



EDITORIAL



Neuropsychopharmacology (NPP) 2020 report on gender balance among corresponding authors and reviewers: before and during the COVID-19 pandemic

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Neuropsychopharmacology (NPP), the official journal of the American College of Neuropsychopharmacology (ACNP), is committed to transparency in its efforts to promote diversity, equity, and inclusion (DEI) in all aspects of journal function. As part of this commitment, NPP has been tracking gender representation among corresponding authors of manuscript submissions and manuscript reviewers [1, 2]. We previously investigated whether the COVID-19 pandemic impacted gender balance among corresponding authors of NPP submissions from January to June 2020, marking the early onset of the pandemic, relative to the same periods in 2018 and 2019 [3]. We found that while the overall number of manuscript submissions increased during this period, there were no changes in the proportion of women compared to men submitting manuscripts as corresponding authors to NPP.

However, the COVID-19 pandemic had a sustained impact on preclinical and clinical research throughout 2020, requiring laboratories to pare down animal colonies, halt human participant studies, and creating unpredictable conditions for parents and caregivers that resulted in loss of productivity. To follow up on our previous report [3]—which reflects only the earliest stages of the pandemic—here we compare gender demographics among (1) corresponding authors on NPP manuscript submissions throughout the entirety of 2020 relative to 2017, 2018, and 2019, and (2) peer reviewers of manuscripts in 2020. To minimize bias in quantifying gender balance across thousands of submissions—and to create an efficient process making frequent analyses feasible in the future—we validated and utilized an existing analytical tool (Gender API) to identify gender based on first names. While Gender API results matched well with our manually performed online searches to identify gender [1–3], we recognize that these methodologies currently exclude non-binary gender identities. To address this methodological gap, we will outline processes that can be implemented to provide more inclusive analyses in the future.

Our analyses were restricted to manuscripts submitted to NPP from January 1, 2017, through December 31, 2020. To remove the influence of submissions that were commissioned by NPP editors—such as Research Highlights, Commentaries, and Hot Topics—only original (non-commissioned) research and review article submissions were included in the analysis. To identify corresponding authors' gender in a high-throughput manner, we utilized a freely available application programming interface called Gender API (<https://gender-api.com/>). Gender API determines gender using a set of samples of a given first name and computes an

accuracy score reflecting how frequently the name is associated with women and men. To validate this approach, we compared Gender API results to manually performed online searches that matched authors' first names to gender-specific pronouns or photographs on scholarly websites. On average, Gender API results aligned with the results of manual online searches for 91% of names in the 2019 dataset we used for validation. Nonetheless, to ensure accuracy in gender determination, we manually confirmed Gender API results associated with less than 75% accuracy for a given name. Since the number of reviewers for NPP manuscripts in 2020 was considerably smaller than the number of corresponding authors across the period of 2017–2020, it was feasible to use manual online searches to assess gender balance in the reviewer pool.

To examine the effect of the COVID-19 pandemic on gender balance among corresponding authors, a linear regression was used to compare the proportions of women and men authors submitting manuscripts in 2020 to those in 2017–2019 on a month-by-month basis. Variables used in the regression included gender (as a percentage), month, year, and all interaction terms.

We found that the total number of non-commissioned manuscript submissions to NPP increased by ~20% in 2020 (1399 submissions) relative to 2017 (1162), 2018 (1141), and 2019 (1179) (Fig. 1). These results are consistent with our prior report, which examined submissions between January and June 2020 [3]. There were no significant monthly trends in submissions across the 2017–2020 period ($P = 0.58$, Fig. 2A), suggesting general consistency in submission rates across the calendar year. To determine whether the increase in submissions in 2020 was driven by gender differences, we compared the proportion of women and men corresponding authors in 2020 to the average of these proportions across 2017–2019. Women represented 36.0% of corresponding authors in 2020, compared to 35.8% in 2019, 35.2% in 2018, and 35.0% in 2017 (Fig. 2B). Although the increase in corresponding authors identified as women in 2020 is small, when compared to the average of 2017–2019, this increase is statistically larger in women than in men (gender \times year interaction, $P = 0.013$; Fig. 3A).

We reported previously [2] that women represented 34.2%, 33.4%, and 38.4% of invited NPP reviewers in 2017, 2018, 2019, respectively. In 2020, 35.9% of invited reviewers were identified as women (Fig. 3B). In 2017–2019, 32.4%, 34.5%, and 38.0% (respectively) of the total number of NPP reviews were performed by women [2]. In 2020, 35.3% of the total number of NPP reviews were performed by women (Fig. 3B). These data indicate that in 2020 women received invitations to review and completed reviews in proportions that are consistent with prior years.

Our current analyses show that the number of NPP manuscript submissions increased by ~20% in 2020—a year defined by the

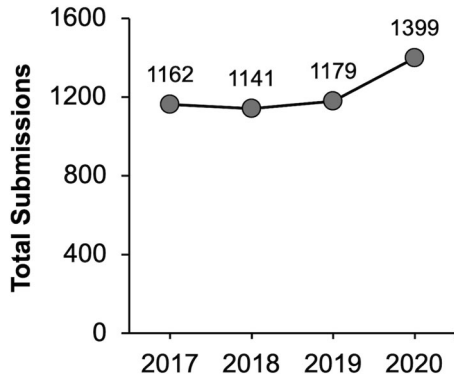


Fig. 1 Total number of unsolicited NPP submissions between 2017 and 2020.

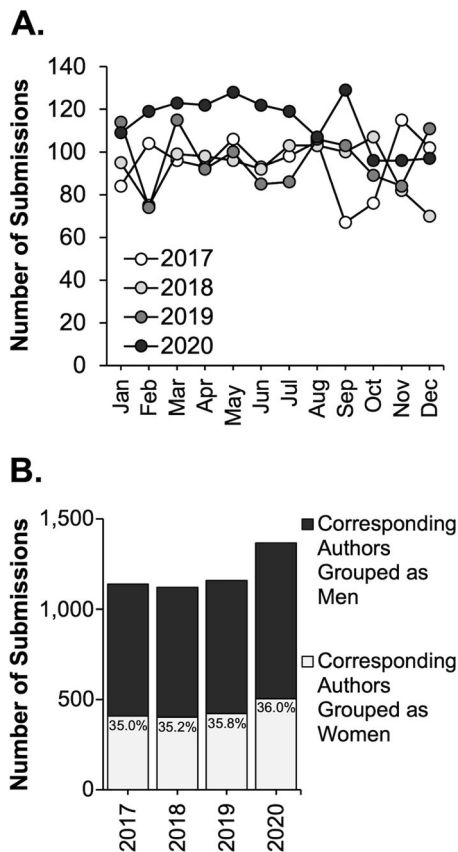
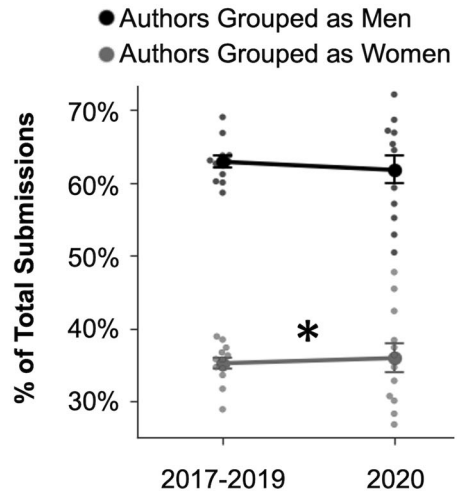


Fig. 2 Annual trends in manuscript submissions. A Month-by-month unsolicited submissions for 2017–2020. **B** Proportion of women and men submitting manuscripts to NPP as corresponding authors between 2017 and 2020.

onset of the COVID-19 pandemic—relative to the three prior years. This increase was associated with a modest (~1%) yet statistically significant increase in the proportion of women submitting manuscripts as corresponding authors relative to men. As such, the marked increase in NPP submissions in 2020 was, for the most part, driven by both women and men corresponding authors. It is unclear whether the slight increase in corresponding authors identified as women is directly related to the pandemic, or if it reflects a general upward trend in the representation of women in psychiatry- and neuroscience-related fields observed over the last decade [2]. However, the small effect size suggests that the pandemic did not cause major alterations in the trajectory of

A. Corresponding Authors



B. Reviewers

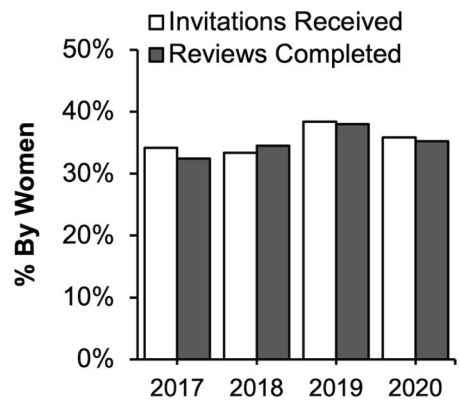


Fig. 3 Gender representation among corresponding authors and reviewers. A Comparison of the proportion of women and men corresponding authors on NPP submissions in 2020 vs. the average of these proportions in 2017–2019. Relative to 2017–2019, there was a small but statistically significant increase in the proportion of women corresponding authors in 2020 relative to men. * $P = 0.013$. **B** Proportion of review invitations received by women (white bars) and proportion of reviews submitted by women (gray bars) between 2017 and 2020.

patterns in submissions from women and men in 2020. Likewise, gender balance among peer reviewers in 2020 was similar to prior years. It is important to acknowledge that the percentages of women corresponding authors and reviewers still fall slightly short of biaswatch (<https://biaswatchneuro.com/>) estimates for the base rate of women in the field of biological psychiatry (40%), and that these patterns may change as the pandemic continues into 2022. At NPP, editors are encouraged to consider all dimensions of diversity when extending their initial round of reviewer invitations. We plan to issue these gender balance reports on a regular basis, as new data sets become available.


Unfortunately, these analyses excluded non-binary gender minorities since neither Gender API nor the manual online searches captured these identities in a way that would enable confidence in analyses. This shortcoming contributes to a major gap in our understanding of gender identity and representation among NPP authors and reviewers, as well as the broader neuroscience community [4]. Current journal policies do not enable the collection of more detailed author demographics,

reflecting an approach that was once intended to protect identities and mitigate discrimination and bias. Clearly, these policies require updating, and efforts to promote DEI have been implemented at ACNP and are being formulated at NPP in collaboration with our publisher. Moving forward, we are exploring approaches to include non-binary identities in analyses of gender demographics by implementing a self-report questionnaire that would allow authors to voluntarily opt into self-identifying their gender identity during manuscript submission. While NPP is committed to improving the visibility and representation of gender and sexual minorities, we recognize that proper tracking of gender identity and LGBTQ+ affiliation will always require thoughtfulness and circumspection [4]. A successful approach that tracks this information requires methodical online submission systems that preserve anonymity and maintain the trust of authors who disclose personal information. Crafting such systems that track gender identity and identify gaps in representation is essential for moving toward a more diverse, equitable, and inclusive community.

DISCLAIMER

This work was written as part of SH's official duties as a government employee, acting in the role of Editorial Intern at NPP. The views expressed in this editorial are the opinions of the authors and do not necessarily represent the views of the NIMH, NIH, or the United States Government.

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AUTHOR CONTRIBUTIONS

SH and CJJ analyzed the data. SH wrote the article. CJJ, WAC, and KM edited the article.

COMPETING INTERESTS

All authors have roles at NPP: SH is the Editorial Intern, KM is the Social Media Editor, WAC is the Principal Editor (i.e., Editor-in-Chief), and CJJ is the Special Projects Manager. None of the authors has any other disclosures relevant to this article.

ADDITIONAL INFORMATION

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