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Bridging Feminist Psychology and Open Science: Feminist Tools and Shared Values Inform Best Practices for Science Reform

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Abstract

Feminist researchers have long embraced the challenging, dismantling, and reimagining of psychology, though their contributions to transforming psychological science remain largely overlooked in the mainstream open science movement. In this article, we reconcile feminist psychology and open science. We propose that feminist theory can be leveraged to address central questions of the open science movement, and the potential for methodological synergy is promising. We signal the availability of feminist scholarship that can augment aspects of open science discourse. We also review the most compelling strategies for open science that can be harnessed by academic feminist psychologists. Drawing upon best practices in feminist psychology and open science, we address the following: generalizability (what are the contextual boundaries of results?), representation (who is included in research?), reflexivity (how can researchers reflect on who they are?), collaboration (are collaborative goals met within feminist psychology?), and dissemination (how should we give science away?). Throughout each section, we recommend using feminist tools when engaging with open science, and we recommend some open science practices for conducting research with feminist goals.

Keywords: generalizability, representation, reflexivity, collaboration, dissemination

Bridging Feminist Psychology and Open Science:

Feminist Tools and Shared Values Inform Best Practices for Science Reform

In this article, we consider opportunities for feminist psychologists in the current era of science reform; namely, we explain how feminist psychologists can both guide and expand upon open science efforts by drawing on the fundamentals of feminist science. We propose that feminist scholars already engage with some central tenets of open science and can thus employ the language and practice afforded by a feminist philosophy of science to inform a more critical, inclusive, and open psychology. Feminist researchers have long embraced the challenging, dismantling, and reimagining of psychology (e.g., historical moments of “feminism and/is/as psychology,” Rutherford & Pettit, 2015, p. 226), though their contributions to transforming psychological science and challenging the status quo remain largely overlooked in the mainstream open science movement. We aim to elucidate feminist psychology’s record while proposing that some values of open science mirror decades worth of theoretical and methodological recommendations by feminist scholars. Centering feminist and marginalized voices in the context of open science not only provides credit where credit is due; but also, addresses gendered power dynamics observed in conversations about science reform (GenderAction, 2019; Gruber et al., 2021; Ledgerwood et al., 2015). The purpose of this article is two-fold: (a) to acknowledge feminist labor that speaks to many of the central questions of the open science movement, and (b) to spark momentum for using feminist tools when doing open science *and* for using some open science tools when working within feminist psychology.

“Open science” discourse involves rethinking scientific practice in pursuit of various goals, such as enhancing reproducibility and replicability, limiting questionable practices in the scientific process, and restructuring the creation of and access to scientific knowledge (Shrout & Rodgers, 2018; Nosek et al., 2012, 2015). The feminist psychology literature similarly offers reflections for bettering psychological science. Feminist psychologists question dominant norms and practices within psychology (e.g., who is studied and how; Marecek, 1995; Stewart, 1998),

work feminist epistemologies into their development of research questions and methodologies (e.g., Fine & Gordon, 1989; Roberts et al., 2016; Rutherford & Pettit, 2015; Unger, 1983), and draw upon tools afforded by intersectionality theory to produce contextually informed research (Bowleg, 2008; Cole, 2009; Grzanka, 2018; McCormick-Huhn et al., 2019). The previous contributions of feminist psychologists and their calls for reform cannot be understated: Their writings about best practices and values within the field of psychology are courageous, numerous, synergistic, and bold. However, the possibilities for feminist practices to assist with building a more open science remain unexplored. Through our familiarity with feminist theory and our awareness of psychology's calls for scientific reform, we identified the present moment as an opportune time to revisit how feminist perspectives enrich psychological research. Our citation practices in this article signal the availability of feminist scholarship that can be used to augment aspects of open science discourse. We recognize that the growing culture of open science comes with concerns related to diversity and inclusion (Nosek, 2017) and presents unique challenges to various types of research; for example, reproducibility and open access to raw data are not, and should not, be goals for all types of research (Campbell et al., 2019; Chauvette et al., 2019; Greenfield, 2017). While unquestionably important, critiquing the issues brought forth by the promotion of open science strategies is not the primary focus of the current article. We instead attend to some positive aspects of the open science movement in that it has popularized discussions about critical, inclusive, collaborative, and transparent research practices.

Though theories of feminist scholarship are diverse and transdisciplinary, we identified five issues addressed by the feminist science tradition that can be applied to researchers' engagement in open science practices regardless of their specialty area in psychology. We review generalizability, representation, reflexivity, collaboration, and dissemination. Within each section, we present the perspectives of open science advocates, highlight how feminist contributions can help, and illuminate how psychologists can build upon recommendations

within feminist psychology and the open science movement to work toward a better science (see Table 1 for a summary). Unger (1983) argued that psychologists should conceptualize their chosen methods as a reflection of their values and ideals—a sentiment shared by feminist scholars decades later (see Bowleg, 2008; Brabeck & Ting, 2000; Grzanka, 2018; McCormick-Huhn et al., 2019; Settles et al., 2020). It stands to reason that some of the values of the open science movement mirror those of feminist psychology, and researchers therefore may find common ground in discussing which approaches best serve collective goals and values.

We propose that both open science advocates unfamiliar with feminist contributions and feminist psychologists not well-versed with open science efforts would benefit from adopting one another's tools toward improving psychological science—that is, establishing a more contextually cognizant, transparent and honest, inclusive, collaborative, and accessible research field. We thus undertake a reconciliation between feminist psychology and open science by imagining methodological synergy and new possibilities for conducting research and creating knowledge. Further, we call for both open science advocates and feminist psychologists to more fully live up to shared scientific ideals. Both parties have much to learn from each other's strengths and weaknesses as they embark toward their versions of a more accessible and just science. We offer insight on how collaboration between feminist psychology and open science could address practical and theoretical barriers to actualization of their community's values. We begin by addressing the issue of generalizability.

Generalizability: What Are the Contextual Boundaries of Results?

Generalizability refers to the extent to which researchers accurately draw conclusions from specific observations that can then be applied at the population-level. The underlying premise is that the most generalizable findings will describe human processes across time, individuals, and settings (Arnett, 2008; Cheon et al., 2020; Simons et al., 2017). Generalizability, to some extent, relates to assumed universality (i.e., the notion that core psychological processes exist in all humans; Norenzayan & Heine, 2005), such that generalizable results may

also evidence some universal characteristics. This traditional philosophy of science, established within the natural sciences and extended to psychology, fails to fully acknowledge how contextual factors and human variation limits the generalizability of findings (Arnett, 2008). As a result, many psychologists might ignore the practical significance of contextual influences (e.g., time, culture, location, population; Van Bavel et al., 2016) by working from the often implied and untested assumption that people in one sample in one study represent phenomena that can be observed among most of humanity (Arnett, 2008; Cheon et al., 2020).

Feminist psychologists fervently oppose these assumptions. Core principles of feminist, intersectional research evoke serious recognition and consideration of historical, social, and political contexts (e.g., Bowleg, 2008; Collins, 1997, 2000; Crenshaw, 1991; McCormick-Huhn et al., 2019; Smith, 1987). Not only do feminist researchers promote historical and sociocultural perspectives, but they also advocate for transparency in reporting contextual dynamics (e.g., demographics, political climate, power relationships) and encourage researchers to resist the unrealistic pursuit of universality (e.g., Brooks & Hesse-Biber, 2007; Cundiff, 2012; Magnusson & Marecek, 2017; Marecek, 1995; Stewart, 1998; Stewart & McDermott, 2004). While calls for richer contextualization have echoed throughout feminist communities for decades, the open science movement now grapples with a similar question: How can researchers properly contextualize results such that their account of generalizability (or lack thereof) is candid and accurate? The replication crisis reignited attention to contextual influences and how context interferes with the reproducibility of research—leading some researchers to challenge whether generalizability and reproducibility should remain as realistic “gold standards” (e.g., Greenfield, 2017; Van Bavel et al., 2016; Yarkoni, 2019). We suggest that feminist psychologists can both advise on best practices *and* expand upon their efforts to emphasize context, enhance transparency, and avoid oversimplifying and overselling research findings.

Contextualize Research Findings

Context matters. Indeed, many psychological scientists subscribe to the classic theory of interactionism and its emphasis on how psychological behavior operates as a function of the person and situation (Lewin, 1936; Stewart & McDermott, 2004), and qualitative researchers in psychology are thoroughly invested in the context of their findings (see recommendations for reporting qualitative research by Levitt et al., 2018). Nevertheless, many quantitative psychologists continue to work from narrow and amateur understandings of context and structural influences. Some researchers treat context as a variable to be controlled or meekly acknowledged in the scientific method (Arnett, 2008; Greenfield, 2017; Yarkoni, 2019), ignoring the reality that some aspects of psychology and research (e.g., constructs, operationalizations, measures) are bound and given meaning by historical and sociocultural contexts.

There have been high-profile considerations of context in general psychology. In a review of replication attempts, Van Bavel et al. (2016) reported an association between contextual sensitivity and reproducibility. To the extent that coders rated the results of original studies as more contextually sensitive (i.e., as likely to vary across cultures or demographic characteristics), results were less likely to replicate even after adjusting for methodological variables that could influence reproducibility. One variable not properly accounted for, however, was psychological subdiscipline (e.g., cognitive or social-personality; Inbar, 2016)—a variable that eliminated Van Bavel et al.'s central findings and thus raises doubt about the causality of contextual sensitivity and reproducibility. Nonetheless, a difference in replication rates exist between cognitive psychology (a relatively less contextually sensitive discipline) and social-personality psychology (a relatively more contextually sensitive discipline), such that studies in cognitive psychology were more likely to replicate in the Reproducibility Project as analyzed by Van Bavel et al. (2016). It thus stands to reason that researchers cannot overlook context but rather should take context seriously, leading Van Bavel and colleagues (2016) to conclude that “the lesson here is not that context is too hard to study but rather that context is too important to ignore” (p. 6458). Likewise, Greenfield (2016, 2017) proposed a theory of social change and

human development to account for context. As people's environments become more urban, commercialized, technological, interconnected, wealthier, educational, and restricted in family size, cultural shifts in individualism, self-esteem, materialism, communality, and gender equality occur (see Greenfield, 2016, 2017). It thus should come as no surprise that what psychologists once understood of people's inner workings years ago may, in some cases, be inexact today. In light of social change theory, even quantitative researchers should not always expect successful direct replication (replication with the same study protocol) or conceptual replication (replication with different methodological procedures). Some topics are likely to "fail" in replication not because of weak research designs, insufficient rigor, or questionable research practices by the original authors, but because context matters and context changes (Greenfield, 2017). Nosek and Errington (2017) argue that both conceptual and direct replications generate confidence in scientific findings. However, we surmise that direct replications would be most vulnerable to changes in social contexts whereas conceptual replications may hold more potential for replication in an ever-changing society. Conceptual replication attempts provide researchers with flexibility to adopt new methodologies in testing an effect. Those replication methods (e.g., study materials, stimuli, measures) can evolve as needed to test the relevance of a psychological effect in a new context. Psychologists' limited understanding of sociopolitical, historical, and cultural contexts may, at times, exacerbate unrealistic beliefs in universality, whereas knowledge of broader contextual factors would provide insight into the replication process.

"Why do effects fail to replicate?" presents a complex question of deep interest to those concerned with replication in the scientific community. We claim that context is not the only culprit of failed replications in every scenario. That is, contextual sensitivity cannot be used as a catch-all explanation for unexpected inconsistencies. Some effects may fail to replicate because of other features that permeate psychological science, such as flawed methodological design (e.g., low-powered analyses, unvalidated stimuli), the ambition of scientists (e.g., questionable

research practices and selective reporting of results), and the publishing system (e.g., favoring significant, surprising, and captivating findings). The contextual sensitivity argument represents one of many factors to consider when seeking to explain replication; it therefore may be more productive to join feminist and qualitative psychologists in their engagement with contexts and what context means for evolving theory than to pursue an oversimplified “pass/fail” taxonomy for which scientific findings replicate. Put simply, if context interferes with replication and replication holds value to the open science movement, then open science advocates should find great use in feminist research strategies for unpacking context.

We recommend others embrace a central value of feminist research: interdisciplinary work. Interdisciplinary collaboration and consultation with scholars external to psychology (e.g., historians, political scientists) would teach psychologists how to thoroughly contextualize positionality of their participants and of themselves, which is an essential task of feminist work (Collins, 1997, 2000; Crenshaw, 1991; Dill et al., 2007; Grzanka, 2018; Harding, 2004; Romero, 2000; Warner, 2008). For example, Held (2020) details how interdisciplinary perspectives, such as those emerging from the humanities about subjective and lived experiences, enrich processes within scientific psychology by more deeply reflecting on the possibilities and acquisition of knowledge. Second, canonical texts for conducting qualitative research and intersectional research in psychology provide roadmaps for unpacking context surrounding psychological phenomena (Bowleg, 2008; Cole, 2009; Levitt et al., 2018; Magnusson & Marecek, 2017; McCormick-Huhn et al., 2019; Shields, 2008; Warner, 2008; Wilkinson, 1999). Who are the participants and who are they not? How are participants situated in structural contexts, and what role may inequality and power differentials play in their lives that can inform their interaction with this research? Where were data collected and analyzed, by whom, when, and under what sociopolitical conditions? These questions, often posed by feminist psychologists in writings toward embracing intersectionality theory, provide direct instruction for contextualizing the research process and acknowledging the full situations of participants

beyond their roles as data points. Revisiting such texts, or meeting them for the first time, would better equip quantitative researchers to appreciate how results are borne out of lived experiences and latent contexts. That is, experts of intersectionality theory's use within psychology advise that it is not enough for psychologists to merely acknowledge the demographic information of their participants, but to understand contexts surrounding their research and their participants as inextricably linked to power dynamics and structures (see Sabik et al., 2022 in this issue). Third, re-evaluating research findings through a critical, contextualized lens allows for new knowledge (and more accurate knowledge) to emerge. For example, Conley and colleagues' (2011) review for challenging gender "differences" in sexuality exposed how psychological findings once touted as valid evidence of gender differences (e.g., differences in casual sex, orgasm, relationship selectivity) weakened when contextual analyses were applied, such that women and men appeared more similar in sexual behavior than previously thought. Likewise, in a meta-analysis of gender differences in human psychology (e.g., differences in personality traits), Hyde (2005) found evidence for the "similarities hypothesis" (i.e., women and men are more similar than different on most psychological outcomes). The re-evaluation of research demonstrates how the scientific record, without proper and rich contextualization and conceptualization of the larger social and cultural forces at play, can be oversimplified and misinterpreted. The two contributions by Conley et al. (2011) and Hyde (2005) are of profound import given beliefs in gender differences are often used to justify the devaluation and exclusion of groups deemed inferior (Marecek, 1995; Shields, 2008; Stewart & McDermott, 2004; Unger, 1983).

Lastly, we cannot overstate the importance of reporting on context. As one example, given Greenfield's theory of social change, we urge researchers to adopt a standard practice of disclosing year(s) of data collection. We plan to adopt this practice moving forward with our own research. Time of data collection is especially critical to report given the lag between data collection and publication date. Researchers who study cohort effects appreciate the temporality

of experience; All scientists could learn from such an approach. Feminist psychologists, for example, could imagine the #MeToo movement, the U.S.'s legalization of same-sex marriage, the rise of the Black Lives Matter movement, and the COVID-19 pandemic as moments that will signify shifts in people's thoughts, feelings, and behaviors. By reporting year(s) of data collection, researchers and consumers of research can properly situate findings in a *pre-* and *post-event* format. We elaborate on best reporting practices in the next section.

Promote Disclosure and Transparent Reporting

Reporting standards lack consistency. Though there are researcher degrees of freedom in the writing process, the extent to which methodological and analytical details are disclosed (e.g., sample characteristics, recruitment strategies, procedures, measures, statistical tests) vary and thus can contribute to lackluster contextualizing that is necessary for truly feminist and open research. Most scientists would agree that open and transparent reporting is a shared value (Nosek et al., 2015); To promote honest and accurate reporting of research, researchers should consider standardized statements about transparency and generalizability (e.g., Gernsbacher, 2018; Simons et al., 2017).

Some journals require modest versions of transparency statements (e.g., "We report all conditions and measures"), but such a practice reflects the bare minimum of what should be required for the sake of transparency. We encourage researchers to adopt detailed transparency statements in feminist psychology and in psychology more broadly. The more often researchers include these statements, the more normalized and expected transparency will become. Statements of transparency can be used as a commitment to faithful reporting as well as a way to identify the availability of supplemental material (Gernsbacher, 2018). For example, a thorough transparency statement could confirm which aspects of the study design and materials are included in the current manuscript, whether data are part of a larger project, a commitment to sharing materials with others, and whether supplemental materials exist and how they can be accessed. Sometimes supplemental material can be hosted through journals'

online platforms, but an easier solution for access and storage exists on the open science framework (OSF) repository (<https://osf.io/>). Though often associated with tracking workflow and data availability, the OSF repository has multiple functions and allows any researcher to create a free account for storing and organizing project materials. At the researcher's discretion, they can create a link to the relevant project materials and include it in publications.

Simons and colleagues (2017) offer another compelling suggestion: the inclusion of an explicit reflection on the constraints of generalizability for published findings. A "Constraints on Generality" (COG) statement, to be added to a general discussion section, "defines the scope of the conclusions that are justified by your data" (Simons et al., 2017, p. 3). Ideally, researchers already report on COG throughout discussion of their work; however, a deliberate effort to identify a COG section in one's writing symbolizes a commitment to generalizability discourse and respect for contextual factors. COG statements should address sample representation, materials, design and procedures, and historical and temporal specificity (see examples provided by Simons et al., 2017). A COG statement, as originally proposed by Simons and colleagues, formally acknowledges potential constraints and thus will facilitate the success of future researchers (e.g., in conceptual replications). We also infer that COG statements will help researchers to avoid decontextualizing participants and the research process by engaging in a more reflexive, feminist version of research (a point we return to in a later section). We encourage reviewers and editors to request COG statements, and we hope that editors will advocate for less restrictive word or page limits that could interfere with researchers' capacity to include the information required for producing good feminist and open scholarship.

In light of the need to contextualize, disclose, and reflect on generalizability, we brazenly welcome a more complicated literature that allows for consumers of research to evaluate all the evidence available—not just what researchers choose to make available. It is time for researchers, including feminist psychologists, to retire the pretense that studies are definitive and that a simple or clean "story" in journal articles presents the most accurate story.

Transparent research requires reporting weaknesses and engaging in self-correction (Gernsbacher, 2018; Nosek et al., 2015), which may cast doubt upon prevailing wisdom and complicate the “story’s” plot. Though some feminist psychologists are exemplars in this arena—for example, Bowleg (2008) provided an outstanding model for others to follow for revisiting data to assess their flaws in previous theory and methods—we surmise that all areas of psychology, including feminist psychology, still have a long way to go. To foster transparent reporting, we must create space for a feminist psychology in which null and significant and surprising and unsurprising results have equal chance of publication to challenge publication gatekeeping in favor of significant results and to lessen the growing file drawer problem (i.e., failure to publish studies that do not “work”). The availability of knowledge should not depend on the shininess of results “but on the soundness of our ideas and the competence of our execution” (Gernsbacher, 2018, p. 405); thus, results should not be grounds for rejection in our journals nor should they elicit feelings of failure among early career researchers. Allowing for a more truthful and vulnerable literature will encourage authors to avoid oversold and overgeneralized claims and, ultimately, will help researchers to situate all results in their current contexts.

Representation: Who Is Included in Research?

To provide a reasonable assessment of generalizability, researchers also must be transparent in reporting an important aspect of sampling procedures: representation. Second-wave feminists advocated for science reform that was once deemed radical: The recommendation that researchers include more than just able-bodied White men in clinical trials and disease profiles (Fine, 2018). Feminist scholars and activists argued that using only one group of people as participants (i.e., able-bodied White men) to determine *everyone’s* physical health was not only unfair, but inaccurate, in that knowledge about diseases and treatments were carelessly and dangerously applied to other populations (Fine, 2018; Nichols, 2000). We would hope that most of today’s scientists accept that representative sampling in clinical trials is good and ethical science, yet issues of representation, androcentrism, and ethnocentrism still

remain in psychology (e.g., Bailey et al., 2019; Purdie-Vaughn & Eibach, 2008; Thalmayer et al., 2020). While representation is just and fair, what feminist scientists have understood is that representation is not merely for the sake of inclusivity and diversity, but also is good research practice. Relying on homogenous and dominant group sampling (e.g., White people, men, college students) negatively impacts the reliability and validity of results.

Generally speaking, psychological researchers have drawn upon the acronym WEIRD to critique the field's overreliance on Western, Educated, Industrialized, Rich, and Democratic samples and the tendency to overgeneralize findings from such a narrow population (Cheon et al., 2020; Henrich et al., 2010; Thalmayer et al., 2020). Though most psychological studies use WEIRD samples, WEIRD people only comprise 12% of the world's population (Rad et al., 2018; Thalmayer et al., 2020). WEIRD samples also differ from other populations on both basic processes (e.g., visual perception) and behavioral processes (e.g., cooperation), leading Henrich and colleagues (2010) to suggest that WEIRD samples are essentially outliers of the human population. Linking concepts of representation and generalization, Rad et al. (2018) concluded that "concerns about diversity are, at their core, concerns about producing generalizable knowledge" (p. 11401).

In a coding project of 5,000+ published articles, Cheon et al. (2020) found that WEIRD sampling was less likely to be noted in titles of articles, suggesting that findings from WEIRD samples are presumed to be representative or generalizable. In contrast, research conducted with non-WEIRD samples often reflect qualification and specification in titling practices because they may be perceived as more culturally-bound. For example, a title might only specify the cultural context when the research occurs outside of WEIRD populations, such as "Moral Decision Making Tasks *in India*." A similar pattern can be found in reporting race of participants such that "White" and "men" are more likely to go unstated as sample characteristics than those of racial and gender groups whose psychological experiences are less visible or implied to be more "specialized" (e.g., Black women; Cundiff, 2012; Purdie-Vaughns & Eibach, 2008).

Further, 72% of the abstracts published in *Psychological Science* contained no information about sampling characteristics (Rad et al., 2018), 73% of premier psychological research articles between the years of 2015 and 2016 did not mention race of participants (Roberts et al., 2020), only 5% of articles in a social psychology outlet (*Journal of Personality and Social Psychology*) used samples of predominantly racial/ethnic minority participants and only 30% used non-students (Thalmayer et al., 2020), and reviews of published studies over a 35-year period revealed that lesbian and gay people were included in less than 2% of psychological research (see Lee & Crawford, 2012). This evidence begets the longstanding question: for whom is psychology, and how should we broaden its applicability?

Look for What (or Who) is Left Out

Open science advocates concerned with WEIRD sampling should capitalize on the work conducted by feminist scholars to address this issue. We are most inspired by the simplicity of Stewart's (1998) call to "look for what is left out" as a feminist task within psychological research. That is, a core tenet of feminist scholarship involves critically examining representation. To critique representation through an intersectional lens, Cole (2009) recommends explicitly and specifically naming who is included and excluded in samples—a practice that should be customary, yet 25% of journal articles lack any reporting on race/ethnicity for example (Thalmayer et al., 2020). Other feminist researchers call for transparent justification as to *why* researchers decided to rely on the samples that they did (McCormick-Huhn et al., 2019; Warner, 2008). We suspect that the uptake of these basic recommendations may help researchers to reflect on their methodological limitations with sampling and to think more carefully about generalizations.

What psychology knows about women, for example, relies on samples of young, White, presumably heterosexual women at large universities. Researchers less familiar with intersectionality theory will be less attuned to how these specific positions of "women" influence the results derived from their samples. Syed and Kathawalla (2021) provide a similar critique of

WEIRD samples, wherein they problematize how the “White” of WEIRD is left unnamed and uncriticized. One could extend this feminist and intersectional critique of who is represented within WEIRD to other identities and statuses, including heterosexual or cisgender characteristics of samples. Broadening sample representation to include non-WEIRD, people of color, queer people, and/or gender diverse people is important for knowledge production. Feminist researchers propose that the representation of marginalized perspectives contributes to a more accurate and well-rounded account of the world (Cole, 2009; Fine, 2018; Fine & Gordon, 1989; Sprague, 2005). Standpoint theory (Harding, 2004) posits that, rather than objective and removed, knowledge is subjective, partial, and situated as it is informed by individuals’ social locations (e.g., gender, socioeconomic status). Therefore, marginalized groups may have access to knowledge that is inaccessible to dominant (or privileged) groups by virtue of their respective positionalities. By centering marginalized groups and valuing their experiences in the research process, psychologists not only diversify sources of knowledge but also avoid casting marginalized groups as deviant spin-offs of dominant groups or the “effects to be explained” (e.g., as done in traditional “differences” research; Cole, 2009; McClelland & Dutcher, 2016). Ultimately, feminist scholars have a rich history of challenging and politicizing whose experiences are acceptable to represent “the whole,” and we invite all researchers to review feminist texts that could further facilitate their understanding of sampling biases and how they pervade the scientific record.

Address What (or Who) is Left Out

Toward remedying who has been left out, feminist scientists discourage the “add women and stir” approach that is often propounded in advocacy for reformative research practices. Add women and stir refers to when women—or any marginalized group—are added to an existing framework without substantial consideration. For instance, Rad et al. (2018) suggested editors mandate 50% of journal articles incorporate non-WEIRD samples and require authors to

analyze potential moderating effects of demographic variables (e.g., gender). Though these recommendations seem well-intentioned, this approach to diversifying representation falls short.

First, the basic broadening of sample demographics does not change the questions being asked, and historically, the only questions posed by researchers are the ones deemed important by a privileged and dominant standpoint (Harding, 1987; Wyer, 2018). Mere numerical representation of marginalized populations—non-WEIRD or not—will not automate a radical shift in science because it does very little to promote the paradigm shifts required for building an inclusive and intersectional psychology (for review, see McCormick-Huhn et al., 2019). In a research context, meaningful representation requires contextualization and consideration of structural inequality (Cole, 2009; McCormick-Huhn et al., 2019). For example, Fine and Gordon (1989) described working as crisis counselors with a rape victim who refused to report to the police or confide in family. Without contextualizing the institutionalized sexism surrounding this woman's experience, the researchers may have interpreted her behavior as an individual deficiency of "helplessness" (i.e., she refused available resources to help herself). Fine and Gordon (1989), however, interpreted her response as logical given police and family are unlikely to believe survivors in light of motivations to uphold patriarchy. As demonstrated in this example, Fine and Gordon's expertise in understanding power and systems of oppression benefitted their interpretation of results. Thinking about inequality and context are what can prevent scientists from misrepresenting marginalized groups as dysfunctional, powerless, or deviant. Simply "adding" marginalized groups into a study design does not guarantee that researchers are properly equipped to interpret and contextualize the results.

Second, feminist scholars assert that representation extends to the inclusion of marginalized researchers and researchers skilled in studying marginalized topics (e.g., Alcoff; 1991; Collins, 1986; Settles et al., 2019, 2020). Due to differing standpoints, marginalized researchers may pursue scientific questions that are either completely overlooked by dominant perspectives (e.g., when researchers reproduce heterosexist biases in research; McClelland &

Dutcher, 2016) or have been deemed unimportant by dominant groups (e.g., when examining sociopolitical questions of oppression; Harding, 1987). Rad et al. (2018) suggested advocating for representation of non-WEIRD and marginalized researchers—not just samples. The open science movement has been criticized for the lack of representation of marginalized researchers (e.g., being referred to as “broken science”; Bahlai et al., 2019; Murphy et al., 2020; Whitaker & Guest, 2020). Though open science advocates purport anyone can engage in open science practices, the movement is, paradoxically, not open to everyone. There are costly financial barriers (e.g., fees for publishing in open-access journals) and social barriers (e.g., open-access journals holding less importance in tenure reviews) to open science that disproportionally affect early career researchers, White women, and people of color (Bahlai et al., 2019). As we advocate for the representation of researchers (and not just participants) in science, we must work toward the removal of these barriers. Until obstacles to open science strategies are eliminated, Bahlai et al. (2019) argue that engagement in open science— particularly on the part of marginalized researchers— should not be seen as “all or nothing,” rather, we should welcome marginalized scholars engaging in whichever degree of openness is appropriate for them (e.g., sharing code but not signing reviews).

The emphasis on some open science strategies, such as pre-registration and direct replication, can be at odds with some feminist epistemologies and thus further marginalize those who conduct marginalized (or feminist) research. For example, the process of rewarding badges to researchers on published journal articles that exhibit certain open science practices is implementing an achievement system that is not equitably accessed and may lead to further epistemic exclusion of already marginalized researchers (see Settles et al., 2020 for discussion of epistemic exclusion). The “Open Data” badge may be out of reach for qualitative researchers often working with sensitive, identifiable data, and the “Pre-Registered Hypotheses” badge may disadvantage those working with understudied populations, community partners (e.g., community advisory boards), or other forms of research that do not easily delineate a study’s

trajectory from the onset. Who identified which scientific practices should be rewarded and recognized? Where is the “Interdisciplinary Thought” badge or the “Diverse Sampling” badge or the “Reflexive” badge? The strategies that feminist researchers often use in pursuit of redressing representation issues lack acknowledgement and value within the new system of promoting open science practices.

Further supporting arguments for the inclusion of marginalized researchers, scientists conducting research on communities they do not belong to or do not have deep understanding of can be problematic (e.g., as evidenced by “Safari research” or temporary and superficial understandings of one’s research sample; Ashdown & Buck, 2018). For example, not all scientists are trained to do “diversity” work or have culturally-relative understanding of non-WEIRD populations (Syed & Kathawalla, 2021). It is therefore inappropriate to advocate for non-WEIRD sampling without also advocating for scientists who are trained to do that work and/or belong to the communities studied. Advancing the argument for representation beyond samples, Roberts et al. (2020) found that the more that White people were represented on a psychology journal’s editorial team, the fewer papers they published that explicitly mentioned race or prioritized racial minority participants. Roberts et al.’s (2020) findings demonstrate that who curates research has downstream effects for “...what and who is included in that research” (p. 9). We also second researchers’ calls for expanding formal curriculum in psychology to require diversity-focused courses in anthropology and multicultural psychology (Arnett, 2008; Thalmayer et al., 2020). Given our areas of expertise, we would add feminist psychology, ethnic minority psychology, and the psychology of sexual and gender diversity as courses that could enhance all psychologists’ aptitude for handling representation and contextualization.

Third, meaningful representation requires an examination of *similarities*, not just differences, between groups (Cole, 2009; Hyde, 2005; McClelland & Dutcher, 2016; Shields, 2008). This recommendation contrasts with advice within mainstream psychology to probe for conditional effects based on participant characteristics (e.g., identities; Rad et al., 2018). Testing

for demographic differences should be theoretically motivated, otherwise it may essentialize social groups and reproduce discriminatory science (Wyer, 2018). Both Cole (2009) and Syed and Kathawalla (2021) emphasize that searching for similarities allows scientists to reassess previous assumptions that demographic groups are fundamentally different from each other. Though currently underused in sexual and gender science, statistical approaches to appraise group similarities and equivalences are available, and have become more accessible in recent years with conceptual revitalization prompting the availability of relevant accessible overviews and open-source software (Ball et al., 2013; Sakaluk, 2019). Primary approaches to equivalence testing include the use of two one-sided tests (TOSTs)—an approach reliant on traditional null hypothesis significance testing (NHST) paradigms—and, beyond NHST approaches, the use of Bayes factors. TOSTs, in contrast to traditional null hypothesis testing paradigms which test only for the presence of effects, can substantiate the *absence* of a (meaningful) effect (Lakens et al., 2018). Within this approach, researchers can specify a range of trivial effect sizes (considered equivalent to the null) and perform two simultaneous one-sided significance tests to determine whether their observed effect is both larger than the lower limit and smaller than the upper limit of that range. If both tests are significant (i.e., both nulls are rejected), it can be concluded that the effect falls within the bounds of the posited trivial interval, thus establishing group similarity (Lakens et al., 2018; Sakaluk, 2019). Bayesian approaches similarly offer solutions to issues of equivalence testing. Bayes factors, or ratios of the likelihood of one specified hypothesis to the likelihood of an alternative hypothesis, describe the strength of evidence in support of both hypotheses (Jeffreys, 1935; Rouder et al., 2018; see also Sakaluk, 2019). This allows for direct quantification of the strength of evidence in support of a hypothesized trivial or null effect (e.g., van Ravenzwaaij, 2019). Overall, we recommend that probing for differences should *not* be mandated or even recommended as a best practice for representation or generalization, as it sets a precedent for the decontextualized gender-as-difference framework (Shields, 2008). However, the uptake of new analytical procedures may

be of use to feminist psychologists who remain interested in comparisons and are equipped to contextualize them not as individualized differences but as related to power or as byproducts of cultural, structural, and socialized processes.

Reflexivity: How Can Researchers Reflect on Who They Are?

The practice of thinking critically about who is included in scientific research also requires thinking critically about who the researcher is, another core principle of feminist research. Open science advocates have considered the effects of researchers' biases and motivations, such as motivated reasoning and career goals, on the research process (Nosek et al., 2012). Incentives to publish, the field's favoritism toward significant results, and personal beliefs about psychological theories have been identified as sources of bias (Bakker et al., 2012; Nosek et al., 2012). Consequently, open science advocates have promoted tools that allow for more transparency, such as pre-registered reports which disclose researcher's intentions prior to data analysis (i.e., similar to a two-part "proposal and "defense" model; Gernsbacher, 2018; Nosek et al., 2015; Nosek & Lakens, 2014). While these ideas are promising, they do not entirely foster the much-needed reflection by researchers to address their position in the research process. Feminist scholars can lend insight on reflecting on researchers' roles (e.g., Finlay, 2002). For decades, feminist scholars have discussed how researchers' biases, motivations, and biographies shape every part of the research process—from the research question to data analysis and interpretation (Collins, 1986; Finlay, 2002; Haraway, 1988; Harding, 1992; McClelland & Dutcher, 2016). Feminist researchers have established methods, such as *reflexivity*, to hold the researcher accountable to their biases and sociocultural positions. Moreover, reflexivity advances transparency as it promotes documenting researcher-based influences throughout the research process.

The open science movement is one that hopes to lessen or eliminate researcher fraud (e.g., data fabrication), questionable research practices (i.e., procedures that best serve the researcher's chance of publication), and replication failures (i.e., failures to duplicate results or

identify stable effects across studies). Clearly, the field of psychology should be ready to acknowledge that the people behind psychological science play a role in what can be gained from the research. We propose that feminist methods may prove useful as more researchers come to appreciate the researcher's role. Specifically, feminist psychologists could teach others about the importance of researcher accountability and analyzing the researcher's role.

Analyze and Document the Researcher's Positionality and Process

In the feminist practice of reflexivity, the researcher engages in critical reflection to develop self-awareness of their social location. They then draw upon this awareness to hold themselves accountable for their knowledge claims (Finlay, 2002; Hesse-Bibber & Piatelli, 2012; Stewart, 1998). Critical reflexivity goes beyond the simple disclosure of identity as it requires a thoughtful analysis of the researcher's identity, power dynamics between the researcher and participant, and the researcher's personal and scholarly position (e.g., pre-existing perspectives) in approaching the topic of study. The researcher identifies and acknowledges the influence of bias and power throughout all aspects of the research process, such as when determining authorship, identifying which research questions are theoretically and practically meaningful, and interpreting results (Hesse-Bibber & Piatelli, 2012). For example, Merrick (1999) reflected on the experience of being a White woman researcher investigating Black adolescent mothers' views on pregnancy. She found that analyzing her data without reflexivity produced thematic content that reflected what she personally believed to be important as opposed to what may have been important to participants. To be true to participants' own perspectives and meanings, Merrick reanalyzed the data using a critical reflexive approach to identify her bias, social position, and role in relation to participants. This approach centered the perspectives of the participants and thus better represented participant experiences in the write-up of the research. In sum, reflexive practices acknowledge how researcher subjectivity is relevant to the construction of knowledge (Alcoff, 1991; Harding, 1991; Levitt et al., 2020; Merrick, 1999).

Given the relevance of sociocultural location, effective reflexive practices require familiarity with standpoint and intersectionality theories to enrich researchers' understanding of how power operates within scientific knowledge production (Collins, 1986; Crenshaw, 1991; Haraway, 1988; Harding, 1992). Reflexive practices cultivate an awareness that each researcher occupies a social position from which they produce particular epistemologies about the world (Acker et al., 1983; Alcoff, 1991; Harding, 1992; Haraway, 1988; Rich, 1983). As one consequence, we can look to the reporting and titling practices previously reviewed, such that WEIRD and privileged (dominant) populations often remain unmarked and assumed in research, which reinforces the process of "othering" everyone else. Likewise, essentialism and beliefs in neutrality have construed some identities as seeming less neutral than others (Alcoff, 1991; Harding, 1992). Marginalized groups, as a result, are often casted as less neutral than dominant identities (e.g., men, White), and science conducted with and by marginalized groups may be perceived as biased, political, or subjective, and therefore less scientifically rigorous (Harding, 1992; Levitt et al., 2020; Settles et al., 2019, 2020). For example, queer faculty in STEM report that colleagues discredit their research and scientific aptitude, even reporting that others have claimed their data cannot be trusted because of their sexual orientation (Bilimoria & Stewart, 2009). Yet, there is no evidence that queer or other members of marginalized groups are any more likely to engage in fraud than other researchers. Indeed, a majority of psychologists admit to using at least one questionable research practice (e.g., only reporting results that "work" or hypothesizing after results are known; John et al., 2012). Because all researchers derive biases, politics, motivations, and interests from their social positions (Levitt et al., 2020), a reflexive research praxis rejects the epistemic exclusion of marginalized knowledge and marginalized researchers (Settles et al., 2019) by showcasing how all researchers approach their research through a unique vantage point and position (Fine, 2018).

There are also tools used in feminist qualitative research, such as member checking, that could be adapted for use by a broader range of psychologists. Member checking is a

validation technique that asks participants to confirm their responses and the researcher's interpretation of their responses. This process presents realistic challenges to those working with different types of data (e.g., large samples); however, there may be creative ways to incorporate a version of member checking into various research endeavors (e.g., randomly selecting participants for validation). The process would temporarily shift power within the research process from researcher to the researched, and also draw upon some of the strengths of community-based participatory research. Whereas generally researchers have more to gain from a successful study in the immediate sense (e.g., publication, career prestige), community-based participatory research and its accompanying reflexivity would position both the researcher and community participants as equal stakeholders in the production of research.

Another practical recommendation for engaging in reflexivity is to maintain a research journal to keep track of decisions, motivations, and thought processes throughout every step of the research process (Hesse-Biber & Piatelli, 2012; Merrick, 1999; Watt, 2007), similar to how central memo-making is to qualitative analyses. A research journal can serve as a tool to reflect on personal biases and one's own motivations and approaches to research questions (Merrick, 1999; Watt, 2007). A research journal can also contribute to reproducibility by providing a detailed account of the researcher's process. For example, a research journal can serve as a record and a place to explain decisions and deviations from protocol. There are other ways to document process, such as keeping meeting notes, using project management tools (e.g., Slack), or documenting workflow on the OSF repository. However, the journaling option likely yields a richer and more in-depth account of one's thoughts as they unfold. It is also important to consider reflexivity in documenting collaborations, including reflecting on power dynamics in collaboration, assessing one's citation practices (i.e., the gender and racial composition of researchers cited), and acknowledging contributions of authors. Reflexivity facilitates transparency and best practices for ethical collaboration.

Collaboration: Are Collaborative Goals Met Within Feminist Psychology?

Open science defines “good” science as a collaborative enterprise, and some notable projects within the open science movement signal an increasing appreciation for collaboration (e.g., multi-site replication efforts, resource sharing, data access; Chartier et al., 2018; Hesse, 2018; Klein et al., 2014). Collaboration is also central to feminist practice and the advancement of underrepresented groups in academia (Bagilhole & Goode, 2001; Murphy et al., 2020; Sagaria & Dickens, 1997), but there remains sensible opportunity for growth in this area among feminist psychologists. For example, collaboration in the future should build upon innovative technologies (GenderAction, 2019) that have been relatively absent in feminist psychology. Recent developments in the open science movement can be mined for insight into strengthening the state of collaboration within feminist science.

Advocate for Structural-Level Collaboration

Reimagining the structure of academic journals could promote high-level collaboration, thus suiting both feminist and open science goals. For example, some journals, such as *Frontiers*, have adopted a model of publishing reviews alongside the corresponding articles. These journals thus illustrate the collaborative process between reviewers/editors and authors which underlie published science but are typically hidden from public view. Publishing peer review could preserve useful aspects of scholarship and illuminate the evolution of thought within a field, as well as promoting more open and constructive, and less biased, interactions in the review process (Bravo et al., 2019; Polka et al., 2018). Opening the review process in some ways does not need to compromise the anonymity of the review process, and we do not recommend mandating de-anonymizing reviewers due to a number of valid concerns on behalf of those with relatively less power. Removing anonymity could discredit the reviews of early career researchers or, in the worst scenarios, provoke retaliation when providing reviews for the work of more senior scholars and invite biases based on race, gender, sexual orientation, career status, university prestige, nationality, and so on. Indeed, fear of retaliation is one social barrier preventing early career and marginalized researchers from engaging in the open science

movement (Bahlai et al., 2019). Another approach is to publish commentaries in response to original target articles, illustrating the conversational process of science as new knowledge enters the field and is embraced or challenged by peers. This process invites more voices to weigh in on evaluating research—ultimately distributing power in more equitable ways and creating a more open and collaborative space for dissemination.

Innovative models for journals make transparent the scientific processes which are often obscured and reveal the collaborative processes through which scientific contributions come to light. Feminist psychologists could adopt similar changes to increase transparency and high-level collaboration within their areas of study; They could also participate in these scientific conversations in mainstream psychology (e.g., writing commentaries) as a point of access for the infusion of feminist theory and methods into psychology more broadly.

In addition, a broad reframing of the production of knowledge to a more encompassing definition—one which would account for service contributions (to the field, to the improvement of science, and to social action)—could improve opportunities for collaboration by constructing networks around non-traditional outputs of productivity. Networks supporting and surrounding non-traditional outputs (e.g., scholar-activism) could serve as innovative sources of collaborative efforts in psychological science. For example, R-Ladies is a collaborative organization and global network for marginalized-gender individuals that provides mentorship and resources for learning R (Saia et al., 2020). There are teaching and service opportunities that have become open and collaborative as academics release free courses, modules, lectures, best practices for mentorship (e.g., laboratory manuals; syllabi), and other helpful resources on the internet (e.g., via OSF, Coursera). An increased network of scholarly connections can yield citable outputs and demonstrates the reimagining of collaboration in a way that both satisfies the goals of open science and provides greater community within feminist academic circles.

Innovative conceptualizations of collaboration could serve the goals of both feminist science and open science. Feminist scholarship often involves working closely with

marginalized populations and communities in pursuit of knowledge production and social change (e.g., Grzanka, 2018). Attempts to merge scholarship with activism often produce collaboration with participants (e.g., participatory action research, community engagement, and working *with* not *for* marginalized groups). Collaboration across these traditional axes of power in the researcher-participant relationship is also promoted in the open science movement. For example, some open science advocates emphasize the need to give back to participants as a form of public accountability and have suggested that stronger relationships between researchers and participants could encourage data donation and trust in science, allowing citizens to see themselves as engaging in science and contributing to public well-being (see Hesse, 2018). Another benefit of collaboration with participants and incentivizing such a practice may be the broadening of whose knowledge and which knowledge (e.g., experiential) matters. As a result, a more feminist epistemology may emerge, one that promotes the inclusion of knowledge and expertise that is socially situated, lived, and rooted in everyday experience (Harding, 2004; Smith, 1987).

Nurturing innovation and adopting new structural frameworks for science would promote collaboration at multiple levels. Given the feminist networks established for psychologists (e.g., American Psychological Association's Division 35 listserv, Association for Women in Psychology, Institute for Academic Feminist Psychologists, social media), feminist researchers could maximize these channels of communication to reimagine the possibilities for working together and within the journal system. We encourage feminist psychologists to organize for structural-level change that would foster greater collaboration in the review process, more collective productivity, and stronger engagement with their communities. We next review ideas for collaboration at a micro level.

Encourage Micro-Level Collaboration

If scientific career trajectories favor individualistic, masculinized styles of performance (Bagilhole & Goode, 2001; Yoder, 2018), is it possible for researchers to collaborate when

pursuing “independent” feminist research? We propose that feminist researchers should collaborate in unconventional ways to disrupt academia’s ego-centric, individualistic, and patriarchal nature. As an example of how early career scholars can work collaboratively on individual goals, two of the authors (MK and LP) united in pursuit of their dissertations. Though developing independent projects, MK and LP identified conceptual overlap and accompanying literature (e.g., related to theory and methods) that they reviewed together. Using a shared Slack and Dropbox, they made use of technological resources and shared interests to approach an often isolating experience (the dissertation process) with newly established infrastructure for support. Across academic institutions, we imagine that early career researchers similarly struggle between the need to meet individualistic milestones and the desire to connect with others in a critical and vulnerable career stage. Collaborating on individual goals in academia could be useful for early career researchers across some of the most challenging career stages: developing master’s theses and dissertations, creating job market materials, writing grants, and crafting tenure narratives.

We encourage researchers to “open” not only the products of science, but the early phases of research development. Whereas scholars recognize the advantages of collaboration for data collection, analysis, and publication, other scientific processes are needlessly left to the individual. The groundwork involved in research development (e.g., reviewing literature, developing research questions, designing studies) benefits from shared knowledge spaces like student-advisor relationships, laboratories, and seminars. Can we scale-up the advantages of local community for feminist psychologists? This is especially important given many feminist psychologists lack feminist accomplices at their institutions. Although MK and LP’s collaboration emerged at the same university, we believe that formalized collaboration processes could engage like-minded feminist psychologists from all parts of the world.

We also anticipate substantial benefits from a feminist version of a “have and need” tool. StudySwap has gained popularity as an online platform for researchers to share resources and

build connections by submitting brief posts about what they require and what they have to offer (Chartier et al., 2018). For example, a user could post that they have the capacity to run an external site follow-up study for another researcher. The possibilities are vast: researchers could identify who is looking for a (virtual) writing group, has specific expertise with a method or analytical technique, is available for collaboration, has access to recruitment mechanisms, has specific career advice, or has syllabi and engaging activities for undergraduate-level courses on psychology of gender. We realize this information exists to some extent—from Academic Twitter to Facebook groups to special interest listservs—but not everyone has been included in such spaces nor has the capacity to remain abreast of an inundation of resources scattered across various areas of the internet. Far too often, collaborations emerge because of who one knows. Informal networking as a pathway to opportunity inevitably excludes those most marginalized, which perpetuates a cycle of marginalization. The open science community has established new infrastructure for collaboration to emerge, and we believe that model could serve the needs of feminist psychologists while expanding who is included and given access to what the feminist psychology community has to offer.

We recognize that one barrier to collaboration may be competition—an artifact of the masculinized “game of science” that upholds individuals’ desire for collecting their own points and trophies (e.g., publications; Bakker et al., 2012). As posited by Bakker and colleagues (2012), the ambition of scientists does not always dovetail with the goals of science. That is, one goal of science may be to generate informed and inclusive knowledge, yet scientists are largely encouraged to produce and demonstrate independent research—recalling the singular, genius, (White male) scientist prototype (Chambers, 1983; Haynes, 2003). The typical model of science depends on solitary pursuit, only later opening one’s work to input by others in the review process. A framework that casts individual researchers as the players and their colleagues as judges and gatekeepers will exacerbate competition within the research community. For collaboration to succeed, non-competitive environments and interpersonal and institutional

models of care must be created (see a feminist manifesto of radical care posed by Dowler and colleagues, 2019). One way to reduce competition in the neoliberal academy is to emphasize shared values of the feminist collective. For example, as faculty, one of us (JM) intentionally constructed a research environment in which ideas blossom in shared projects, team-based writing assignments, and compassionately critical brainstorming sessions among graduate students. The graduate student authors (MK, FO, and LP) thrive in this non-competitive, teamwork-based environment and are keenly aware of how their workspace runs counterintuitively to “the game” of academia. In the open science community, we sense that the superordinate goal of building a more accessible science fostered greater collaboration efforts and lessened competition between individuals and laboratory groups. Feminist psychologists could likewise leverage highly valued goals, such as working toward a more intersectional psychology (McCormick-Huhn et al., 2019) to foster more frequent and sizable collaborations. This approach may simultaneously lend itself to embracing and encouraging interdisciplinary collaboration, often suggested in feminist scholars’ advice for engaging with intersectionality theory (Bowleg, 2008; Collins, 2000; Grzanka, 2018).

Collaboration is contagious, especially when collaborative values are modeled by people with relative power. Because the basic structure of academia does not incentivize caring for each other, responsibility for creating these environments indeed often falls upon advisors, laboratories, and cohorts. Care and community are critical to the resiliency and sustainability of feminist psychologists; thus, we find this extra work to be worthwhile. Together, it is up to the feminist psychology community to deprioritize the individualistic incentive system and practice collaborative values that we often preach.

Dissemination: How Should We Give Science Away?

Disseminating research in scholarly journals is widely considered the primary indicator of academic productivity (Lund, 2012; Nosek et al., 2012). Often taken as a quantifiable measure of success, this oversimplified notion of productivity mathematically accounts for quality and

impact through various metrics and heuristics (e.g., citation counts, H-indices, number of publications), but fails to critically examine the myriad meanings of quality and impact (e.g., who decides what constitutes “quality” work and what knowledge matters?; Hart & Metcalfe, 2010; McDermott, 1994). Put simply, traditional metrics of evaluating scholarly impact have never served marginalized researchers or marginalized topics very well, and those metrics do little to incentivize slower and more careful versions of research required for open science practices. Though a definitive fixture of the academic hierarchy, the position of journal publications (and particularly, the weight given to the quantity of those publications) has been challenged as the primary indicator of academic success by open science advocates and feminists alike.

Redress the “Publish or Perish” Culture

Some psychologists have called for structural change to publication and incentive systems because of their role in the replication crisis (Bakker et al., 2012; Nosek et al., 2015; Van Bavel et al., 2016). The disconnect between “what is good for scientists and what is good for science” produces a conflict of interest for scientists as individuals (Nosek et al., 2012, p. 616). In particular, the tension between individualized incentives for publishing (e.g., promotion and tenure) and scientific goals (e.g., accurate knowledge accumulation) can contribute to questionable research practices as scientists attempt to reconcile their career aspirations in a “publish or perish” framework (Bakker et al., 2012; Nosek et al., 2012). The pressure to build an outstanding publication record, in the context of publication bias that favors novel and positive results, harms the accuracy and quality of the scientific literature (Nosek et al., 2012, 2015).

Feminist scholars similarly call for structural changes to publication and incentive systems; however, feminist critiques of the publish or perish culture center on inequities within the academy (e.g., Bagilhole & Goode, 2001; Jones, 1992; Yoder, 2018). For example, the academic emphasis on publication constrains feminist attention to *within* the academy, limiting activism and political work directed toward empowerment and social change *outside* of the academy (e.g., Romero, 2000; Yoder, 2018). Notably, some research societies (e.g., Society for

the Improvement of Psychological Science, Association for Women in Psychology, Society for the Psychological Study of Social Issues) now offer awards to recognize contributions to psychological science beyond traditional outputs (e.g., research records, publications). These more expansive awards value various contributions including outreach, mentorship, policy, and community building. Though such innovations represent progress for recognizing a broader set of contributions, the larger evaluation system within academia (e.g., hiring, promotion, tenure) must simultaneously evolve to weigh these accomplishments as being of similar value as other types of productivity and contribution. If academics establish a greater balance of what is valued in the profession, it seems likely that both the publish or perish culture would be lessened and that feminist scholar-activists would gain deserved status for their various efforts toward enriching academic life (Richter et al., 2020). However, if more expansive awards are not valued within the existing system, they will have little disruption to the status quo that prioritizes and incentives growing expectations for publication productivity.

The individualistic imperative to publish poses a challenge to feminist practice within academia, as conforming to the publication pressure for academic success contributes to the maintenance of intellectual hegemony and the academic hierarchy (see Fox, 1985), thus contrasting with feminist goals of challenging patriarchal social institutions and systems of dominance (e.g., Fonow & Cook, 2005; Wilkinson, 1988). Feminist scholars have also noted how the publication obligation, in tandem with the marginalization of other activities in the academy (i.e., teaching, mentorship, activism, community outreach), ensures women's low status in the academic hierarchy as women are more likely to engage in communal activities of academic life (Lund, 2012; Yoder, 2018).

Though informed by different perspectives, open science advocates and feminist scholars both seek more equitable, rigorous, and just incentive processes to dismantle systemic power imbalances within academia. We thus have identified a unique opportunity within the open science movement for feminists to work toward common goals in restructuring

dissemination and establishing structures for opening science. Open science advocates recommend incentivizing transparent and open publication practices in order to rectify the current incentive system. As mentioned previously in pursuit of collaborative goals, one suggestion is extending citation standards to shared data, code, and materials so that transparency is rewarded (Nosek et al., 2015). A more radical recommendation seeks to de-incentivize publication by removing barriers to publication and thus trivializing the process. For example, by embracing public repositories for dissemination (e.g., pre-prints, working drafts, post-prints), researchers could retire the peer review process entirely or, perhaps more realistically, relegate it to an open forum for evaluating the merit of the work—a process that disempowers the gatekeepers of science (e.g., editors, senior and well-known scholars, publishers) and makes productivity less about “winning” publications for one’s career and more about getting good research into the world (Nosek & Bar-Anan, 2012; Nosek et al., 2012).

Similarly, feminist scholars have approached reforming the publication process (and the gendered consequences thereof) by challenging the traditional definition of dissemination of one’s work. Feminist researchers have advocated for expanded metrics of productivity and success which account for dissemination of work through non-traditional avenues (e.g., activism, practice, teaching) as well as dismantling the gatekeeping processes inherent in typical dissemination modes (e.g., by reviewers, academic presses) that produce power inequities (Hart & Metcalfe, 2010; Stanley, 1990). For example, feminists have tried to debias the publication process by asking publishers to reveal their commercial biases and reflect on their power as disseminators of discourse (Jones, 1992). Likewise, in the spirit of reflexivity, feminist researchers have encouraged authors to disclose their investments as a researcher that can highlight their motivations, even where not required (e.g., Stanley, 1990). The infusion of the feminist ethos into open science and vice versa provides actionable goals for reform.

Expand Access to Research

At the root of feminist concerns about journals is the understanding that alternative dissemination practices exist and, by engaging in the journal system, researchers reproduce hierarchical system of dominance and productivity which constitutes academe (Jones, 1992; see also Doane et al., 2017). As a solution, we encourage psychologists to broaden what counts as “giving psychology away” (Miller, 1969, p. 1071), for example crediting people’s engagement with social media, teaching efficacy, interviews with small and large networks (e.g., blogs, podcasts, community-specific news, mainstream news), community discussions, and participation in activism and advocacy. Alternative forms of dissemination beyond the journal system would share knowledge at various levels, including giving back to communities through activist efforts—a goal at the center of the scholar-activist model though underappreciated in universities’ evaluation processes (Richter et al., 2020). In a fair and just society, everyone deserves to have access to research conducted about their lives and interests; however, most of the information produced rests behind paywalls or websites requiring university log-in credentials. The involvement of feminist voices in the open access movement forwards scientific progress through the demystification of science and the dissemination of knowledge (and thus, power) beyond the academy (Doane et al., 2017; Harding, 1991). Feminists have long supported unrestricted access to knowledge as a tool for reducing disparities and providing people with information relevant to their lived experiences (e.g., Harding, 1991). The open provision of scientific information disrupts systems of power and control and would particularly benefit those historically prevented from accessing and contributing to institutionalized bodies of knowledge (Craig et al., 2011; Scherlen & Robinson, 2008). An alliance between feminist psychologists and open science advocates could thus serve to dismantle traditional power imbalances pertaining to the dissemination of scholarly knowledge.

Open access provides one path to achieving a more equitable and transparent science, and also advances feminist goals. Openness (of data, code, workflow, materials, and research products) may be the ultimate solution to issues of transparency surrounding research and the

publication process (e.g., Nosek et al., 2012). Openness publicly puts forth the scientific process, allowing for critique, collaboration, replication, further investigation, and overall scientific progress, increasing individual accountability and the potential for science to be self-correcting (Nosek & Bar-Anan, 2012; see also Nosek et al., 2012). Further, it makes scholarly literature freely available on the internet (Scherlen & Robinson, 2008) and may improve the quality of research reporting in the scientific literature. Perhaps knowing that one's work will be made available to the public eye may inspire researchers to become more thorough and candid notetakers, organizers, and reporters. However, from a feminist perspective of equity and inclusion, it is difficult to imagine how the current format of open access (e.g., including high fees to make a publication openly available) would serve those without external funding or significant institutional support. A feminist version of open access would require large-scale structural change to remove barriers to some of the opportunities in the name of open science.

Overall, an alliance between feminist scientists and open science advocates could prove fruitful for collaboratively achieving goals of de-incentivizing science for individuals and broadening who has access to science. By modifying the current publication and incentive systems and expanding the accessibility of science, feminist and open science practices can improve the accuracy of the scientific literature and its impact. We also imagine tensions in thought between open science advocates and feminist scholars as to how the ideal of openness in dissemination is achieved. Feminist researchers may take issue with open science strategies that create or reproduce inequities—highlighting the necessary, critical role of feminist perspectives in open science conversations.

Conclusion

The present review of how feminist psychology lends itself to a more critical and open science joins the choir of feminist psychologists who, over the past four decades, have touted the tools of feminist, intersectional scholarship for improving psychological science (e.g., Bowleg, 2008; Cole, 2009; Fine & Gordon, 1989; Grzanka, 2018; Marecek, 1995; McCormick-

Huhn et al., 2019; Roberts et al., 2016; Rutherford & Pettit, 2015; Stewart, 1998; Unger, 1983).

We hope that psychologists who are interested in open science but thus far have been inattentive to feminist discourses in science found this article to be most enlightening. With newfound awareness that feminist psychology has grappled with many of these same questions for decades, open science advocates can now build upon some key tenets of feminist theory and methodology in approaching a more inclusive, critical, and collaborative science. Likewise, we hope this review ignited new ideas and opportunities for psychologists who already engage with feminist approaches to psychological research but have not yet connected themselves to open science practices. We call for those engaging with open science and those engaging with feminist psychology—separately and together—to more fully enact values of transparency and openness. Conversation, collaboration, and resource-sharing between these parties would prompt further pursuit of these ideals. If there was ever a time to work together to transform the values and practices that guide the field of psychology, it is now while the field of psychology is reckoning with its limitations. We look forward to the overdue acknowledgement and contributions of feminist psychology in present and future calls for open science.

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Table 1*The Future of Best Practices for a Feminist, Open Science*

Theme	Recommendations	Examples of Application
Generalizability: What are the contextual boundaries of results?	<i>Contextualize research findings.</i> Consider sociohistorical and sociocultural contexts surrounding participants and results.	review feminist, intersectional, and qualitative canonical texts as a source for unpacking context; take caution when interpreting replication failures; seek interdisciplinary insights; report year of data collection
	<i>Promote disclosure and transparent reporting.</i> Adopt standardized practices for showing work and commit to honest reporting in building the scientific literature.	make supplemental material available; include statements of transparency; provide a constraints on generality statement; advocate for publishing null or indefinite results
Representation: Who is included in research?	<i>Look for what (or who) is left out.</i> Critically examine who is being studied to facilitate stronger understandings of representation and generalizability.	do not only report on sample characteristics, justify them; consider intersectionality and structural inequalities in interpreting results
	<i>Address what (or who) is left out.</i> Draw from feminist scholars' recommendations to remedy limitations of representation and to better position researchers to study marginalized populations.	avoid the "add and stir" method; include diversity education as a core requirement; advocate for marginalized research and researchers; acknowledge similarities (not only differences)
Reflexivity: How can researchers reflect on who they are?	<i>Analyze and document the researcher's positionality and process.</i> Identify one's role and power within the research process, and document how the researcher influences knowledge production given their own biases, motivations, and vantage points.	reflect on power relationships; maintain a research journal; review standpoint theory and intersectionality theory; avoid ascribing "neutrality" and "objectivity" to participants (and researchers) with privileged identities
Collaboration: Are collaborative goals met within feminist psychology?	<i>Advocate for structural-level collaboration.</i> Organize for change within the journal system and reframe knowledge production to credit a broader range of collaborative activities.	publish peer reviews and/or commentaries with target articles; credit non-traditional outputs of collaborative productivity (e.g., resources, service); collaborate with communities and participants

	<i>Encourage micro-level collaboration.</i> Create novel opportunities for collaboration and formalize feminist collaboration opportunities by leveraging technology.	reject individualistic, masculinized academic achievement expectations; capitalize on overlapping interests; identify “haves and needs;” build non-competitive environments; model collaborative norms
Dissemination: How should we give science away?	<i>Redress the “publish or perish” culture.</i> Change incentive systems that contribute to questionable research practices and widespread publication biases.	use public repositories for uploading articles beyond the journal system (e.g., pre-prints); deprioritize quantity of publications; expand metrics of productivity in academia (e.g., mentorship, service, activism)
	<i>Expand access to research.</i> Increase the accessibility of research in terms of data (if appropriate), materials, and research products.	make scholarly literature publicly available; broaden what counts as “giving psychology away” (e.g., social media use, community engagement, teaching)

Note. Themes are organized by order of appearance in the article, and the recommendations subsequently parallel subheadings within each section.