methods research*. SAGE Publications. <https://books.google.com/books?id=6tYNo0UpEqkC>
- Donna, Y. F., & Janet, E. H. (2012). Overview and introduction: testing and assessing African Americans: Tests are still unfair. *The Journal of Negro Education*, 81(3), 186-189.
<https://doi.org/10.7709/jnegroeducation.81.3.0186>
- England, K. V. L. (1994). Getting personal: Reflexivity, positionality, and feminist research*. *The Professional Geographer*, 46(1), 80-89.
<https://doi.org/https://doi.org/10.1111/j.0033-0124.1994.00080.x>
- Fraley, R. C., & Vazire, S. (2014). The N-pact factor: Evaluating the quality of empirical journals with respect to sample size and statistical power. *PLoS ONE*, 9(10), e109019.
<https://doi.org/10.1371/journal.pone.0109019>
- Gordon, E. W., & Meroë, A. S. (1991). Common destinies—continuing dilemmas. *Psychological*

- Science*, 2(1), 23-30. <https://doi.org/10.1111/j.1467-9280.1991.tb00091.x>
- Gordon, E. W., Miller, F., & Rollock, D. (1990). Coping with communicentric bias in knowledge production in the social sciences. *Educational Researcher*, 19(3), 14-19. <https://doi.org/10.3102/0013189X019003014>
- Graham, S. (1992). "Most of the subjects were White and middle class": Trends in published research on African Americans in selected APA journals, 1970–1989. *American Psychologist*, 47(5), 629-639. <https://doi.org/10.1037/0003-066X.47.5.629>
- Hall, G. C. N., Yip, T., & Zárate, M. A. (2016). On becoming multicultural in a monocultural research world: A conceptual approach to studying ethnocultural diversity. *American Psychologist*, 71(1), 40-51.
- Haven, T. L., Errington, T. M., Gleditsch, K. S., van Grootel, L., Jacobs, A. M., Kern, F. G., Piñeiro, R., Rosenblatt, F., & Mokkink, L. B. (2020). Preregistering qualitative research: A Delphi study. *International Journal of Qualitative Methods*, 19, 1609406920976417. <https://doi.org/10.1177/1609406920976417>
- Helms, J. E. (2005). Stereotype threat might explain the Black-White test-score difference. *Am Psychol*, 60(3), 269-270; discussion 271-262. <https://doi.org/10.1037/0003-066x.60.3.269>
- Helms, J. E. (2006). Fairness is not validity or cultural bias in racial-group assessment: A quantitative perspective. *American Psychologist*, 61(8), 845-859. <https://doi.org/10.1037/0003-066X.61.8.845>
- Hill, C. E. (2015). Consensual qualitative research (CQR): Methods for conducting psychotherapy research. In O. C. G. Gelo, A. Pritz, & B. Rieken (Eds.), *Psychotherapy research: Foundations, process, and outcome*. (pp. 485-499). Springer-Verlag Publishing. https://doi.org/10.1007/978-3-7091-1382-0_23

Hill, C. E., Knox, S., Thompson, B. J., Williams, E. N., Hess, S. A., & Ladany, N. (2005).

Consensual qualitative research: An update. *Journal of Counseling Psychology*, 52(2), 196.

Houtkoop, B. L., Chambers, C., Macleod, M., Bishop, D. V. M., Nichols, T. E., &

Wagenmakers, E.-J. (2018). Data sharing in psychology: A survey on barriers and preconditions. *Advances in Methods and Practices in Psychological Science*, 1(1), 70-85. <https://doi.org/10.1177/2515245917751886>

Ioannidis, J. P. A. (2005). Why most published research findings are false. *PLoS Medicine*, 2(8), e124. <https://doi.org/10.1371/journal.pmed.0020124>

Kazdin, A. E. (1998). *Research design in clinical psychology*, 3rd ed. Allyn & Bacon.

Kirtley, O. J., Lafit, G., Achterhof, R., Hiekkaranta, A. P., & Myin-Germeys, I. (2021). Making the black box transparent: A template and tutorial for registration of studies using experience-sampling methods. *Advances in Methods and Practices in Psychological Science*, 4(1), 2515245920924686. <https://doi.org/10.1177/2515245920924686>

Krause, N. M., Brossard, D., Scheufele, D. A., Xenos, M. A., & Franke, K. (2019). Trends—Americans' trust in science and scientists. *Public Opinion Quarterly*, 83(4), 817-836. <https://doi.org/10.1093/poq/nfz041>

Krypotos, A.-M., Klugkist, I., Mertens, G., & Engelhard, I. M. (2019). A step-by-step guide on preregistration and effective data sharing for psychopathology research. *Journal of Abnormal Psychology*, 128(6), 517-527. <https://doi.org/10.1037/abn0000424>

Kuhn, T. S. (1996). *The structure of scientific revolutions* (3rd ed ed.). University of Chicago Press.

Lee, R. M. (2017). Editorial. *Cultural Diversity and Ethnic Minority Psychology*, 23, 311-311.

<https://doi.org/10.1037/cdp0000172>

Lilienfeld, S. O. (2017). Psychology's replication crisis and the grant culture: Righting the ship.

Perspectives on Psychological Science, 12(4), 660-664.

<https://doi.org/10.1177/1745691616687745>

Lui, P. [@drpriscillalui]. (2020, August 12). *Thesis and dissertation proposals are the OG Stage*

I Registered Reports [Tweet]. Twitter.

Lui, P. P., Skewes, M. C., Gobrial, S., & Rollock, D. (2021). Advancing transparency and impact

of research: Initiating crosstalk between Indigenous research and mainstream “open science”. *Journal of Indigenous Research*, 9(2021), Art. 10.

<https://doi.org/10.31219/osf.io/bg9a4>

Lynam, D. R., Hyatt, C. S., Hopwood, C. J., Wright, A. G. C., & Miller, J. D. (2019). Should

psychologists sign their reviews? Some thoughts and some data. *Journal of Abnormal Psychology*, 128(6), 541-546. <https://doi.org/10.1037/abn0000426>

Munafò, M. R. (2016). Opening up addiction science. *Addiction*, 111(3), 387-388.

<https://doi.org/https://doi.org/10.1111/add.13147>

Munafò, M. R., Nosek, B. A., Bishop, D. V. M., Button, K. S., Chambers, C. D., Percie du Sert,

N., Simonsohn, U., Wagenmakers, E.-J., Ware, J. J., & Ioannidis, J. P. A. (2017). A manifesto for reproducible science. *Nature Human Behaviour*, 1(1), 0021.

<https://doi.org/10.1038/s41562-016-0021>

NIH. (2020). *NIH Data Sharing Policy*. National Institutes of Health.

https://grants.nih.gov/grants/policy/data_sharing/data_sharing_workbook.pdf

Nosek, B. A., Alter, G., Banks, G. C., Borsboom, D., Bowman, S. D., Breckler, S. J., Buck, S.,

Chambers, C. D., Chin, G., Christensen, G., Contestabile, M., Dafoe, A., Eich, E., Freese,

- J., Glennerster, R., Goroff, D., Green, D. P., Hesse, B., Humphreys, M., Ishiyama, J., Karlan, D., Kraut, A., Lupia, A., Mabry, P., Madon, T., Malhotra, N., Mayo-Wilson, E., McNutt, M., Miguel, E., Paluck, E. L., Simonsohn, U., Soderberg, C., Spellman, B. A., Turitto, J., VandenBos, G., Vazire, S., Wagenmakers, E. J., Wilson, R., & Yarkoni, T. (2015). Promoting an open research culture. *Science*, 348(6242), 1422.
<https://doi.org/10.1126/science.aab2374>
- Nosek, B. (2017). *How can we improve diversity and inclusion in the open science movement?*
 Retrieved from: <https://www.cos.io/blog/how-can-we-improve-diversity-and-inclusion-open-science-movement>
- Nosek, B. A., & Bar-Anan, Y. (2012). Scientific utopia: I. Opening scientific communication. *Psychological Inquiry*, 23(3), 217-243. <https://doi.org/10.1080/1047840X.2012.692215>
- Nosek, B. A., Spies, J. R., & Motyl, M. (2012). Scientific utopia: II. Restructuring incentives and practices to promote truth over publishability. *Perspectives on Psychological Science*, 7(6), 615-631. <https://doi.org/10.1177/1745691612459058>
- Nutu, D., Gentili, C., Naudet, F., & Cristea, I. A. (2019). Open science practices in clinical psychology journals: An audit study. *Journal of Abnormal Psychology*, 128, 510-516.
<https://doi.org/10.1037/abn0000414>
- Nzinga, K., Rapp, D. N., Leatherwood, C., Easterday, M., Rogers, L. O., Gallagher, N., & Medin, D. L. (2018). Should social scientists be distanced from or engaged with the people they study? *Proceedings of the National Academy of Sciences*, 115(45), 11435.
<https://doi.org/10.1073/pnas.1721167115>
- Open Science Collaboration. (2012). An Open, Large-scale, collaborative effort to estimate the reproducibility of psychological science. *Perspectives on Psychological Science*, 7(6),

657-660. <https://doi.org/10.1177/1745691612462588>

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science.

Science, 349(6251), aac4716. <https://doi.org/10.1126/science.aac4716>

Pardee, J. W., Fothergill, A., Weber, L., & Peek, L. (2018). The collective method: Collaborative social science research and scholarly accountability. *Qualitative Research*, 18(6), 671-688. <https://doi.org/10.1177/1468794117743461>

Quintana, S. M., Troyano, N., & Taylor, G. (2001). Cultural validity and inherent challenges in quantitative methods for multicultural research. In J. G. Ponterotto, J. M. Casas, L. A. Suzuki, & C. M. Alexander (Eds.), *Handbook of multicultural counseling* (2nd ed.). (pp. 604-630). Sage Publications, Inc.

Rad, M. S., Martingano, A. J., & Ginges, J. (2018). Toward a psychology of Homo sapiens: Making psychological science more representative of the human population. *Proceedings of the National Academy of Sciences*, 115(45), 11401. <https://doi.org/10.1073/pnas.1721165115>

Reischer, H. N., & Cowan, H. R. (2020). Quantity over quality? Reproducible psychological science from a mixed methods perspective. *Collabra: Psychology*, 6(1). <https://doi.org/10.1525/collabra.284>

Roberts, S. O., Bareket-Shavit, C., Dollins, F. A., Goldie, P. D., & Mortenson, E. (2020). Racial inequality in psychological research: Trends of the past and recommendations for the future. *Perspectives on Psychological Science*, 15(6), 1295-1309. <https://doi.org/10.1177/1745691620927709>

Rowley, J., Johnson, F., Sbaffi, L., Frass, W., & Devine, E. (2017). Academics' behaviors and attitudes towards open access publishing in scholarly journals. *Journal of the Association*

for Information Science and Technology, 68(5), 1201-1211.

<https://doi.org/https://doi.org/10.1002/asi.23710>

Shrout, P. E., & Rodgers, J. L. (2018). Psychology, science, and knowledge construction:

Broadening perspectives from the replication crisis. *Annual Review of Psychology*, 69(1), 487-510. <https://doi.org/10.1146/annurev-psych-122216-011845>

Siebert, M., Gaba, J. F., Caquelin, L., Gouraud, H., Dupuy, A., Moher, D., & Naudet, F. (2020).

Data-sharing recommendations in biomedical journals and randomised controlled trials: an audit of journals following the ICMJE recommendations. *BMJ Open*, 10(5), e038887. <https://doi.org/10.1136/bmjopen-2020-038887>

Spangler, P. T., Liu, J., & Hill, C. E. (2012). Consensual qualitative research for simple

qualitative data: An introduction to CQR-M. In C. E. Hill (Ed.), *Consensual qualitative research: A practical resource for investigating social science phenomena*. (pp. 269-283). American Psychological Association.

Sue, S. (1999). Science, ethnicity, and bias: Where have we gone wrong? *American*

Psychologist, 54(12), 1070-1077. <https://doi.org/10.1037/0003-066X.54.12.1070>

Sue, S., & Sue, L. (2003). Ethnic research is good science. In G. Bernal, J. E. Trimble, A. K.

Burlew, & F. T. L. Leong (Eds.), *Handbook of Racial & Ethnic Minority Psychology* (pp. 198-207). SAGE Publications.

Syed, M. (2020). The Promise of the open science movement for research on identity. *Identity*,

20(3), 143-156. <https://doi.org/10.1080/15283488.2020.1781635>

Syed, M., & Kathawalla, U.-K. (2020). Cultural psychology, diversity, and representation in

open science. In K. C. McLean (Ed.), *Cultural methodologies in psychology: Capturing and transforming cultures*. Oxford University Press.

- Tackett, J. L., Brandes, C. M., Dworak, E. M., & Shields, A. N. (2020). Bringing the (pre)registration revolution to graduate training. *Canadian Psychology/Psychologie canadienne*, 61(4), 299-309. <https://doi.org/10.1037/cap0000221>
- Tackett, J. L., Brandes, C. M., King, K. M., & Markon, K. E. (2019a). Psychology's replication crisis and clinical psychological science. *Annual review of clinical psychology*, 15(1), 579-604. <https://doi.org/10.1146/annurev-clinpsy-050718-095710>
- Tackett, J. L., Brandes, C. M., & Reardon, K. W. (2019b). Leveraging the open science framework in clinical psychological assessment research. *Psychological Assessment*, 31(12), 1386-1394. <https://doi.org/10.1037/pas0000583>
- Tackett, J. L., Lilienfeld, S. O., Patrick, C. J., Johnson, S. L., Krueger, R. F., Miller, J. D., Oltmanns, T. F., & Shrout, P. E. (2017). It's time to broaden the replicability conversation: Thoughts for and from clinical psychological science. *Perspectives on Psychological Science*, 12(5), 742-756. <https://doi.org/10.1177/1745691617690042>
- Tamminen, K. A., & Poucher, Z. A. (2018). Open science in sport and exercise psychology: Review of current approaches and considerations for qualitative inquiry. *Psychology of Sport and Exercise*, 36, 17-28. <https://doi.org/10.1016/j.psychsport.2017.12.010>
- Thalmayer, A. G., Toscanelli, C., & Arnett, J. J. (2021). The neglected 95% revisited: Is American psychology becoming less American? *The American psychologist*, 76(1), 116-129. <https://doi.org/10.1037/amp0000622>
- Toth, A. A., Banks, G. C., Mellor, D., O'Boyle, E. H., Dickson, A., Davis, D. J., DeHaven, A., Bochantin, J., & Borns, J. (2020). Study preregistration: An evaluation of a method for transparent reporting. *Journal of Business and Psychology*. <https://doi.org/10.1007/s10869-020-09695-3>

- Uhlmann, E. L., Ebersole, C. R., Chartier, C. R., Errington, T. M., Kidwell, M. C., Lai, C. K., McCarthy, R. J., Riegelman, A., Silberzahn, R., & Nosek, B. A. (2019). Scientific utopia III: Crowdsourcing science. *Perspectives on Psychological Science, 14*(5), 711-733. <https://doi.org/10.1177/1745691619850561>
- Valentine, C. A. (1971). Deficit difference, and bicultural models of Afro-American behavior. *Harvard Educational Review, 41*(2), 137-157.
- van't Veer, A. E., & Giner-Sorolla, R. (2016). Pre-registration in social psychology—A discussion and suggested template. *Journal of Experimental Social Psychology, 67*, 2-12. <https://doi.org/10.1016/j.jesp.2016.03.004>
- Vassar, M., Jellison, S., Wendelbo, H., & Wayant, C. (2020). Data sharing practices in randomized trials of addiction interventions. *Addictive Behaviors, 102*, 106193. <https://doi.org/10.1016/j.addbeh.2019.106193>
- Wallerstein, N., Duran, B., Oetzel, J. G., & Minkler, M. (2018). Community-based participatory research for health.
- Wallerstein, N. B., & Duran, B. (2006). Using community-based participatory research to address health disparities. *Health Promotion Practice, 7*(3), 312-323. <https://doi.org/10.1177/1524839906289376>
- Walsh, C. G., Xia, W., Li, M., Denny, J. C., Harris, P. A., & Malin, B. A. (2018). Enabling open-science initiatives in clinical psychology and psychiatry without sacrificing patients' privacy: Current practices and future challenges. *Advances in Methods and Practices in Psychological Science, 1*(1), 104-114. <https://doi.org/10.1177/2515245917749652>
- Weston, S. J., Ritchie, S. J., Rohrer, J. M., & Przybylski, A. K. (2019). Recommendations for increasing the transparency of analysis of preexisting data sets. *Advances in Methods and*

Practices in Psychological Science, 2(3), 214-227.

<https://doi.org/10.1177/2515245919848684>

Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J. J., Appleton, G., Axton, M., Baak, A., Blomberg, N., Boiten, J.-W., da Silva Santos, L. B., Bourne, P. E., Bouwman, J., Brookes, A. J., Clark, T., Crosas, M., Dillo, I., Dumon, O., Edmunds, S., Evelo, C. T., Finkers, R., Gonzalez-Beltran, A., Gray, A. J. G., Groth, P., Goble, C., Grethe, J. S., Heringa, J., t Hoen, P. A. C., Hooft, R., Kuhn, T., Kok, R., Kok, J., Lusher, S. J., Martone, M. E., Mons, A., Packer, A. L., Persson, B., Rocca-Serra, P., Roos, M., van Schaik, R., Sansone, S.-A., Schultes, E., Sengstag, T., Slater, T., Strawn, G., Swertz, M. A., Thompson, M., van der Lei, J., van Mulligen, E., Velterop, J., Waagmeester, A., Wittenburg, P., Wolstencroft, K., Zhao, J., & Mons, B. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific data*, 3, 160018-160018. <https://doi.org/10.1038/sdata.2016.18>

Table 1

Key Open Science Practices Available to Authors in Four Major Ethnic Minority Psychology Research/Cultural Diversity Science (EM/D) Journals

Open science element available/acknowledged	Journal			
	<i>Asian American Journal of Psychology (AAJP)</i> [Established in 2009]	<i>Cultural Diversity and Ethnic Minority Psychology (CDEMP)</i> [Established in 1995 (formerly <i>Cultural Diversity and Mental Health</i>)]	<i>Journal of Black Psychology (JBP)</i> [Established in 1974]	<i>Journal of Latinx Psychology (JLP)</i> [Established in 2013]
Open science badges (number)	Available-Journal (4)	Available-Journal (5)	Not Mentioned	Not Mentioned
Free preprints	Available-Journal	Available-Journal	Available-Publisher	Available-Publisher
Public significance statements	Required	Required	Not Mentioned	Required
Preregistrations	Available-Journal	Available-Journal	Not Mentioned	Not Mentioned
Replications	Available-Publisher	Available-Journal	Not Mentioned	Available-Publisher
Registered reports	Available-Journal	Available-Journal	Not Mentioned	Not Mentioned
Author contribution/CRediT statement	Not Mentioned	Required	Not Mentioned	Not Mentioned
Conflict of interest disclosure and funder information	Required-Publisher	Required-Publisher	Not Mentioned	Required-Publisher
COG statement	Not Mentioned	Not Mentioned	Not Mentioned	Not Mentioned
Data transparency statement	Available-Publisher	Available-Publisher	Not Mentioned	Available-Publisher
Power/Sample size reporting	Not Mentioned	Available-Journal	Not Mentioned	Not Mentioned
Statistical precision	Not Mentioned	Available-Journal	Not Mentioned	Not Mentioned
TOP Factor	2	15	0	1

Note. All four journals are published quarterly. Available-Journal = Option is available/permitted direct from the journal (e.g., “Author Instructions”). Available-Publisher = Option is available/permitted from publisher (e.g., American Psychological Association Journal Article Reporting Standards, Ethical Principles and Standards of Conduct). CRediT = Contributor Roles Taxonomy. COG = Constraints on Generalizability. TOP = Transparency and Openness Promotion. TOP Factors are retrieved from <https://topfactor.org/> in December 2020 and are calculated based on 10 standards: data citation, data transparency, analytic code transparency, material transparency, design and analysis reporting guidelines, preregistration, replication, registered reports and publication bias, and open science badges. Each TOP standard can be evaluated across levels 1, 2, and 3 implementations. The highest possible score for TOP

Factor = 30. As of August 16, 2021, the highest-scoring journal has a TOP Factor of 27. See author instructions and other journal information: *AAJP* (<https://www.apa.org/pubs/journals/aap>), *CDEMP* (<https://www.apa.org/pubs/journals/cdp>), *JBP* (<https://journals.sagepub.com/author-instructions/JBP>), *JLP* (<https://www.apa.org/pubs/journals/lat>). The size of editorial board varies by journals (as of August 16, 2021): *AAJP*: 70 (1 editor, 2 associate editors, 1 case studies editor, 1 book reviews editor), *CDEMP*: 212 (1 editor, 8 associate editors), *JBP*: 67 (1 editor, 3 associate editors), *JLP*: 55 (1 editor, 3 associate editors). All journals instruct authors to use APA style, none indicates the option to store data with APA (or any other) repository. APA designates [PsyArXiv](#) as the preferred preprint archiving server. No journal appears to allow or encourage signed/open reviews.

^a *AAJP* offers four open science badges: open data, open materials, preregistered, and preregistered + analytic plan

^b *CDEMP* offers five open science badges: open data, open data: protected access, open materials, preregistered, and preregistered + analytic plan

Table 2

Summary of Open Science Practices Implemented in Empirical Articles Published in Four Major Ethnic Minority Psychology Research/Cultural Diversity Science (EM/D) Journals

	Total	<i>Asian American Journal of Psychology (AAJP)</i>	<i>Cultural Diversity and Ethnic Minority Psychology (CDEMP)</i>	<i>Journal of Black Psychology (JBP)</i>	<i>Journal of Latinx Psychology (JLP)</i>
Empirical Research Article Audited	823	185	384	151	111
			<i>k (%)</i>		
Any Open Science Practices	32 (3.89%)	13(7.03%)	11(2.86%)	4(2.65%)	4(3.60%)
Year of Publication	2015: 1	2015: 1	2015: 0	2015: 0	2015: 0
	2016: 2	2016: 1	2016: 0	2016: 1	2016: 0
	2017: 2	2017: 1	2017: 0	2017: 1	2017: 0
	2018: 3	2018: 1	2018: 1	2018: 0	2018: 1
	2019: 7	2019: 4	2019: 2	2019: 1	2019: 0
	2020/Online	2020/Online	2020/Online	2020/Online	2020/Online
	First: 17	First: 5	First: 8	First: 1	First: 3
Specific Practice					
Material Sharing	28 (3.40%)	12 (6.49%)	10 (2.60%)	2 (1.32%)	4 (3.60%)
Data Sharing	9 (1.09%)	2 (1.08%)	5 (1.20%)	2 (1.32%)	0 (0.00%)
Preregistration of Study Design and Analyses	2 (0.24%)	1 (0.54%)	1 (0.26%)	0 (0.00%)	0 (0.00%)
Open-Access Preprint/Postprint	2 (0.24%)	1 (0.54%)	1 (0.26%)	0 (0.00%)	0 (0.00%)
Replication Study	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Registered Report	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Table 3*Summary Descriptive Statistics of Scholars' and Editors' Opinions about Open Science*

Abridged Item	Scholars		Editors		<i>t</i>	<i>p</i>
	<i>M(SD)</i>	<i>N</i>	<i>M(SD)</i>	<i>N</i>		
Familiarity with replication/reproducibility crisis	3.69(1.09)	147	4.25(0.68)	16	-2.91	.008
Belief that there was a replication/reproducibility problem in ...						
... psychological science	3.88(0.92)	139	3.69(1.01)	16	0.72	.483
... ethnic minority psychology research/cultural diversity science	3.68(1.09)	139	3.25(1.39)	16	1.20	.247
Familiarity with the open science movement	3.39(1.34)	140	4.06(1.00)	16	-2.44	.023
Importance that own/edited research was ...						
... rigorous	4.75(0.47)	136	4.92(0.28)	13	-2.00	.060
... reproducible	4.17(0.97)	136	3.62(0.65)	13	2.79	.012
... transparent	4.76(0.48)	136	4.85(0.55)	13	-0.56	.586
Confident that own research was ...						
... rigorous	4.17(0.68)	136	-	-		
... reproducible	4.01(0.82)	134	-	-		
... transparent	4.35(0.71)	135	-	-		
Likelihood of using/encouraging open science in the future ^a	3.50(1.02)	121	3.80(0.84)	5		

Note. Item responses ranged from 1 (*not at all*) to 5 (*very much*). ^a This item was administered only to current but not former (associate) editors. Independent-samples *t*-tests are used to compare responses from scholars and editors. Items were presented in a fixed order; missingness appeared to reflect premature termination of the study participation throughout the survey.

Table 4

Compare and Contrast of Mainstream Open Science (OS) and Ethnic Minority Psychology Research/Cultural Diversity Science (EM/D), and Summary of How They Could Make Contact With One Another

Research Domain	Goals and Possible Solutions		Potential for Mutual Utility
	<u>Mainstream OS</u>	<u>EM/D</u>	
Philosophical Approach to Science	<p>Features:</p> <ul style="list-style-type: none"> • Reveals enduring laws of science that generalizes across individuals, groups, and conditions • Uses postpositivistic concerns about undue influence of researcher biases; continued pursuit of objectivity by bias elimination, using refined hypothetico-deductive approaches with greater transparency to identify biases <p>Manifestations:</p> <ul style="list-style-type: none"> • Uses etic approach • Applies quantitative and big data methods • Aims to describe, predict, explain, modify human psychology • Objectivity as primary path to truth; emphasizes detecting individual researcher biases that detract from objectivity • Minimizes contexts and social history that aid in identifying general principles • Emphasizes transparency to illuminate potential biases 	<p>Features:</p> <ul style="list-style-type: none"> • Generates relevant knowledge for unique populations and communities • Uses scientific understanding of mechanisms and contexts to help predict and illuminate pathways to empowerment <p>Manifestations:</p> <ul style="list-style-type: none"> • Uses emic & strength-based approaches • Engages in community-based participatory research models • Applies qualitative and mixed-methods designs • Aims to understand, advocate, and empower individuals and communities • Understanding as primary path to truth and freedom from oppression; concern with larger contextual constraints that lead to illusion of objectivity while reproducing oppression 	<ul style="list-style-type: none"> • Value credible evidence • Emphasize the validity of both qualitative and quantitative approaches, that are carried out according to established norms to knowledge production

Incentives For Research	<div data-bbox="548 493 680 521">Features:</div> <ul style="list-style-type: none"> • Scientific and academic institutional stakeholders reward new, positive, and statistically significant results • Acknowledges that funders have biases just like individual investigators • Avails outlets and incentives for “productive” researchers who uphold mainstream science • Aims to redistribute privilege beyond those with resources (esp. funding, high-visibility outlets, status and power in institutions) • Incentivizes transparency and research quality/rigor • Rewards results that can be reproduced <div data-bbox="1050 201 1482 487"> <ul style="list-style-type: none"> • Address within-population variability and cultural hegemony • Emphasizes contextualized and historical perspectives in understanding phenomena, and recognizes that researcher biases may never be eliminated) </div> <div data-bbox="1050 493 1182 521">Features:</div> <ul style="list-style-type: none"> • Recognizes that access to data depends on community cooperation • Recognizes that members and their broader communities have distinctive motivations for participating in research • Understands that rewards (e.g., funding, institutional advancement) are often limited in encouraging and facilitating this type of research • Aims to redistribute privilege to and empower underresourced and underrepresented populations • Aims to understand, empower, and highlight the strengths in communities of color, and learn from community partners/members <div data-bbox="1514 493 1892 1414"> <ul style="list-style-type: none"> • Acknowledge the needs for stakeholder buy-in and resource-sharing • Use transparency and critical methods to broaden the visibility and impact of research • Recognize that research infrastructure and normal science are resistant to changes • Identify the influence of power structure in research spheres; broaden and reform reward structures that keep influence in the hands of limited range of investigators approaching a limited range of questions from a narrow range of self-serving perspectives • Broaden rewards & incentives for collaborative teams, beyond individual investigators </div>
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Research Questions	<p>Stakeholders:</p> <ul style="list-style-type: none"> • Individual investigators (and their reputation/career) • Journals/editors • Funders • Institutions that offer credentials to, hire, and reward investigators • Rewards include open science badges <p>Features:</p> <ul style="list-style-type: none"> • Ideas should reflect well-developed, incrementally established foundations 	<p>Stakeholders:</p> <ul style="list-style-type: none"> • Individual investigators • Communities whose research is to understand and serve • Communities that allow data collection • Rewards may include community recognition and community benefits <p>Features:</p> <ul style="list-style-type: none"> • Ideas should avoid pathologizing the target populations; ideas are developed with communities' needs and strengths in mind • Investigators should understand communities and relevant phenomenon well enough to ask proper research questions 	
	<p>Manifestations:</p> <ul style="list-style-type: none"> • Research questions initiated by investigators • Multisite collaboration and team science 	<p>Manifestations:</p> <ul style="list-style-type: none"> • Research questions are informed by population and community-specific needs • Research process typically involves collaborations, permission, and sanction from the community under study 	<ul style="list-style-type: none"> • Collaborate with team members and institutions of diverse perspectives from diverse backgrounds • Identify common investigator/cultural biases that may perpetuate disadvantage to communities under study • Research training should include ethnic minority psychology, history and systems of discipline-specific science, and current limits in literature

Methods:**Researcher Positionality****Features:**

- Seeks to eliminate investigator biases, and related conflicts of interest

Manifestations:

- Assumes researcher naïveté
- Uses independent methodological support and oversight
- Reports (financial) conflicts of interest
- Collaborations to broaden data collection, dilute individual biases,

Methods:**Validity and Reproducibility****Features:**

- Concerns particularly about internal validity, and protects internal validity typically via clear protocols, reliable materials or established instrumentation
- Protects external validity as shown by reproducibility of findings

Features:

- Investigators use insider knowledge and emphasize cultural competence to inform insight and skills are used to address research questions and contexts
- Leverages of social power (justice, equity, diversity, inclusion) in research process
- May engage with critical theory frameworks

Manifestations:

- Investigators reflect their positionality
- Partners with or seek approval from community stakeholders and/or elders
- Continued and regular engagement with community, to minimize possibility of exploitation

Features:

- Considers internal validity
- Gives additional emphasis on external and ecological validity; shares greater concern for validity than reproducibility or generalizability
- Protects external validity as ecological validity

- Integrate basic and continuing education to advance methodological skills and cultural competency
- Involve insider/outsider teams and collaborations
- Incorporate independent oversight bodies

- Generate repositories of valid methods
- Avail consultation on methods for community-specific and intersectional questions
- Encourage team collaborative methods that explicitly acknowledge positionality of investigators

Concerns in Drawing Conclusions

Manifestations:

- Uses large samples
- Employs within-person and experimental designs, whenever appropriate
- Uses open-sourced materials or shares study materials
- Preregisters research questions and/or analytic approaches
- Publishes registered reports

Features:

- (Low) statistical power
- Guards against methodological “shortcuts”
- Cautions against hypothesizing after results known
- Concerns poor methodological training

- Addresses social structure and contexts that contribute to human psychology

Manifestations:

- May use smaller samples to generate hypotheses about subgroups, and interrogate mechanisms underlying previously observed patterns
- Verifies methods and results with community members—including other investigators

Features:

- Warns against pathologizing or mischaracterizing target populations and communities
- Concerns inadequate training on cultural competency in research

- Form new ways to share data to observe (actionable) patterns in diverse contexts, while protecting both analyses of datasets that have been collected painstakingly, and respondent confidentiality
- Consider carefully what variations or intersectional phenomena are worth pursuing

- Registered reports can demonstrate and verify rigor of methods, and insure rewards of publication without constraints of particular findings
- Preregistrations & registered reports promote making clear data analytic

Evaluating Research
Utility**Manifestations:**

- Encourages designing studies with large samples that ensure sufficient statistical power
- Reports effect size parameters and confidence intervals to document precision of results
- Uses preregistrations and registered reports to minimize post-hoc “discoveries”

Features:

- Engages in critical scrutiny from a range of sources
- Ensures that professional peer reviewers are informed and qualified for evaluating the research
- Supports outlets that evaluate the research fairly and openly

Manifestations:

- Makes research reports broadly available via preprints or postprints

Manifestations:

- Consults with stakeholders and participants to verify the accurate representations of the communities

Features:

- Challenges normal science structures that do not appreciate models, challenges, methods relevant to research questions
- Ensures that reviewers are culturally competent in evaluating the research
- Ensures that relevant stakeholders—including community members—understand and accept findings

Manifestations:

- Provides opportunities for independent review— and

choices and free researcher from exploring all avenues

- Use the most appropriate designs and/or methods of summarizing patterns statistically and/or qualitatively

- Incorporate stringent review and reconsideration of standards for evaluating quality and valuable research
- Include broad range of perspectives in reviewing work submitted to influential and relevant outlets
- Make available broadly findings for review by all stakeholders

Reporting and
Dissemination of
Findings

- Cross-checks research process against preregistration
- Encourages reviews to be objective and independent from the researchers
- Promotes a diversified and democratic peer review methods

Features:

- Presets well-established standards for full and transparent reporting that maximize the consumption and evaluation by the scientific community
- Makes findings accessible broadly and freely

Manifestations:

- Discloses conflicts of interest and how they have been addressed
- Preregisters research plan and analytic decisions
- Deposits data to allow independent scientists' inspection and promote efforts for reproducing findings
- Publishes preprints
- Offers free reprints or publishes in open-access outlets

possibly input—by community members and relevant stakeholders

- Avails publishing outlets that have population-specific particular expertise

Features:

- Ensures adequate description of contexts that shape human psychology
- Publishes in outlets that are of greatest concern to community stakeholders
- Presents findings back to relevant stakeholders for their understanding and consumption

Manifestations:

- Discloses investigators' positionality as it pertains to the interpretation of results
- Acknowledges fully the engagement of and with community members as primary stakeholders

- Share data and findings broadly but securely, to allow investigation of broader patterns across communities
- Include and recognize broad ranges of outlets
- Reflect and report in constraints on generality statements, to call attention to context-dependence of reported findings

Figure 1

Percentages of Reasons (A) For Using and (B) For Not Using Open Science Practices in Ethnic Minority Psychology Research/Cultural Diversity Science

(A) Reasons for using open science practices

(B) Reasons for not using/supporting open science practices

Note. Top figure (A) summarizes reasons for (1) using any open science (OS) practices among ethnic minority psychology research/cultural diversity science (EM/D) scholars who had experiences with open science ($N = 71$), and (2) supporting the use of OS practices among editor participants who believed that OS was “good” for research ($N = 9$; $n = 5$ current and $n = 4$ former). Bottom figure (B) summarizes reasons (1) for not using any OS practices among EM/D scholars who had no prior history with OS ($N = 67$), and (2) for not supporting the use of OS practices among editors who believed OS to be harmful or irrelevant in EM/D ($N = 4$; all former).

Supplement to Main Text

Study 1, Method: Article Audit

Data sharing refers to when raw study data used to generate empirical knowledge are shared with other individuals in the academic or public communities. Examples include archiving data files in a third-party online repository (e.g., Inter-university Consortium for Political and Social Research, Open Science Framework [OSF]), through which anyone or a restricted set of individuals can access the data freely. *Material sharing* refers to whether the information used to collect data (e.g., survey instruments, stimuli in experimentation, qualitative interview guide) are publicly available to other researchers—and possibly nonacademic readers—and if so, where to access the information. For example, study materials may be stored permanently in a trusted, third-party online repository. *(Pre)Registrations* include clear and detailed information about a planned investigation that are recorded prior to the execution of the study. Preregistrations, typically used in original data collections, may contain descriptions of the study aims, methodological approach, decision rules for data screening and exclusion, and may or may not outline a data analytic plan. Registrations also are appropriate for research using archival data. Registrations of analytic plans are applicable to studies using original and existing data. To allow independent verification, study (pre)registrations are time-stamped; links to a third-party repository where the (pre)registrations are stored should be made available in the article during peer review and/or after publication. *Open-access preprints/postprints* refer to versions of research articles that have been made freely accessible to the scientific and public communities either prior to peer-review and journal publication, or after acceptance for publication but before page-editing. *Replications* are research studies that are designed to repeat the study procedures using new samples and reproduce the findings in already-published

investigations. Replication studies can help identify the degree to which known results are reliable and uncover the limits of reproducibility. Finally, *registered reports* represent a publishing format that includes peer-reviewed study preregistrations and findings. Stage 1 registered reports contain literature reviews, justification for the research, and planned methods; in this stage, the manuscripts are reviewed prior to data collection and/or data analyses. Studies that show significance and meritorious approach may be conditionally accepted for publication. Upon data collection and analyses, and reporting and interpreting results, Stage 2 registered reports may be accepted fully for publication for adhering to the proposed research plan.

Study 2, Method: Additional Scholar Participant Information

Based on the Carnegie classification of higher education institutions, 52.2% of participants were affiliated with Research-1 universities (very high research activity), 16.8% with Research-2 universities (high research activity), 14.2% with doctoral/professional universities, 8.0% with master's universities/colleges, 1.8% with baccalaureate colleges, and 7.1% with other academic or nonacademic institutions (e.g., medical centers). Most participants reported an applied psychology discipline—clinical psychology (41.2%) and counseling psychology (28.1%). Other disciplines included developmental psychology (6.1%), educational/school psychology (5.3%), social-personality psychology (4.4%), health psychology (3.5%), community psychology (3.5%), experimental psychology (0.9%), and disciplines not listed (7.0%; e.g., psychopharmacology, social work). On average, participants had published 8.22 peer-reviewed journal articles as primary authors ($SD=15.75$) and 10.00 articles as supporting authors ($SD=16.54$). Most participants reported using predominantly quantitative approaches in their research (47.4%); others tended to use mixed methods (35.1%) or qualitative designs (4.4%).

Study 2, Method: Additional Information about Scholar and Editor Surveys

In the scholar surveys, items about knowledge (e.g., “How familiar are you with the ‘open science’ movement?”) were rated on a scale from 1 (*not at all*) to 5 (*very much*). Participants were then given a brief definition of the OS movement; they were asked to report whether they used any OS practices. Participants rated the degree to which they believed rigor, reproducibility, and transparency of their own research to be important (e.g., “How important is it that the research you conduct is rigorous?”) and their level of confidence in these aspects of their research (e.g., “How confident are you that the research you conduct is reproducible?”), on a 5-point scale. Response options were: 1 (*not at all*), 2 (*a little*), 3 (*somewhat*), 4 (*moderately*), and 5 (*very much*). Among participants who reported having used one or more OS practice(s), they checked all reasons for doing so. They also listed practices with which they had experiences in their completed and ongoing investigations. Among participants who had not used any OS practices, they provided reasons for not engaging in with these behaviors. In two open-ended questions, participants were invited to share their concerns about the use of OS practices in psychological research in general, and in EM/D research specifically. Finally, participants rated the likelihood that they would engage in OS practices in their future research, on a scale of 1 (*not at all*) to 5 (*very much*).

Similar to the survey for EMD scholars, the survey for journal editors contained open- and closed-ended items about their beliefs about OS practices. Modified items included, “How important is it that the manuscripts you edit(ed) are/were transparent in the research procedures and outcomes?” Finally, we asked the likelihood that editor respondents would encourage OS practices in the future.

Study 2, Results: Themes Emerged from Open-Ended Responses

Supporting quotes from participants:

Reasons For OS²⁰

Accessibility

- *Access to journals [is] gate kept by publishers, mandating people to buy the article in order to view it, unless the individual is associated with an institution who has access to those articles. This creates a great divide between community and academia. Only those who have access can view the research; it becomes extremely one-sided... The gatekeeping of information is very obvious, and it harms low-income and communities of color more because the knowledge and access of those resources are very limited.* (Graduate Student)
- *Our most vulnerable communities have the least access to research even though it is most needed. Open science would address this issue.* (Editor)

Reasons For Not Using, and Concerns about, OS²¹

Unfamiliarity

- *Did not receive training in open science practices. Unsure of where to receive free comprehensive training in open science. Unsure how to practice open science with certain research projects (e.g., clinical trials for treatment of mental health disorders).* (Faculty)

Lack of Opportunity

- *As graduate students, we have been introduced to the concept of open science journals. However, I believe we are not necessarily pushed, or incentivized, to utilize these practices in comparison to the encouragement received from advisors to submit our work to the classic peer-reviewed journals.* (Graduate student)
- *I just have not seen it been done much in our subfield... It has never been required in my line of work to do any of them. Nor have collaborators ever pushed for any of these practices. It has not been super relevant but I think they are important practices that maybe we should be talking about more.* (Graduate student)

²⁰ These open-ended responses were solicited from scholars and editors who indicated prior experiences using open science practices.

²¹ These open-ended responses were solicited from scholars and editors who indicated that they had not engaged with any open science practices.

Harmful Consequences against Participant Interests

- *Given their lack of representation in the broader population, it may be easier to identify individuals and these concerns aren't applicable to White people. Participants may be identified based on the limited characteristics provided. (Faculty)*
- *I'd be concerned with sharing my data, especially data with vulnerable populations (e.g., immigrants, mixed-status families) with other researchers whom I may not know and who may not be cognizant of the potential harm for misinterpretation of the findings. (Graduate student)*
- *My concerns surround the privacy of my participants, given I work with minoritized and vulnerable populations. Moreover, I do not feel comfortable asking my participants during the consent process about consenting to open science given these complexities. Even though the data is not identifiable, I worry about the data being used in inappropriate ways. (Faculty)*
- *Rigor is often defined in a homogeneous, mainstream way that represents a very narrow interpretation of psychological science. Rigor may look different across different cultural understandings of science. Registering a study design also does not allow for good [community-based participatory research] methods of revising methods as a result of interaction with community stakeholders... Although I agree with some of the intentions of the movement, it continues to use a Eurocentric interpretation of appropriate methods and interpretation. The movement has the capacity to coerce mainstream methods on all research. (Faculty)*

Disproportionate Impact on EM/D Scholars

- *Honestly, when it has come to publishing I've prioritize trying to publish in higher impact journals. As far as I know, these (within my field) are not using open science practices. (Faculty)*
- *I worry about having my findings or data "scooped" by another researcher with additional funding who can afford to be slightly more productive in their labs. (Graduate student)*
- *[I am concerned about] how it will be used against academic researchers in the home institutions for tenure and promotion and hiring. Reputation matters. (Faculty)*
- *Requiring (often cash-strapped) researchers to put down thousands of dollars to publish is not a sustainable solution—this keeps a lot of people out, including research, researchers, and institutions that are not supported by major grants. (Faculty)*

Epistemological Considerations

- *My primary method of choice is qualitative methods, which does not lend itself easily to this "open science" framework... I understand the rationale behind [open science] but I think there is also a sense that advocates of open science movement look down on those whose methods or epistemology do not fit neatly into open science practices. (Faculty)*
- *Sometimes the goal of the ethnic minority psychology/diversity research is to identify a new or unique phenomenon that pertains only to a specific group in context so reproducibility is not a main goal. (Editor)*
- *I think academic departments will have to radically change their cultures around productivity pressures to allow researchers to practice open science and to retain their innovation and creativity. Without this culture change, I think open science becomes yet another checkbox, among many checkboxes, that psychologists have to deal with and it becomes an added burden... We need to be wary of open science standards getting applied discriminatorily and promoting within-profession marginalization, especially to areas of psychology that do not conform to postpositivist paradigms. (Faculty)*

Study 3, Method: Additional Information on Community Participant Demographics and Data Collection Procedures

Most participants reported having been born in the U.S. and lawfully residing in the U.S. The first dataset was collected in Fall 2019, in which Hispanic individuals in Texas were recruited through four platforms: Qualtrics Panel, Facebook, Craigslist, and InfoUSA. The full survey protocol took 45-60 minutes to complete. The second dataset was collected via Qualtrics Panel in April 2020 at the early phase of the 2019 coronavirus disease pandemic. Questions about data sharing and credibility of science and researchers were included in the baseline survey protocol of a short-term longitudinal study; full survey protocol took approximately 15 minutes to complete. Participation was anonymous and voluntary. Participants recruited via Qualtrics Panel received point-based incentives that were agreed upon with their vendors. Participants recruited through the other platforms received a \$30 e-giftcard as reimbursement.

Table S1*Study 3 Community Participant Demographic Characteristics by Ethnoracial Group*

	Asian American (<i>N</i> = 403)	Hispanic/ Latino/a/x (<i>N</i> = 376)	Black/ African American (<i>N</i> = 120)	White/Euro American (<i>N</i> = 120)	Native American/ Alaska Native/ Indigenous Peoples (<i>N</i> = 9)	Multiracial or Other (<i>N</i> = 76)
Age <i>M</i> (<i>SD</i>)	46.99 (15.16)	35.93 (13.04)	49.53 (16.87)	48.09 (16.43)	55.44 (18.33)	45.42 (15.14)
Gender %						
Man	49.1	55.3	32.5	63.3	44.4	53.9
Woman	50.9	44.1	67.5	36.7	55.6	44.7
Transgender/Nonbinary	0	0	0.5	0	0	1.3
Nativity %						
U.S.-born	51.0	65.4	93.3	96.7	88.9	89.5
Foreign-born	49.0	34.6	6.7	3.3	11.1	10.5
Lawful U.S. Resident %	98.3	98.9	100.0	99.2	100.0	98.7
Education Attainment %						
High school diploma or below	3.2	21.8	15.0	15.0	22.2	5.3
At least some college	58.1	65.9	62.5	57.5	66.7	68.4
Advanced degree	38.7	12.3	22.5	32.5	11.1	26.3
Range of Median Household Income	\$80,001- 100,000	\$60,001- 80,000	\$40,001- 60,000	\$80,001- 100,000	\$20,000- 40,000	\$60,001- 80,000

Note. There was only one participant who identified as Arab, Middle Eastern, North African; this individual's data were combined with participants who identified as multiracial or reported other group membership.