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Gender of Authors in the *Brazilian Journal of Behavior Analysis*

Gênero dos autores na Revista Brasileira de Análise do Comportamento

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Abstract

We examined publication records in the *Brazilian Journal of Behavior Analysis* from 2005 through 2020 to determine the participation of women and men as contributing authors. We assessed the following variables: authorship (in general), first authors, articles with at least one woman, articles with at least one man, articles with both men and women, single-author articles, and authors with more than 10 publications. We identified 281 articles, with a total of 732 listed authors. Women and men were listed as authors 361 (49%) and 368 (50%) times, respectively. Women accounted for 43% of articles as first authors, and 69% of articles listed at least one woman as an author. These data are discussed and compared to data from other behavior-analytic journals.

Keywords: Gender analysis, authorship, Brazilian Journal of Behavior Analysis.

Resumo

Examinamos o registro de publicação, de 2005 a 2020, do Revista Brasileira de Análise do Comportamento para determinar a participação de mulheres e homens como autores colaboradores. Foram avaliadas as seguintes variáveis: autoria (em geral), primeiros autores, artigos com pelo menos uma mulher, artigos com pelo menos um homem, artigos de ambos os sexos, artigos de autoria única e autores com mais de 10 publicações. Identificamos 281 artigos, com um total de 732 autores listados. Mulheres e homens foram listados como autores 361 (49%) e 368 (50%) vezes, respectivamente. As mulheres representaram 43% dos artigos como primeiros autores e 69% dos artigos listaram pelo menos uma mulher como autora. Esses dados são discutidos e comparados com dados de outros periódicos analíticos comportamentais.

Palavras-chave: Análise de gênero, autoria, Revista Brasileira de Análise do Comportamento.

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Behavior analysts have long been interested in gender issues and advocated for practices that support their successful participation in the discipline (e.g., Iwata & Lent, 1984; Laties, 1987; Li et al., 2018; McGee et al., 2004; Myers, 1993; Neef, 1993; Simon et al., 2007). Although B. F. Skinner founded the discipline and most of the prominent early behavior analysts were men, women have always played a critical role and their contributions have increased dramatically over time (Nosik & Grow, 2015). These trends are evident in a series of studies that reported the gender of authors of articles that were published in the *Journal of the Experimental Analysis of Behavior (JEAB)* and *Journal of Applied Behavior Analysis (JABA)* at different points in time (McSweeney et al., 2000; McSweeney & Swindell, 1998; Poling et al., 1983).

Most recently, Li et al. (2018) provided data from 2014 through mid-2017 for *JEAB*, *JABA*, and five additional behavior-analytic journals (*Behavior Analysis in Practice*, *Behavior Analysis: Research and Practice*, *The Psychological Record*, *The Analysis of Verbal Behavior*, and *The Behavior Analyst*) for which the gender of authors had not previously been examined. The authors reported that women accounted for 43% of author contributions across all journals and 42% of contributions as first authors. At least one woman author was listed for 67% of the articles. In comparing these data to previous findings (i.e., McSweeney et al., 2000; McSweeney & Swindell, 1998; Poling et al., 1983), as highlighted by Li et al. (2018), it is apparent that women's participation as authors has increased markedly over time. Notably, during the period examined by Li et al. (2018), women published a higher percentage of articles as first author than men in *The Analysis of Verbal Behavior* and *JABA* (57.6%).

The substantial participation of women in the journals that were examined by Li et al. (2018) is promising, but all of the journals they examined are headquartered in the United States. Behavior analysis, of course, is an international discipline with journals headquartered in several other countries. One of these journals is the *Mexican Journal of Behavior Analysis (MJBA)*. Curiel et al. (2020) recently provided an analysis of the gender of authors of articles that were published in *MJBA*. The authors analyzed the percentage of women and men as authors from its initial publication (in 1975) through 2018. The data showed that women accounted for an average of 35% of author contributions (regardless of authorship order) and 20% of articles as first author. Furthermore, 43% of the articles listed at least one woman as an author. Although the mean percentages were lower for women than for men, trends for woman authorship generally increased over time. These findings align with results that were reported for some journals that are published in the United States.

The *Brazilian Journal of Behavior Analysis (BJBA)*, like *MJBA*, is another important behavior-analytic journal that is headquartered outside the United States. The journal publishes a variety of articles that address multiple aspects of behavior analysis. The journal is described by its publisher in the following manner:

“The *Brazilian Journal of Behavior Analysis* is a biannual publication that aims to disseminate the analysis of behavior in Brazil and abroad, publishing original texts in Portuguese and in English in the forms of theoretical article, conceptual analysis, research report and brief research communication. The magazine also publishes articles that contribute to the preservation of the history of Behavior Analysis and Behaviorism and the translation of classic articles into Portuguese” (Periodicos UFPA, n.d.).

The journal has been published since 2005, but the gender proportion of its contributing authors (women and men) is unknown. Data from this journal may provide a substantial addition to our knowledge of the participation of women in behavior analysis. These types of studies are important because researchers and those in positions that are able to initiate change can analyze data, communicate findings using objective data, and make recommendations that foster gender equality when they are warranted. The purpose, therefore, of the present study was to examine the gender of authors of articles that were published in *BJBA* from 2005 through 2020.

Method

We examined all articles in *BJBA* from 2005 to 2020, spanning its entire publication record. Data from each article were collected from the journal's online archive (<https://periodicos.ufpa.br/index/php/rebac>). We extracted the authors' names and order of authorship from each article. From these data, we determined and coded each author's perceived gender—woman or man—based on their first and last name (cf., Curiel et al., 2020; Gravina et al., 2019; Li et al., 2018; McSweeney & Swindell, 1998; Nosik et al., 2018; Poling et al., 1983). We

then obtained and recorded the following data: number of articles, number of authors, number of women and men as authors, number of first-author articles by gender, number of articles with at least one woman or at least one man as an author, number of articles with at least one woman and one man as authors, and number of single-author publications.

The journal published reprints, translated articles, and joint publications. The published reprints were seminal behavior-analytic articles (i.e., Sidman & Tailby, 1982; Skinner, 1950) that were originally published in other journals and translated to Portuguese within this journal. These articles were excluded from the present analysis. The journal occasionally published original works in two languages (Portuguese and English), resulting in duplicate articles (see Jay Moore's Special Section in 2017, Vol. 13, No. 2). We only counted duplicate articles once. We excluded a total of 17 reprints or duplicate articles. Joint publications that were simultaneously published in *BJBA* and another journal were included in the present analysis (e.g., Sidman, 2005). Editorials, research articles, literature reviews, theoretical articles, remembrance articles, special sections, and joint publications were included in the analysis.

The count and percentage of authors by gender were not absolute counts because we counted the number of authors and their perceived gender as an independent count every time they appeared (see McGee et al., 2004). One author of the present study coded the data for each article. That author coded the perceived genders based on names that are common for women and names that are common for men (McSweeney & Swindell, 1998; Poling et al., 1983). If the coder was unfamiliar with the gender of an author or if the name did not suggest a specific gender, then the coder conducted internet searches on various platforms (e.g., university webpages, conference programs, LinkedIn, ResearchGate, and company profiles) to locate an image or description that indicated gender (see Li et al., 2018). If gender was not identified via these searches, then the coding author emailed and requested such information from the corresponding author that was listed in the author note of the article. The gender of three authors was not identified.

Interobserver agreement was conducted by the third author (a native Brazilian Portuguese-speaker). She coded 84 articles (30% of the total) that were selected randomly. The number of agreements was divided by the number of agreements and disagreements and multiplied by 100. Interobserver agreement was 99%.

Results

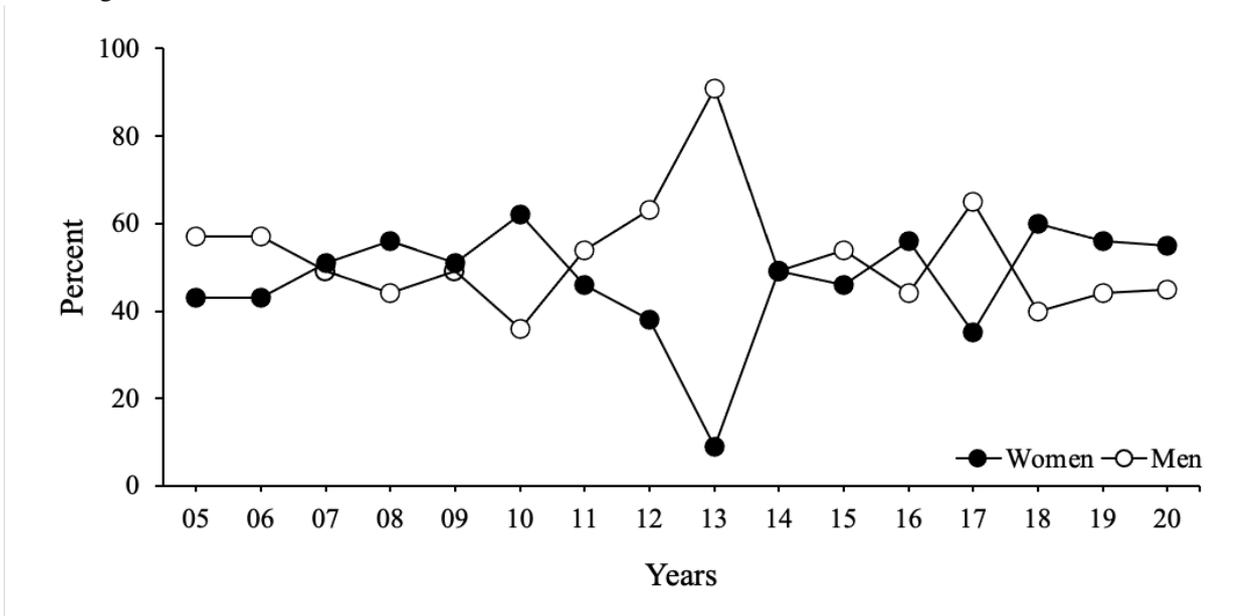
The *BJBA* has been publishing behavior-analytic research for 16 years. We identified 281 publications within this time span. The journal published an average of 17.5 articles per year (range, 10-24). There was a total of 732 authors listed across all articles. The gender of three authors was not identified.

The percentages of women and men as authors for each year from 2005 through 2020 are presented in Figure 1. The data were calculated by adding the total number of authors—for women and men separately—and dividing each gender's total by the total number of authors (women and men) and multiplying by 100¹. There was no clear trend in data across the 16 years. The data for both genders fluctuated, with minimal variability, around 50%, with the exception of 2013. The data for 2013 drastically differed from yearly percentages that preceded and followed that year. The journal published 17 articles in 2013, in which two women (9%) and 21 men (91%) appeared as authors. Overall, women accounted for 49% of authorship, and men accounted for 50% across all years. These percentages included any order of authorship (i.e., first, second, or third).

The percentage of articles that were first-authored by women and by men are presented in Figure 2. The data were calculated by adding the total number of articles first-authored by women and men separately and dividing each gender's total by the total number of articles and multiplying by 100. Women published 122 articles as first authors (43% of the total), averaging eight articles per year (range, 2-14). Men published 157 articles as first authors (56% of the total), averaging 10 articles per year (range, 6-15). There were notable differences in the percentage of first-author publications by gender in 2011, 2012, 2013, and 2017 relative to other years. In these four years, women published two (20% of the total), two (20%), two (12%), and four (21%) articles as first authors, respectively.

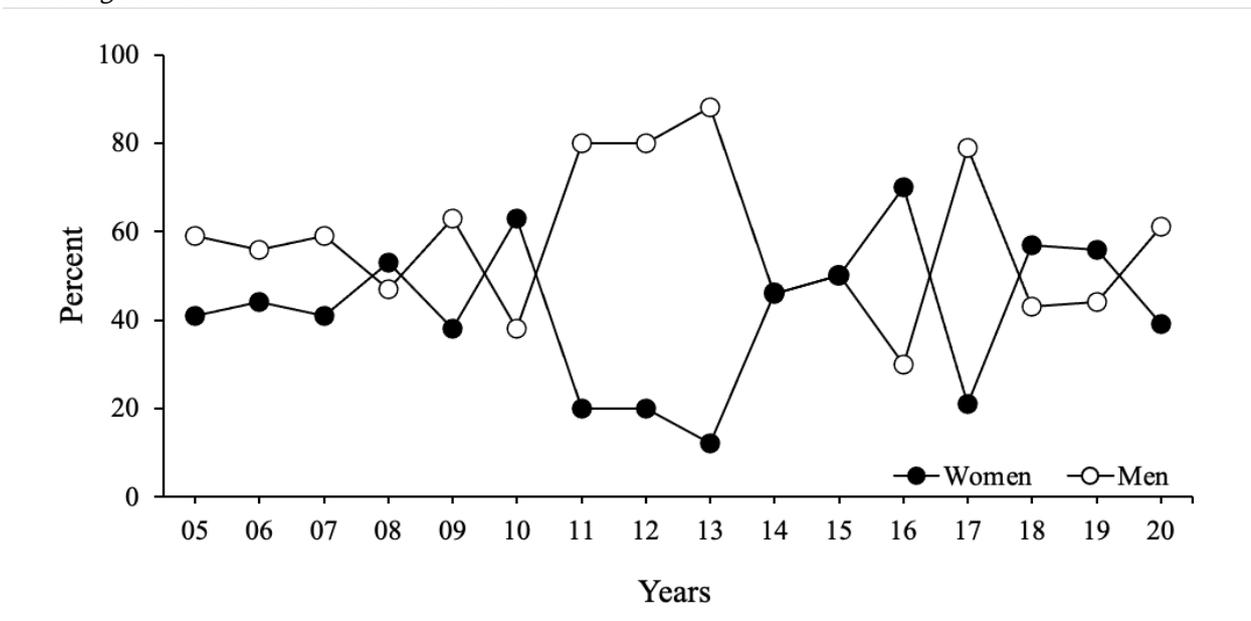
¹ The percentages were calculated using the total number of listed authors, which included three authors for which gender was not identified. The percentages, therefore, do not equal 100.

Figure 1
Percentage of women and men as authors



Note. The percentage of women and men as authors is depicted per year.

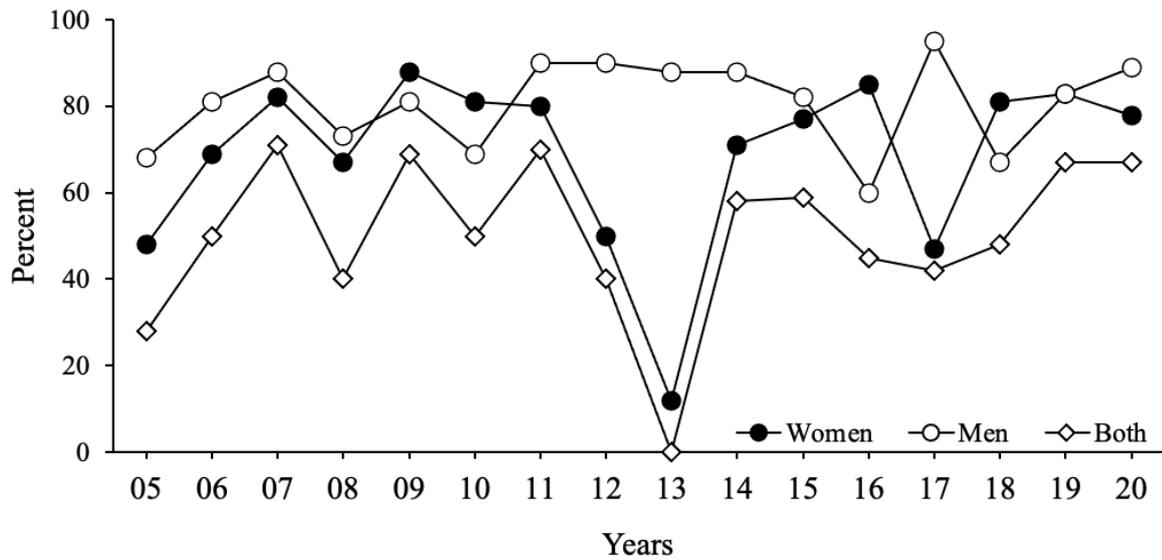
Figure 2
Percentage of women and men as first authors



Note. The percentage of women and men as first authors is depicted per year.

The percentages of articles with at least one woman, at least one man, and with both genders are presented in Figure 3. The total number of articles with at least one woman was divided by the total number of articles (281) and multiplied by 100, yielding a percentage across all publication years. The same was done for men and for both genders. Women were listed at least once, regardless of order, for 195 articles (69% of the total), and men were listed for 227 articles (81% of the total). There were 141 articles (50% of the total) that listed at least one woman and one man as authors.

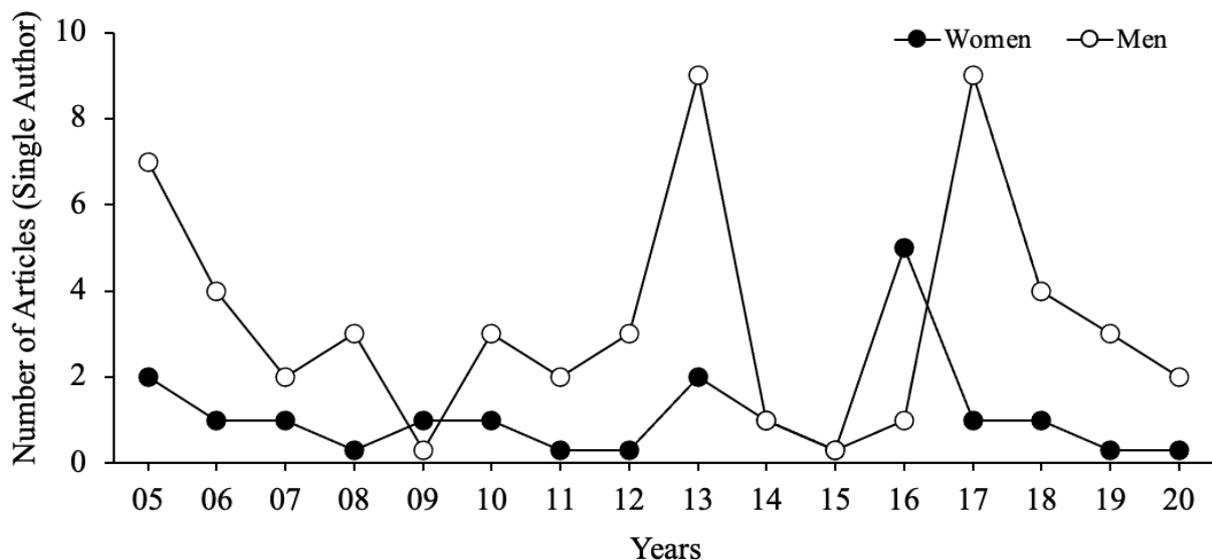
Figure 3
 Percentage of articles with at least one woman, at least one man, and both men and women as authors



Note. The percentage of articles with at least one woman, at least one man, and both women and men is depicted per year.

The journal published 69 articles with a single author, which accounted for 25% of all articles. Figure 4 presents the total number of single-author publications across years. Women published 16 articles as single authors (23% of the total number of such articles), with an average of one such publication (range, 0-5) per year. Men published 53 articles as single authors (77% of such articles), with an average of three such publications (range, 0-11) per year.

Figure 4
 Number of single-author articles



Note. The number of single-author articles by women and men is depicted per year

There were 437 individual contributing authors across the 281 publications. Of the 437 authors, we determined the absolute number of publications and identified seven authors with more than 10 articles. The authors

with the highest number of publications from 2005 through 2020 were the following: Deisy das Graças de Souza, Romariz da Silva Barros, João Cláudio Todorov, Elenice Seixas Hanna, Luiz Marcellino de Oliveira, Sebastião Sousa Almeida, and Maria Helena Leite Hunziker (see Table 1)².

Table 1
Authors with more than 10 publications

Author Name	Number of Published Articles
Deisy das Graças de Souza	24
Romariz da Silva Barros	23
João Cláudio Todorov	19
Elenice Seixas Hanna	14
Luiz Marcellino de Oliveira	12
Sebastião Sousa Almeida	12
Maria Helena Leite Hunziker	11

Discussion

We assessed the authorship of each article published in *BJBA*. Notably, the participation of women and men as authors was roughly equal, with no clear trend across time. For example, overall, women and men appeared as authors 361 and 368 times, respectively, and three of the seven authors with at least 10 publications were women. Our data highlight the important contributions of both genders to *BJBA*.

Our current understanding of gender participation and authorship in behavior analysis is based on previous studies that quantified authorship and gender. These types of analyses are important because they help researchers assess the status of women and men as authors and allow the detection of underrepresentation, overrepresentation, or equal representation. Poling et al. (1983), McSweeney and Swindell (1998), and McSweeney et al. (2000), for example, reported that women were underrepresented in *JEAB* and *JABA* as authors compared with men. Comparisons of data on authorship in general, first authorship, and editorship by McSweeney and Swindell (1998) and McSweeney et al. (2000) concluded that a “glass ceiling” was evident in *JEAB* and *JABA*. Their data showed that the percentage of women decreased as the role became more prestigious. That is, the percentages decreased from authorship in general, to first authorship, to editorial positions. In recent years, similar analyses have shown that women are no longer underrepresented as first authors in *JABA* (Kranak et al., 2020; Li et al., 2018), but they continue to be underrepresented in *JEAB* (Li et al., 2018). These types of analyses are also important because they help researchers make recommendations that may foster equitable behavior when inequities are present (see Poling et al., 1983; McSweeney et al., 2000; McSweeney & Swindell, 1998).

In the first study that examined the gender of authors of behavior-analytic articles, Poling et al. (1983) assessed women’s participation in *JABA* from 1968 through 1981. They analyzed the percentage of women as authors, regardless of order, and their data did not show an increasing trend for authorship. Conversely, their data showed an increasing trend for the percentage of first-author articles by women. McSweeney et al. (2000) then assessed women’s participation from 1978 through 1997. Their data showed an increasing trend for women as authors in *JABA*, increasing from 41 authors (from 1978 to 1982) to 88 authors (from 1993 to 1997). The average number of articles for which women appeared as first authors also increased from 14 to 24. Importantly, the trends moved toward a commensurate point, but women were still relatively underrepresented relative to men.

Although the aforementioned analyses preceded the inception of *BJBA*, the trends are important for understanding the participation of women from 1968 through 1997. Recently, two publications (Curiel et al., 2020; Li et al., 2018) provided data on similar variables and for overlapping years, allowing comparisons to *BJBA*. Compared to data from Li et al. (2018), data from *BJBA* were similar to *Behavior Analysis in Practice* (in terms of first authorship and articles that had at least one woman as an author), *The Psychological Record* (in terms of articles that had at least one woman as an author), and *The Analysis of Verbal Behavior* and *The Behavior Analyst* (in terms of articles that had at least one man as an author). These comparisons are based on the visual inspection of graphs because data were not reported for each variable and journal across similar spans of time (2014 to 2017).

When the data for *BJBA* were compared to *MJBA* from 2005 through 2018 (see Curiel et al., 2020), the overall percentage of women as authors differed by 6%. The percentage of authors who were women was approximately 40%

² The total counts include editorials.

and 46% for *MJBA* and *BJBA*, respectively. In terms of first authors, women accounted for an average of 41% of articles in *BJBA*, whereas the mean for women in *MJBA* was 34%. Lastly, 67% of articles listed at least one woman and 80% listed at least one man in *BJBA*, whereas at least one woman was listed in 63% of articles and at least one man was listed in 92% of articles in *MJBA*.

The percentages and trends in *BJBA* are different from other behavior-analytic journals, in that authorship has generally been similar for both genders since the journal's inception. Single-author articles appear to be the exception. Men have published more single-author articles than women for 12 of 16 years. Our data highlight these differences, but we are unsure why women are less likely to publish articles as sole authors.

Our study has some limitations. The data in Figures 1-4 are not based on the total number of individual authors. Instead, the data are based on the number of authors that are listed per article. Therefore, if a woman was listed as an author on 12 occasions, within or across years, then the total count for women and total count of authors (women and men) increased, respectively. For this reason, we reported a total of 732 authors listed across the 281 articles assessed herein, with a total of 437 individual contributing authors. Furthermore, we did not analyze the gender of authorship for last authors. Such data would further increase our understanding of authorship patterns for senior researchers, who are typically listed as last authors (see González-Álvarez & Cervera-Crespo, 2019; Kranak et al., 2020). Lastly, we used a gender binary approach to quantify authorship, which raises two issues. The gender of each author in *BJBA* was coded by the authors of the present study; thus, we reported the gender as perceived gender. That being the case, the coding system did not account for gender identity. We understand that this system is rudimentary, but such data are not readily available. Although challenging, surveying contributing authors to determine their gender identity may be an endeavor worth pursuing (see Curiel et al., 2020; Gravina et al., 2019).

Our recommendations for future research include assessing trends in the journal's editorial board, analyzing submission and acceptance rates as a function of the gender of submitting authors, analyzing publications by new and veteran authors, and determining the contribution of women and men to other behavior-analytic journals. Because membership on an editorial board is a relatively high-status position, gender representation on editorial boards of other behavior-analytic journals has been examined (see Gravina et al., 2019; Li et al., 2018; McSweeney et al., 2000; McSweeney & Swindell, 1998). Notably, the Associate Editors of *BJBA* were equally divided between women and men (10 of 20) at the time this article was prepared³, but we did not examine this variable for prior years. Publication submissions and acceptance rates have also been analyzed and recommended for analyses that deal with gender participation (see Iwata & Lent, 1984; Neef, 1993). Kranak et al. (2020) recently analyzed publication trends for new authors and veteran authors across variables (i.e., authorship, authorship order, and gender) for *JABA*; their approach could be applied to *BJBA*. Lastly, conducting similar analyses for the *European Journal of Behavior Analysis* and *Japanese Journal of Behavior Analysis* would provide information that would further allow us to determine the status of participation at an international level.

Declaration of Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Contribution of each author

All the authors are equally responsible for the article contents.

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