DISCUSSION AND REVIEW PAPER

Women in Behavior Analysis: A Review of the Literature

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Abstract

Women have played, and continue to play, an important role in behavior analysis. Their participation as authors of journal articles and as journal editors was first quantified in 1983 and has been the topic of several subsequent articles. Other articles have addressed other aspects of women's participation in the discipline, but no review of articles concerned with women in behavior analysis has appeared. The present review (a) describes articles that quantified the participation of women, (b) presents a novel data set providing an updated overview of women's participation in eight behavior-analytic journals, (c) reviews suggestions from prominent female behavior analysts, (d) discusses other topics that pertain to the participation of women, (e) presents data describing the gender of authors who have written about women in behavior analysis, and (f) makes suggestions for future research. Women's participation in behavior analysis has increased greatly over the past half-century. The articles we review clearly document that increase and may have contributed to it, although that contribution is speculative.

Keywords authors · behavior analysis · gender · editors · women

Sexism was rife when B. F. Skinner laid the foundation of behavior analysis in the 1930s and went largely unchallenged well into the 1960s. During this period, women were actively discouraged from participating in scientific endeavors and discriminated against when they tried to do so. Given this zeitgeist, it is unsurprising that, for many years, leadership roles in behavior analysis—and in fact, all roles—were almost exclusively played by men. For example, the *Handbook of Operant Behavior*, an influential volume edited by Werner Honig (1966), comprised 19 chapters with 21 authors, all men.

To borrow Bob Dylan's apt description, the times, they were a'changing in the 1960s. Change for the better was the goal of the women's rights movement, also called the women's second liberation movement. This "second wave" of feminism (Baxandall & Gordon, 2005) persisted for roughly two decades. The people responsible for it sought greater freedom and independence for women, particularly with respect to sexuality and reproductive rights. They also sought equal rights and opportunities in the workplace, in education, and elsewhere. Their efforts led to the passage of landmark legislation, in the form of Title IX of the Federal Education Amendments of 1972 (U.S. Department of Justice, 1972). Title IX, enforced by the Office of Civil Rights of the Department of Education, states that "no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance" (Department of Education, 2015, para. 1). Title IX made it much easier for women to attend and succeed in institutions of higher education (although barriers remained), which is a prerequisite for their becoming behavior analysts.

As behavior analysis, and in particular applied behavior analysis, expanded in the 1970s, an increasing number of women entered the discipline. This increase is evident in the authorship of another influential volume, *Handbook of Operant Behavior*, edited by Honig and John Staddon (1977). It comprised 22 chapters with 32 authors, 4 of whom were women—namely, Evelyn Satinoff, Patricia Blough, Evalyn Segal, and Robin Kanarac. Segal was the sole author of one chapter, and Satinoff was the first author of another, whereas Blough and Kanarac were contributing authors.

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Many of the female behavior analysts, and their like-minded male colleagues, supported the passage of the Equal Rights Amendment. In 1978, the Midwestern Association for Behavior Analysis (MABA) conference committee, led by Elsie Pinkston, decided to move the organization's annual convention from the city initially chosen, Chicago, to Dearborn, Michigan. The decision was made because Michigan, but not Illinois, had ratified the Equal Rights Amendment. MABA eventually became the Association for Behavior Analysis (ABA), which in turn became the Association for Behavior Analysis International (ABAI), the discipline's foremost professional organization.

MABA was headquartered at Western Michigan University, where students and faculty engaged in vigorous discussion of how women were, and how they should be, treated in the world at large and within the discipline of behavior analysis. Five female students and their male advisor eventually decided to collect some data relevant to the participation of women as behavior-analytic scholars and researchers. Their findings were published in what appears to be the first article addressing women in behavior analysis (Poling et al., 1983). In the ensuing years, more than 30 articles have considered some aspect of the topic. Contemporary behavior analysts are clearly interested in issues of diversity, equity, and inclusion, including women's issues, as evidenced by a recent special section (Nosik & Grow, 2015) and special issue (Volume 12, Issue 4) of *Behavior Analysis in Practice* (BAP) and the establishment of the Women in Behavior Analysis (WIBA) Conference (WIBA, 2017).

Given that interest, in the present article we review the data, analyses, and suggestions that have appeared in published articles concerned with women's involvement in behavior analysis. Although it is not consistent with American Psychological Association (2020) style, to inform readers of the gender of the behavior analysts whose work we are describing, we include first names when initially referring to individuals and use gendered pronouns.

Our coverage of articles is generally in chronological order, with articles divided into three broad topical areas: articles that quantified the participation of women, suggestions from prominent female behavior analysts, and other topics. To find relevant articles, we searched PsycInfo and Web of Science for all years through 2020 using "women" with "behavior analysis" and "gender" with "behavior analysis" as search terms and limiting our search to journal articles. We then examined the abstracts of articles revealed by the searchers. Articles listed in the reference section of each article selected in this fashion for inclusion were also examined for possible inclusion. We specifically excluded articles that dealt with the gender of participants (e.g., Rotta et al., 2020; Watkins et al., 2014). Although this is an important topic, it is complex and better handled separately. To keep the scope of the project manageable, we also excluded articles that dealt with general

issues of diversity, equity, and inclusion without a specific focus on gender. It is the case, however, that the challenges faced by women in behavior analysis overlap with those experienced by other historically disadvantaged groups. Moreover, strategies for addressing those challenges are likely to be broadly applicable, as discussed by Akpapuna et al. (2020).

We also present two novel data sets. One provides an updated overview of women's participation in eight behavior-analytic journals. The other describes the gender of authors who have written about women in behavior analysis. Finally, we offer suggestions for future research.

Articles Quantifying Participation: Women as Authors, Editors, and Conference Presenters

Figure 1 provides a timeline of articles that quantified and analyzed the participation of women in behavior analysis. Alan Poling et al. (1983) reported the proportion of empirical articles authored by women that appeared in the *Journal of the Experimental Analysis of Behavior* (JEAB) and the *Journal of Applied Behavior Analysis* (JABA) from 1958 to 1981 and 1968 to 1981, respectively. They also reported the proportion of ABA memberships held by women for the years 1980–1981 and 1981–1982 and invited addresses, symposia, and posters presented by women at the 1982 ABA convention. They found that women appeared as authors far less often than men in both JEAB and JABA, although women's participation increased over time. The proportion of women authors was greater for JABA than for JEAB. Women constituted 39% and 40% of ABA memberships from 1980 to 1981 and 1981 to 1982, respectively. However, fewer than 3 in 10 full memberships were held by women. At the 1982 ABA convention, women were listed as senior contributors for 14% of invited addresses, 30% of symposia, and 38% of poster presentations. Poling et al. proposed three strategies to increase women's involvement and success in behavior analysis: (a) making all manuscript reviews blind, (b) developing and maintaining groups that support women in behavior analysis, and (c) employing the principles of behavior analysis to design and evaluate programs that increase women's participation in behavior analysis.

Brian Iwata and Carol Lent (1984) provided data showing that, for JABA, female authorship during 1982 and 1983 was substantially higher than in the years considered by Poling et al. (1983). They also reported that, for 1982, articles submitted to JABA with female and male first authors had very similar acceptance rates (18.2% and 20%, respectively). They suggested that the similarity in acceptance rates argued against a need for blind review, a point that assumes that the overall quality of submissions is equivalent regardless of the gender
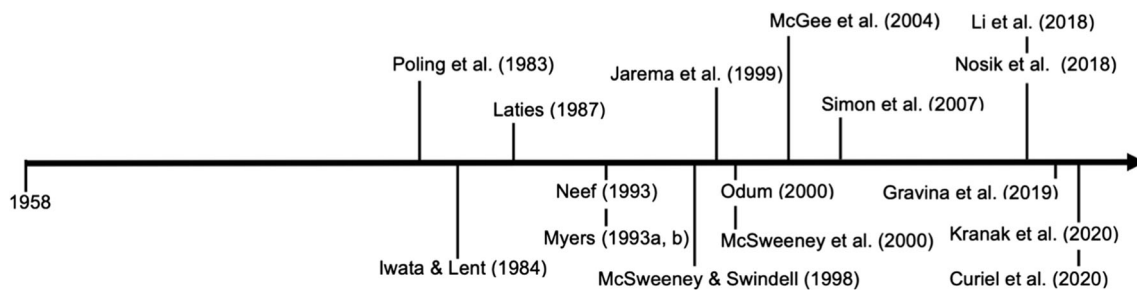
Fig. 1 Timeline of Studies Devoted to the Participation of Women in Behavior Analysis. *Note.* The studies (author, year) are depicted in chronological order from 1958 through 2020. The timeline begins in 1958, which was the inception of the *Journal of the Experimental Analysis of Behavior*

of the first author. Iwata and Lent suggested that women published less often in JABA than men because they submitted fewer articles to the journal, but they did not describe this as a concern.

Victor Laties published an article in 1987 that described the history of the Society for the Experimental Analysis of Behavior (SEAB)—specifically, the founding and editorial practices of JEAB and JABA, as well as the geographical distribution and gender of their editorial board members. Until 1970 and 1972, the editorial boards for JEAB and JABA, respectively, consisted of all males. In 1970, Barbara Ray joined the JEAB editorial board. Seven years later, Patricia Blough became JEAB's first female associate editor, with Evalyn Segal following suit in 1980 and Dianne McCarthy in 1987. JABA appointed its first female board members in 1972, those being Martha Bernal, Stephanie Stolz, Beth Sulzer-Azaroff, and Barbara Wasik. Within a year, Wasik became an associate editor. In the 15 years that followed, seven more women served as associate editors: Stolz, Sulzer-Azaroff, Emily Herbert-Jackson, Sandra Twardosz, Rosemary Nelson, Laura Schreibman, and Nancy Neef.

In explaining why few women were members of the JEAB editorial board, Laties (1987) posited, "The problem appears not one of achieving editorial slots on the journal, but rather in obtaining satisfactory academic jobs; several women who have been members of the editorial board have left psychology" (p. 504). Laties did not speculate on why there were few satisfactory academic jobs for women or indicate that the scarcity of such jobs was a problem. Gender was not, however, the primary focus of his article, so these omissions are understandable.

David Myers (1993b) described the participation of women and men in (a) the editorial process and publications of three behavior-analytic journals, (b) leadership positions in the ABA and the SEAB, and (c) the 1982 and 1991 ABA conventions. In all three areas, the relative involvement of women was lower than the percentage of ABA members who were women (31%) and the percentage of women in the general population (51%). Myers provided a detailed discussion of

several factors that may disadvantage women. He noted, "One factor is the traditional role of women in domestic partnerships: to be the primary homemaker and parent" (p. 82). He also discussed challenges women face due to job and economic discrimination and sexual harassment.

Myers (1993b) offered several suggestions for increasing women's participation in behavior analysis. The thrust of his message, which is strong support for women, is evident in the following passage:

A beginning is to listen to women about their experiences and follow their suggestions for change. We can state our policies and goals in writing, and pursue practices that promote these goals and punish violators. We must monitor our own behavior and that of our colleagues, and refuse to engage in, or allow others to engage in, harassment. We can forsake the "good ole boy" approach in choosing colleagues and voting, and commit to looking for viable female candidates. We need to be sure we are promoting opportunity and development for female students and professionals, including consideration for their multiple roles as homemakers, wives, and mothers. (p. 84)

It is noteworthy that Myers's suggestions focused on the need for men to change their behavior, at both the individual and cultural levels.

Later in 1993, Nancy Neef published a response to Myers's (1993b) article. She corroborated the underrepresentation of women in behavior analysis; however, she contested the source of the issue. That is, Neef pointed out that the comparison samples Myers referenced (i.e., women in the general population, women who are ABA members, and first authors who are women) were invalid representations of the available candidates in the relevant roles. Neef supported Iwata and Lent's (1984) proposition that the underrepresentation of women as authors in behavior analysis is most likely due to a low submission rate for that group. Like them, she did not describe this as a problem.

With respect to women members of the editorial board of JEAB, Neef (1993) argued that, in essence, women were treated fairly. She wrote,

Fewer women than men publish repeatedly, but of those who do, an equal or higher proportion of women (depending on the standard applied) assumes senior editorial positions. (It is also important to point out that not all women who have been offered senior editorial positions have accepted them, and, as often occurs with highly capable individuals, competing demands of other leadership responsibilities have been a factor.) Of those in senior editorial positions, a higher proportion of women (indeed, virtually all) has served on the SEAB Board of Directors. Thus, any apparent differences between the representation of men and women in editorial positions in behavior analysis seem to follow from sex differences in senior authorship of multiple publications, a finding that extends to other journals in the field of psychology. These differences are undoubtedly related to broader societal circumstances that are beyond the purview of our journals to address. (p. 358)

In considering Neef's (1993) historical remarks, or those of any other author, it is important to recognize that those remarks are dated and do not necessarily reflect an author's current views. The social and scientific environments in which behavior analysts discussed women's issues have changed dramatically over the years, and those changes may well have altered the behavior of individuals with a long history of working in the area. Past behavior is the best predictor of future behavior only in a static world. We believe and fervently hope that is true of our own.

Myers (1993a) replied to Neef's (1993) concerns, mostly addressing semantic differences. Myers continued to express dissatisfaction with the delays in appointing women to high-status positions in behavior analysis, stating that these delays cannot be reasonably attributed to the unavailability of qualified women.

Frances McSweeney and Samantha Swindell (1998) further explored the participation of women in the experimental analysis of behavior (EAB). They compared the percentage of articles authored by women in JEAB to the same measure for three similar journals (i.e., the *Journal of Experimental Psychology: Animal Behavior Processes*, *Animal Learning & Behavior*, and *Learning and Motivation*). They found that the percentage of articles with at least one female author, the percentage of authors who were female, and the percentage of articles with a female first author increased from 1978 to 1997, for all journals. JEAB had lower percentages for female participation than the other three journals across all measures. The percentage of females on JEAB's editorial board also failed to increase as rapidly as it did for the other journals.

McSweeney and Swindell (1998) observed that the degree of participation of women in JEAB activities decreased with the selectivity, and apparent status, of the activity, which they construed as evidence of a "glass ceiling." They wrote,

For example, from 1993 to 1997, 20.9%, 14.9%, and 12.7% of authors, first authors, and editorial board members, respectively, were female. These data are consistent with the idea that a "glass ceiling" is developing for the participation of women in the experimental analysis of behavior. That is, although women are participating more in the experimental analysis of behavior, their participation is largely confined to the lower levels of the profession. (p. 200)

McSweeney and Swindell (1998) viewed the glass ceiling as a problem and suggested a number of strategies for breaking it: (a) if aspiring graduate students are interested in publishing, they should choose their graduate programs and mentors carefully; (b) in addition to conducting blind reviews, editors should send articles written by female authors to female reviewers, when possible; (c) editors should self-monitor the gender of the authors to whom they issue invitations to publish; (d) editors should peruse objective lists of qualified authors when selecting for important positions (e.g., editorial board members, invited articles); (e) when considering authors for the aforementioned important positions, the gender of whom they have published with in the past should be considered; (f) formal records should be kept, noting the participation of women and other minorities in EAB; and (g) female authors should refrain from citing "unequal treatment" as an excuse for failure to publish.

Kimberly Jarema et al. (1999) evaluated every article published in the *Journal of Organizational Behavior Management* (JOBM) from 1977 through 1997 to determine trends in women's representation as authors and editorial board members. Organizational behavior management (OBM) has its roots in behavior analysis and remains relevant to it (Johnson et al., 2001), which is the reason for the inclusion of this and other OBM articles in our review. Over the time examined by Jarema et al., the percentage of articles with female first authors and the overall percentage of female authors increased from 7% to 43% and 10% to 33%, respectively. The percentage of female editorial board members increased from 7% to 11%.

In 2000, Amy Odum wrote a response to McSweeney and Swindell (1998), stating that their data were difficult to interpret because they did not report the variability in the mean data representing different individuals over time. Moreover, they did not include associate JEAB editors in their analysis of participation as a function of the selectivity of the activity. Odum found that when the median number of publications by female and male associate editors is considered, there is no evidence of a glass ceiling. She also reported that there was no difference in the median number of JEAB publications by female and male members of the editorial board, suggesting that similar criteria are applied to selecting board members, regardless of their gender.

Finally, Odum (2000) examined for 1996 to 1998 the acceptance rates for JEAB manuscripts with female and male submitting authors. She found no significant difference in the percentage of manuscripts accepted, with values of 40% and 45% for males and females, respectively. Odum defended JEAB's practices, writing,

> In summary, I did not find evidence in recent years of inequitable treatment of the work of women at *JEAB* either in the way that manuscripts are treated or in the choice of people for selective positions at the journal. (p. 282)

From her perspective, women were less involved in JEAB activities because they submitted fewer papers to the journal, due to broad features of the culture. Therefore, efforts at recruitment and retention are needed to increase women's participation in EAB.

Odum (2000) was critical of some aspects of McSweeney and Swindell's (1998) recommendation to arrange differential treatment for women, such as having women's submissions reviewed only by other women. She wrote,

> Frankly, I am concerned by the suggestion of McSweeney and Swindell (1998) that the work of women in the experimental analysis of behavior be evaluated by "special steps" (p. 201). To me, equitable treatment requires the work of men and women to be evaluated by the same criteria without regard for gender. I could find no compelling evidence to the contrary for *JEAB* in recent years, and therefore I see no reason to suggest changes to the review process. I fear any differential treatment, however well intended, could damage the morale of men and women in the field and jeopardize the integrity of the journal. (p. 283)

McSweeney et al. (2000) systematically replicated McSweeney and Swindell's (1998) analysis by examining the status of women in applied behavior analysis rather than in EAB. They compared the percentage of articles authored by women in JABA to the same measure for three similar journals (i.e., *Behavior Therapy*, *Behavior Modification*, and *Behaviour Research and Therapy*). McSweeney et al. found that the percentage of articles with at least one female author, the percentage of authors who were female, and the percentage of articles with a female first author increased from 1978 through 1997, for all journals. However, unlike JEAB, JABA displayed equal or greater percentages of female participants when compared to other journals.

McSweeney et al. (2000) reported that the percentage of females on editorial boards failed to increase over time for JABA, *Behavior Modification*, and *Behaviour Research and Therapy*. They concluded that a glass ceiling limited the participation of women at the highest levels of applied behavior analysis, as it did in EAB. They reviewed and advocated for the suggestions made by McSweeney and Swindell (1998) and Poling et al. (1983) for increasing the participation of women.

In 2004, Heather McGee et al. examined the participation of women in four journals (i.e., JOBM, the *Academy of Management Journal*, *Personnel Psychology*, and the *Journal of Applied Psychology*) devoted to OBM, from 1978 through 2000.

For each year, they reported (a) the percentage of articles with at least one female author, (b) the number of female authors, (c) the number of female first authors, (d) the number of female editorial board members, and (e) the number of female associate editors. They found that the percentages increased across all variables, for all four journals, with an especially dramatic increase in the number of female first authors. Increases were smaller for JOBM and *Personnel Psychology* relative to the other journals, specifically in the percentages of female editorial board members. McGee et al. (2004) stated, "In *JOBM*, the gender discrepancy may be due to differential publication rates of males and females" (p. 4). They proposed that policies regarding applied versus academic board members should be developed, and invitations should be extended, equally, to qualified males and females. Finally, they encouraged female students to accept academic appointments and work with female practitioners to publish in quality journals.

Jennifer Simon et al. (2007) looked at women's participation (i.e., relative to men's) at the annual meetings of the ABA, from 1975 through 2005. They reported three substantial findings: (a) the percentage of female presenters increased, across all formats (i.e., posters, symposia, invited events); (b) the percentage of female first authors increased; and (c) the percentage of females presenting in several specialty areas (e.g., autism, behavioral pharmacology, education) increased. Despite these increases, they noted that women were still often underrepresented relative to their membership, specifically in activities considered to be more prestigious (e.g., invited events). Moreover, women were underrepresented in specialty areas such as basic research and conceptual analysis, but overrepresented in applied work. Simon et al. encouraged leaders of institutions to distribute resources to counter the contingencies that have created these disparities and behavior analysts to use their science to develop, implement, and evaluate interventions that address gender inequity.

Melissa Nosik et al. (2018) conducted a detailed analysis of the participation of women in behavior analysis, looking specifically at age and career point to detect "progress that may be masked by overall patterns" (p. 213). Categories of analysis included professional recognition (e.g., awards or fellows), professional organization leadership (e.g., organizational president), invited presentation speakers, editorial board

appointments, publication trends, faculty hires, and Board Certified Behavior Analysts. They found that, relative to men, women were more represented in categories that typically occur early in a career (e.g., certification and faculty hires) and less represented in categories that typically occur later (e.g., ABAI fellow). Nonetheless, they acknowledged that substantial progress had been made in the participation of women in behavior analysis.

Anita Li et al. (2018) examined article authorship and editorial board membership for seven behavior-analytic journals (i.e., *The Analysis of Verbal Behavior* [TAVB], BAP, *Behavior Analysis: Research and Practice* [BARP], *The Behavior Analyst* [TBA], JABA, JEAB, and *The Psychological Record* [TPR]) from 2014 through 2017. They found that, compared to findings from prior years, women's participation had increased substantially and suggested that this increase should be celebrated. It is noteworthy that, for JABA and TAVB, there were more female than male first authors during 2014–2017. Moreover, the percentage of articles with at least one female author exceeded the percentage of articles with at least one male author for both JABA and TAVB.

Nicole Gravina et al. (2019) updated and extended the analysis of women's participation in JOBM. They examined (a) the percentage of female authors (i.e., overall); (b) the percentage of female first authors; (c) the percentage of females as the sole author; (d) the percentage of female authors in empirical articles; (e) collaborations between males only, females only, and both males and females; (f) the percentage of female members on the current editorial board; and (g) the percentage of female associate editors. They also determined the 10 most published women in JOBM (i.e., Alyce Dickinson, Ramona Houmanfar, Nicole Gravina, Alicia Alvero, Beth Sulzer-Azaroff, Florence D. DiGennaro Reed, Heather McGee, Judi Komaki, Barbara Bucklin, and Linda Hayes). Overall, they found that the participation of women in JOBM had increased steadily, across most measures. They encouraged readers to pay greater attention to increasing the participation of women and other underrepresented groups in behavior analysis.

In 2020, Michael Kranak et al. published an updated analysis of authorship trends in JABA. Although their focus was not solely on gender, they did report the percentage of women and men as first and senior authors. They found that there has been a substantial increase in the percentage of female authors across the last decade. In fact, in 2019, women made up 70% of first authors for articles published in JABA. The percentages of female senior authors (i.e., the supervisory member of the research team, frequently listed as the last author) were not as impressive, although in 4 of the last 6 years, there were more female senior authors than males. Kranak et al. stated that, considering their data, women appear to be well represented as authors in JABA; however, it is still unclear if they

are proportionally represented. Kranak et al. encouraged editorial boards to select reviewers carefully, as research suggests that reviewers' gender may influence article acceptance and the content of accepted articles (Lloyd, 1990).

Hugo Curiel et al. (2020) examined the *Mexican Journal of Behavior Analysis*. They examined the percentage of authors who were female, the percentage of publications with a female first author, the percentage of publications with at least one female author, and the percentage of articles with at least one male author. Overall, from 1975 through 2018, 33% of all authors were female. Over time, the percentage of female authors and female first authors increased. Curiel et al. stated, "It is interesting, and heartening, that the increase in women's participation as authors that is evident in English-language behavior-analytic journals housed in the United States is also evident in a bilingual, behavior-analytic journal housed in Mexico" (p. 217).

The series of studies just described provide compelling evidence that, historically, female behavior analysts have been underrepresented as authors relative to their representation in the population at large and in the discipline. Their relative participation typically decreased across the roles of any author, first author, and editor. The relative participation of men relative to women varied substantially across journals, with generally the highest representation of women in applied journals (e.g., JABA). The authors of many of the articles we reviewed made suggestions for increasing the participation of women, and it is noteworthy that, over the past 40 years, there has been a substantial overall increase in the relative number of female authors and editors in behavior-analytic journals. Their participation as conference presenters also has increased. Nonetheless, women are still underrepresented relative to their representation in the discipline.

Women's Participation: An Empirical Update

To provide further, and current, information about women's participation as authors and editors in behavior-analytic journals, we updated the analysis conducted by Li et al. (2018) to include the latter half of 2017 through 2020. This update includes data for JOBM, which were not included in Li et al.'s gender analysis. During this period, a total of 1,518 articles were published in BAP (295); BARP (117); JABA (353); JEAB (253); TAVB (56); TPR (193); *Perspectives of Behavior Science* (Perspectives on Behavior Science; 178), formally known as TBA; and JOBM (73). We recorded the gender of the first author and last author and the total number of authors who were women and who were men. We followed the procedures described by McSweeney and Swindell (1998) and designated authors or editorial board members as women or men based on their first names. When this procedure did not allow a person to be classified, we examined the pronouns

used in the publication's author information or ethics declaration page and/or conducted a Google search using the person's full name with their affiliation in sources like university or company webpages and social media (e.g., LinkedIn, ResearchGate). This procedure allowed all but 24 authors and all editors to be categorized. Authors who used *they*/*them* pronouns or considered themselves nonbinary were not classified as men or women but were included in the total author count. An independent rater scored 228 of the 1,518 total articles, selected at random. Interobserver agreement across the four dependent variables was 99.5% (ranging from 99.0% to 100.0% across categories).

Authorship data for each journal individually and mean values for all journals combined are depicted in Figure 2. The percentages of articles with a woman as first author ranged from 27.0% for PBS to 67.8% for BAP, with a mean value of 49.0%. BAP, JABA, and TAVB had higher percentages of female than male first authors. The percentages of articles with a woman as last author ranged from 20.6% for JEAB to 58.1% for JABA, with a mean across journals of 40.3%. The percentages of articles with at least one woman as an author ranged from 30.9% for PBS to 79.6% for JABA, with a mean across journals of 58.9%. Six journals (JEAB, JABA, BAP, BARP, PBS, and TPR) had a greater percentage of articles with at least one woman as an author than articles with at least one man as an author.

Table 1 shows the percentages of single-author articles by women and men. For women, these values ranged from 0.3% for JABA to 5.6% for PBS, with a mean of 2.7% across journals. In comparison, single-author values for men ranged from 2.0% for JABA to 33.1% for PBS, with a mean of 12.6% across journals. These results are comparable to those reported by Li et al. (2018), who found that men published over four times as many single-author articles (191) as women (41). Interestingly, for BAP, we found that the number of single-author articles was similar for women (13) and men (16).

Figure 3 shows the percentage of female editorial board members for each journal and the mean across journals as of April 1, 2021. The percentages of female editors ranged from 32.5% for TPR to 57.7% for JABA, with a mean of 43.8%. This is a substantial increase relative to Li et al.'s (2018) finding that 37.7% of editorial board members were women.

The data we collected represent a short time frame and are in themselves insufficient to support meaningful conclusions. For example, editorial board appointments are often for a 3-year period, so our time frame was inadequate to detect changes in the gender of editors. We collected authorship and editorship data only to provide evidence that the increase in women's participation evident in earlier years has continued to the present. Meaningful changes in participation can be determined only when data are examined over substantial periods. The present data are significant only when combined with those of prior studies to document that women's participation in various scholarly activities has generally and substantially increased over the past 4 decades, although the magnitude of the increase depends on the specific activity under consideration.

It is not easy to collect accurate data on the gender of participants in various activities in behavior analysis. In examining the gender of authors, editors, and conference presenters, the technique used in the first study in this area (Poling et al., 1983) has continued to be used. That technique involved classifying individuals as males or females based on the gender typically associated with an individual's first name. For example, "John Jones" would be counted as a man and "Janet Jones" as a woman. With respect to publications, individuals are counted each time their name appears. For example, if Janet Jones appears as the first author of 10 articles, 10 female first authors, not 1, would be recorded. To our knowledge, although this information would be interesting, researchers have not determined the relative number of *different* men and *different* women who contributed to publications, although they have occasionally determined the men and women with the highest number of contributions (e.g., McGee et al., 2004).

Obtaining and scoring the first name of every individual of interest is effortful. Recently, researchers outside behavior analysis have relied on online databases (i.e., GenderChecker) to code gender (González-Álvarez & Cervera-Crespo, 2019; González-Álvarez & Sos-Peńa, 2020). It is unclear whether using this technique makes data collection easier or more accurate, but behavior analysts working in the area should consider it. Some first names, however, such as "Amari," "Taylor," and "Charlie," are gender neutral. Others will be unfamiliar to researchers who hand score them. Moreover, especially in older articles, authors' initials, rather than first names, are sometimes provided. In early studies (e.g., Poling et al., 1983), some individuals whose gender was not readily apparent were classified based on the researchers' personal knowledge of them, or on the personal knowledge of colleagues of the researchers. This approach remains viable, but the field of behavior has grown dramatically over time, which may limit its current usefulness.

As technology advanced, researchers began to use internet search engines to search professional networks (e.g., LinkedIn), social media sites (e.g., ResearchGate), and employee websites to gain information about gender (see Li et al., 2018, and Nosik et al., 2018). The pronouns used in some websites in reference to individuals of interest were especially useful.

Although imperfect, the technique used to determine the gender of contributors to behavior analysis has yielded high levels of interrater agreement—for instance, it was 99.5% for the data set we report in this article. This technique has also allowed the gender of most contributors, 99.5% for the data set we collected, to be determined.

Fig. 2 Dependent Variable Values for Each Journal Alone and for the Group Means (2017–2020). *Note.* JEAB = *Journal of the Experimental Analysis of Behavior*; JABA = *Journal of Applied Behavior Analysis*; BAP = *Behavior Analysis in Practice*; BARP = *Behavior Analysis: Research and Practice*; PBS = *Perspectives on Behavior Science*; TAVB = *The Analysis of Verbal Behavior*; TPR = *The Psychological Record*; JOBM = *Journal of Organizational Behavior Management*
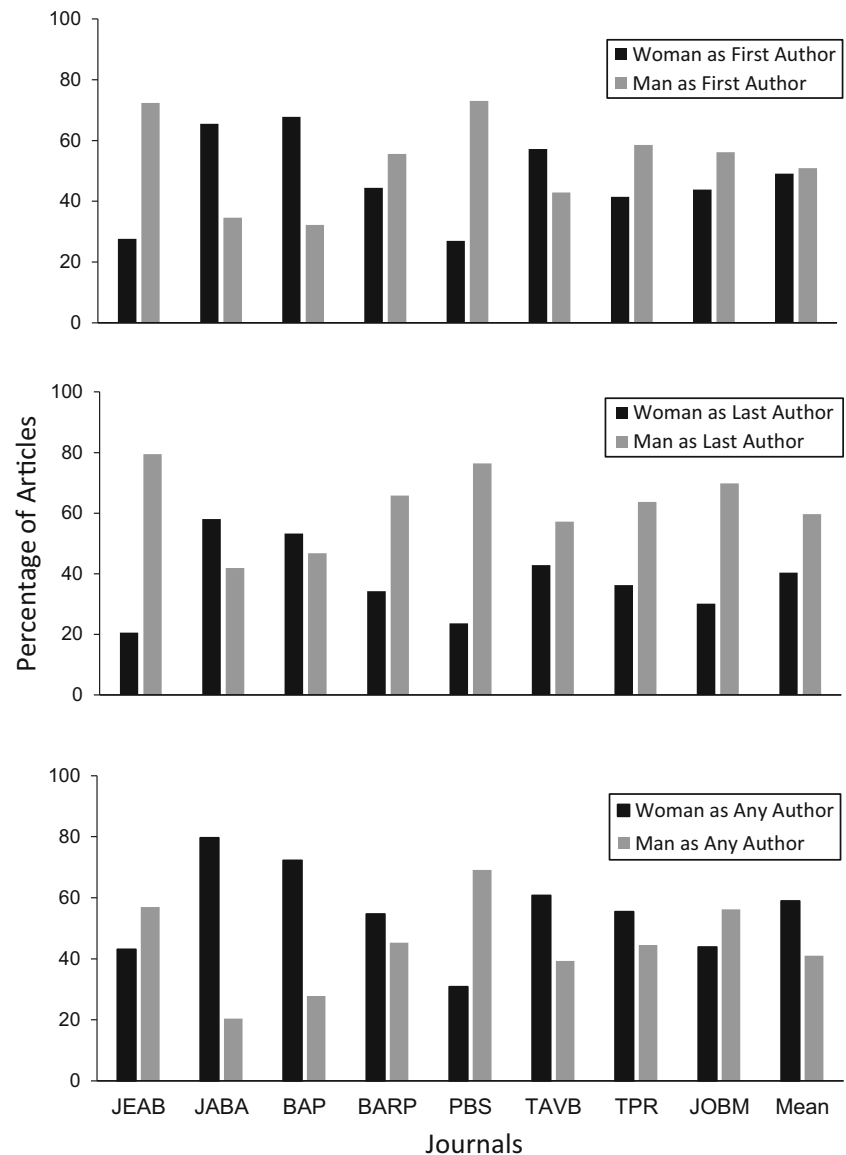
In the past decade, opposition to the forced use of gender-specific pronouns has emerged, and future researchers should be cautious in using pronouns to classify gender. Moreover, and importantly, the studies we summarized used a binary classification, in which contributors were classified as women or men, regardless of how they viewed their gender. That is, self-identified gender was ignored (see Gravina et al., 2019). We have, for example, no empirical information about the participation of agender, bigender, and transgender people in behavior analysis. This is a limitation that researchers have

Table 1 Percentage (and Number) of Single-Author Articles

Author	Journals								
	BAP	BARP	JABA	JEAB	PBS	TAVB	TPR	JOBM	Mean
Female	4.4% (13)	2.6% (3)	0.3% (1)	3.6% (9)	5.6% (10)	1.8% (1)	0.5% (1)	4.1% (3)	2.7% (41)
Male	5.4% (16)	19.7% (23)	2.0% (7)	18.6% (47)	33.1% (59)	16.1% (9)	11.9% (23)	9.6% (7)	12.6% (191)

Note. BAP = Behavior Analysis in Practice; BARP = Behavior Analysis: Research and Practice; JABA = Journal of Applied Behavior Analysis; JEAB = Journal of the Experimental Analysis of Behavior; PBS = Perspectives on Behavior Science; TAVB = The Analysis of Verbal Behavior; TPR = The Psychological Record; JOBM = Journal of Organizational Behavior Management.
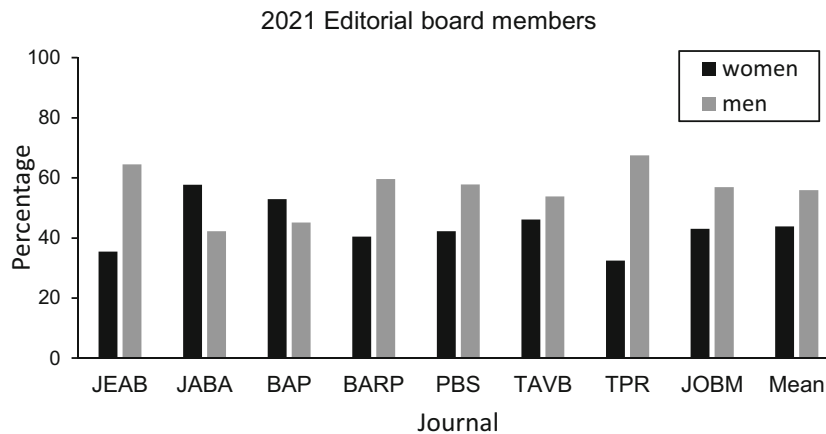
2021 Editorial board members

Fig. 3 Percentage of Editorial Board Members for Each Journal Alone and for the Group Means. *Note.* JEAB = *Journal of the Experimental Analysis of Behavior*; JABA = *Journal of Applied Behavior Analysis*; BAP = *Behavior Analysis in Practice*; BARP = *Behavior Analysis:* *Research and Practice*; PBS = Perspectives on Behavior Science; TAVB = The Analysis of Verbal Behavior; TPR = The Psychological Record; JOBM = Journal of Organizational Behavior Management

acknowledged (Gravina et al., 2019; Li et al., 2018). Determining how gender identity contributes to individuals' participation in behavior analysis, particularly with respect to the unique challenges they face, is highly important. But it will not be easy to obtain relevant information. Asking individuals about their gender identity can be obtrusive, and some, perhaps many, people will be unwilling to provide this information. The techniques used to evaluate the contribution of males and females as authors, editors, and conference presenters clearly will not suffice to quantify the participation of people of other genders. Other techniques, which may lack the scientific rigor behavior analysts prefer, are needed, and we consider some of them in the Future Directions section.

Another challenge in comparing the contribution of men and women is determining the "denominator"—that is, the number of potential contributors to a given activity. Consider a conference with 10 presentations, 5 by women and 5 by men. That is equality, right? Not if women submitted 10 presentations with half rejected and men submitted 5 with all accepted. But what if the acceptance rates were equal? That is much better. It is heartening to see, for instance, that acceptance rates for articles submitted to JABA from 2015 to 2019 by men and women were roughly equal (Kranak et al., 2021). (It is heartening if the quality of submissions by men and women are equal—a reasonable assumption, but not a given.) But men submitted substantially more articles (59%–66% across years) than women.

This difference may not appear to be great, but when one considers that most behavior analysts are women (82% of the membership of the ABAI in 2015; Nosik & Grow, 2015), the denominator changes, and one is tempted to ask, "Why aren't women submitting more manuscripts?" Such questions are easier asked than answered. To further complicate matters, behavior analysis has increasingly become a helping profession. Most members of the ABAI are practitioners and, for

them, publishing may be of little value, rather than a goal worth pursuing. Gender differences in participation in any activity are problems only if they result from practices deemed undesirable (e.g., discriminatory, unethical, illegal, inequitable) by members of the culture in which they occur. It is hard to quantify the extent to which female behavior analysts historically have been exposed to such practices, but the experiences of successful women in behavior analysis should be a source of relevant information.

Suggestions From Prominent Female Behavior Analysts

Melissa Nosik and Laura Grow (2015) highlighted seven prominent female behavior analysts: Judy Favell, Linda LeBlanc, Frances McSweeney, Anna Pétursdóttir, Carol Pilgrim, Beth Sulzer-Azaroff, and Bridget Taylor. Each of them was interviewed by Nosik and Grow, who asked 15 questions about their training history and advice to others.

Favell (2015) was lured into the world of behavior analysis through an undergraduate course in operant conditioning, with an accompanying animal lab. She completed her doctoral training at the University of Kansas, studying with Francis Horowitz, Donald Baer, Montrose Wolf, Todd Risley, James Sherman, and Barbara Etzel. After graduate school, Favell learned very quickly that the world was not full of radical behaviorists like herself and her colleagues. Although the values and principles of behavior analysis held true, she learned to understand and appreciate the value of other disciplines, such as pharmacology and psychology. Considering her 40-year career, Favell offered the following piece of advice to aspiring behavior analysts: seek graduate programs with mentors who go beyond the usual academic and professional mentorship. The gender of these mentors is less relevant

than their ability to inspire, understand, and support. To fellow females within the discipline, she provided the following recommendations: (a) maintain the scientific roots of behavior analysis, (b) practice the Golden Rule when managing others, and (c) in the words of Todd Risley, "Do good, take data."

LeBlanc (2015) found her love for behavior analysis through an undergraduate practicum course in which she worked with children with intellectual disabilities and autism. She earned her PhD in child clinical psychology from Louisiana State University, where she received an eclectic training in everything from psychometrics and advanced statistics to psychotherapy, as well as in behavior analysis. LeBlanc studied under professors such as Johnny Matson, Timothy Vollmer, and Mary Lou Kelley, who provided her with a variety of opportunities that fostered her love of scientific research, teaching, and clinical practice. LeBlanc corroborated many of the points made by Favell. In addition to those recommendations, she cautioned the discipline to resist the pressure to produce behavior analysts more quickly. Although there is a large supply–demand imbalance in the applied setting, she highlighted the negative outcomes of pushing inadequately trained individuals into the workforce. Should that occur, both the consumers and the discipline will suffer. LeBlanc also stressed the importance of addressing gender-based issues directly and immediately. She encouraged women to pick their battles wisely but fight for the ones that matter for themselves and other women.

McSweeney (2015) noted that her interest in behavior analysis was piqued during her junior year of college by Robert Bolles's (1967) book, *Theory of Motivation*. When faced with the choice between neuroscience or behavior analysis, she chose the latter because it "had the rigor of neuroscience without the blood" (p. 248). Following her undergraduate studies, McSweeney continued her education at Harvard University, where she earned a PhD, studying with B. F. Skinner, Richard Herrnstein, and William Baum. From there, she taught for 1 year at McMaster University, before serving in a variety of positions at Washington State University and in the discipline at large (e.g., president of the ABAI). When asked what advice she had for aspiring behavior analysts, McSweeney advised them to choose a graduate program and advisor carefully, as those two factors will fundamentally shape a student's career. She pointed out the public's negative perception of behavior analysis, stressing the importance of correcting this misconception, even if that means sacrificing some technical language. Finally, she discussed the importance of a work–life balance, encouraging both aspiring and current behavior analysts to take care of their personal needs so they can get through the marathon, not the sprint, of their career.

Pétursdóttir (2015) began her behavior-analytic journey in Iceland, where she was first exposed to B. F. Skinner's work in her undergraduate courses and her grandfather's library. She earned a PhD from Western Michigan University, where she studied with Richard Malott, Jack Michael, Jim Carr, Linda LeBlanc, Alan Poling, Alyce Dickinson, and Brad Huitema. After graduation, Pétursdóttir was hired into her current position as a professor at Texas Christian University. As of 2015, she was the only behavior analyst within the psychology department but viewed this as a good thing. She claimed it pushed her to broaden her perspective and learn from a diverse community of researchers, all of whom are studying human and nonhuman behavior. When asked about valuable advice from her mentors, she offered a paraphrase from Jack Michael: "Your degrees and early career moves stay with you for life, whereas there is no guarantee that a man will" (p. 259). Pétursdóttir advised aspiring behavior analysts to seek work that ignites passion rather than doing what is convenient.

Pilgrim (2015) started her undergraduate career with a focus on psychology and philosophy. Pilgrim quickly found her love for behavior analysis after reading B. F. Skinner's (1971)*Beyond Freedom and Dignity*. She earned her PhD at the University of Florida, studying with Jim Johnston, Hank Pennypacker, Ed Malagodi, and Marc Branch. Like Pétursdóttir, Pilgrim is still working at the institution where she took her first academic position, the University of North Carolina, Wilmington. When asked what aspiring behavior analysts should consider when choosing a training program, she echoed points made by the other interviewees, but added that students should visit the programs and spend as much time as possible with current students and faculty. She encouraged both current and aspiring behavior analysts to practice being good listeners. Whether you are in a leadership role or simply a member of a multidisciplinary team, Pilgrim stressed the importance of reserving speaking opportunities for high-quality contributions. She added that a healthy sense of humor and some thickened skin never hurt either.

Sulzer-Azaroff (2015) started her career as a grade-school teacher, but quickly discovered a love for behavior analysis when her husband, Edward Sulzer, took a doctoral-level course from Fred Keller at Columbia University. She and her husband would discuss what he was learning in the course (e.g., effective applications of positive reinforcement) and how she might use those principles in her classroom. Soon after, Sulzer-Azaroff earned her own PhD in school psychology from the University of Minnesota, studying with Robert Orlando, Kenneth McCorquodale, Travis Thompson, and Wells Hively. She encouraged aspiring behavior analysts to do the following when considering training programs: (a) refer to the data (e.g., number and proportion of students graduated within a reasonable time, the nature of the positions they secured, research and conceptual publications), (b) attend a variety of conferences to familiarize yourself with the breadth and depth of the discipline, and (c) visit programs in person and come with a list of questions and concerns for both faculty and current students. Sulzer-Azaroff advised young behavior

analysts to look at challenges as just one aspect of a much larger, more complex network of contingencies.

Taylor (2015) discovered her passion for behavior analysis through childhood interactions with her younger brother, John, who had Down syndrome, and by working with Catherine Maurice's daughter, Anne-Marie(Maurice, 1994). After earning a master's degree in special education from Columbia University, Taylor earned her PhD in applied and professional psychology at Rutgers University. During her graduate training, Taylor worked with Linda Meyer to develop, open, and run the first school program based in applied behavior analysis for children with autism, Alpine Learning Group in Bergen Country, New Jersey. Taylor also worked with other scholars, including Sandra Harris, Charles Mace, and Jennifer McComas. When asked what advice she had for the behavior analysts of the future, Taylor highlighted the importance of discriminating between personal and professional preferences for interventions based in applied behavior analysis. She cautioned behavior analysts to avoid taking on more clients than ethically feasible. Finally, Taylor encouraged both current and aspiring behavior analysts to surround themselves with people who will both challenge and encourage them. She stated, "There is tremendous pleasure to be found in identifying your reinforcers and helping others access their own" (p. 292).

Although not included in Nosik and Grow's (2015) interviews, Ruth Rehfeldt, who is an accomplished behavior analyst, wrote a related article in 2018, sharing her own experiences and recommendations for aspiring female academicians. Rehfeldt earned her PhD from the University of Nevada, Reno, and is currently a professor at the Chicago School of Professional Psychology. In her 2018 article, Rehfeldt encouraged new academicians to take the unavoidable bureaucracy of academia for what it is and remain focused on what is important (i.e., the reinforcers associated with a faculty position). She reassured her readers that "success is not measured by how loudly, frequently or convolutedly one speaks during meetings" (p. 182). Instead, Rehfeldt applauded graduate students who sit quietly and think until they have something of significant value to contribute. Rehfeldt, like many of Nosik and Grow's interviewees, noted that she had not personally observed many instances of gender disparity; however, she acknowledged the stereotypes that many female faculty members experienced, and encouraged the field to continue fighting these injustices.

All interviewees, and Rehfeldt (2018), agreed on a few things. First and foremost, all eight women stressed the importance of finding mentors who are accessible, inspiring, understanding, and enjoyable. They agreed that the gender of a mentor was not as important as the presence of those characteristics, although they did encourage readers to identify, observe, and emulate same-gendered role models. Another point of agreement was the ability of behavior analysts to serve as both good mothers and successful professionals, although it is no easy task. Each woman, regardless of child status, agreed that appropriate support from partners, family, friends, and colleagues is essential in that journey. They also encouraged behavior analysts of all kinds (i.e., aspiring, current, male, female) to self-reflect and self-assess often, monitor goals and workload constantly, and engage in reinforcing activities. In the words of B. F. Skinner (1956), "When you run onto something interesting, drop everything else and study it" (p. 223).

Historically, behavior analysts have often used interviews as an early step in behavioral assessment (Cooper et al., 2019), because the information provided by respondents can provide clues to the variables that control target responses. The interviews arranged by Nosik and Grow (2015) may provide clues as to some of the factors that contributed to interviewees' success in behavior analysis, as well as the challenges they faced, which is useful information. Baires and Koch (2019) made rich use of the information gained from the interviews in their behavior-analytic analysis of sexism, described later.

The successful women interviewed by Nosik and Grow (2015) were allowed to tell their stories in their own words, and behavior analysts have recently come to recognize the importance of stories, or narratives, in changing behavior (e.g., Dietrich, 2018; Hineline, 2018). Hineline provided an informative analysis of the behavioral mechanisms through which stories affect behavior. It is beyond our purpose to explore these mechanisms, but it is important to emphasize that, put simply, we humans are much affected by stories well told by people we trust and value. Reading the words of prominent women has the power to inspire and inform other women, as well as men, who trust and value those prominent women. Nosik and Grow exposed their readers to good stories, well told, by people to whom we behavior analysts should listen. We hope our summary of the interviews entices them to do so.

We also hope that researchers seek out women, and men, who *failed* in their attempts to succeed in behavior analysis in general, or in specific domains, such as publishing or securing grant funds, and allow them to tell their stories. The samples are unlikely to be random ones, and good quantitative data will be elusive, but the stories told, especially when they reveal consistent differences in the experiences of men and women, may help to illuminate things that commonly go wrong in our discipline.

Other Topics

Maria Ruiz (2003) pointed out that within the discipline of behavior analysis, as elsewhere, women and men operate

under different culturally mediated contingencies. She explained, for instance, that

> direct observations of classroom practices spanning over 25 years revealed that a child's sex exerts powerful discriminative control over teacher behavior. Specifically, male children receive an overwhelming proportion of the resources managed by teachers and are clearly selected in the classroom. A related and consistent finding is that teachers are typically unaware that the child's sex is exerting discriminate control over their classroom practices. (p. 14)

Ruiz (2003) emphasized that the control exerted by gendered practices is subtle and hard to define and detect. Nonetheless, fundamental principles of behavior underly that control. Ruiz encouraged behavior analysts to carefully examine the contingencies that deleteriously affect women. We return to this suggestion in the Future Directions section.

Anita Li et al. (2019) examined the salaries of male and female faculty members at 16 ABAI-accredited university programs. Of the 103 faculty members included in their analysis, 52.4% were female, although there were twice as many males as females at the full-professor level. Across all academic levels and training programs, they found that women were paid less than men. At the assistant-, associate-, and full-professor levels, the mean salaries of men were 13%, 6%, and 15% greater than those of women. Moreover, the highest salary at every level, across all programs combined, was earned by a man. Li et al. (2019) encouraged both men and women to argue forcefully and effectively for equal pay. They also suggested that the ABAI should take steps to support equal pay. Specifically, they proposed that for behavior analysis programs to be accredited by the ABAI, the universities where they are housed should be required to demonstrate that they are actively combating gender-based inequity in hiring, pay, and promotion.

Devon Sundberg et al. (2019) provided an overview of the history and status of the WIBA Conference, which was first held in 2017. They also reviewed the issue of gender inequality within the discipline and described how the WIBA Conference can help to resolve gender issues. For example, each year, the conference provides a variety of educational and training opportunities for its attendees, all focused on women's issues, professional issues, and diversity. Moreover, the conference provides a variety of scholarships to women within the discipline and fosters an environment where formal and informal mentoring can take place. One of WIBA's proudest accomplishments is "creating an environment where we can highlight the work of true examples in our field, as well as women who may not have received their fair recognition" (Sundberg et al., 2019, p. 814).

Baires and Koch (2019) provided a behavioral account of sexism—specifically, sexism within the discipline of behavior analysis. They stated that behavior analysis is both the problem and the solution. That is, behavior analysts have failed to adequately examine sexism, the impact of sexism within the discipline, and the impact of sexism within the community. Nonetheless, behavior analysts can and should use their science to reduce sexism within and outside the discipline. Specifically, behavior analysts should work to shift societal contingencies from those that punish appropriate behaviors and fail to punish inappropriate behavior, to those that reinforce appropriate behaviors and punish inappropriate behaviors.

The data reported by Li et al. (2019) further highlight the need for concern regarding issues of equity in behavior analysis. As Sundberg et al. (2019) pointed out, the WIBA Conference helps to ensure that these issues are examined. And the suggestions made by Li et al. (2019) and by Baires and Koch (2019), if followed, should help to ensure the fair and equal treatment of women.

The Gender of Authors Who Study Gender

In this review, we summarized 30 articles concerned in one way or another with gender issues in behavior analysis; the selection of those articles is described in the next-to-last paragraph of the Introduction. We determined the gender of the 55 authors of those articles using the procedure described in the Women's Participation: An Empirical Update section. This procedure allowed all authors to be categorized.

Of the total authors, 71% (39) were women. Of the 30 first authors, 77% (23) were women. Interobserver agreement was calculated for 18% of the authors (10) selected at random, and equaled 100%. Nine people contributed two or more articles to this literature. Their names and the number of articles to which they contributed appear in Table 2. A man, Alan Poling, has the most contributions, five, followed by a woman, Frances McSweeney, with four. Seven people were authors of two articles: four women (Anita Li, Melissa Nosik,

Table 2 Authors With Multiple Contributions to Relevant Literature

Author	Number of Articles
Alan Poling	5
Frances McSweeney	4
Anita Li	2
David Myers	2
Hugo Curiel	2
Josh Pritchard	2
Melissa Nosik	2
Nicole Gravina	2
Samantha Swindell	2

Nicole Gravina, and Samantha Swindell) and three men (Hugo Curiel, Josh Pritchard, and David Myers).

The percentages of total and first authors who were women were substantially higher for the articles we reviewed than their relative participation in behavior-analytic articles in general, as indicated in prior articles (e.g., Li et al., 2017) and in the data we report here. It is unsurprising that women have a strong interest in their role and status in the discipline. It is good that men have participated in the conversation and advocated on behalf of their female colleagues.

Future Directions

With respect to research, it makes sense for behavior analysts to occasionally provide updates on the authorship of journal articles by men and women, because publications are directly relevant to the hiring and promotion of academics and to the status and influence of individuals within their discipline (Hayes, 2015; Rawat & Meena, 2014; Schimanski & Alprin, 2018).

Of course, a publication is a product measure of behavior. It provides no information about the behavior of successful authors, or of others involved in the publication process. But that information is exactly what is needed to understand how gender relates to publishing. It would be interesting to know, for example, whether the gender of graduate students influences how likely it is that they are asked to contribute to a literature review or a theoretical article, or to be involved in a research project likely to yield publishable data. It would also be interesting to determine whether the feedback advisors provide on draft manuscripts differs in tone or amount as a function of the gender of the student who receives it. Put simply, we know that historically males have disproportionately contributed to the behavior-analytic literature, but we do not know why this has occurred. We also know that women's contributions have increased markedly over time, but we do not know the variables responsible for the increase.

Comparing bibliometric data quantifying women's participation across time in behavior analysis relative to their participation in other disciplines, such as the "hard" sciences (e.g., Larivière et al., 2013) or psychology (McSweeney & Parks, 2002), provides information about whether general changes in the culture are influencing women's participation. McSweeney and Parks (2002) used this technique 20 years ago to reach the following conclusion:

Participation by women on the editorial staff did not keep pace with their increased authorship for social and developmental psychology. Based on these trends, women's participation decreased with increases in the selectivity of the position for social and developmental psychology (a glass ceiling). The development of a glass ceiling suggests that the contributions of men and women are not always treated equally (gender inequity). Because a similar glass ceiling was reported for journals in behavior analysis (McSweeney, Donahoe, & Swindell, 2000; McSweeney & Swindell, 1998), the causes of this inequity appear to be relatively widespread. The failure to find a glass ceiling for general and cognitive psychology suggests that the inequity might be reduced by subtle pressure for diversity in editorial positions and by adopting actions that encourage women to pursue research positions. (p. 37)

As Ruiz (2003) pointed out, different culturally mediated contingencies are in place for male and female behavior analysts, both within and outside of their discipline. The same appears to be true for women in many other disciplines. Teasing out those contingencies will not be easy—how, for example, do humans interact with one another and other aspects of their environment to create a glass ceiling? But worthwhile activities rarely are easy, and it is possible to address meaningful research questions regarding women in behavior analysis. We know, for instance, that, overall, male behavior analysts in academia are paid more than females (Li et al., 2019). But why is this the case? Do women negotiate differently than men? Do administrators evaluate the achievements of women and men differently? Does the gender pay gap in behavior analysis extend beyond academia? If not, why not? Clearly, there is no shortage of viable research topics.

There is, of course, a large literature concerned with women in the culture at large and in the workplace outside of behavior analysis (e.g., Charlesworth & Banaji, 2019; Pettit & Hook, 2009). Researchers have explored, for example, the relative amount of time men and women spend caring for their children and other family members. Women typically spend substantially more time than men, which may limit the amount of time they have to devote to behavior analysis, or to any other profession. Female behavior analysts operate within a broad cultural context, which is of interest to many people who are not behavior analysts. Learning about their work can help behavior analysts better understand sexism within and outside the discipline, and to devise strategies for combating it. There is strength in numbers, and the discipline of behavior analysis can only benefit if its members join other professionals and laypeople in holding a broad and open conversation regarding women in society.

Because sexism continues to exist within and outside behavior analysis (Baires & Cook, 2019), a research area of huge potential value is translating "sexism" into specific responses that can be accurately measured, then intervening to reduce those responses to acceptable levels if they were unacceptably high during baseline. Akpapuna et al. (2020) provided valuable insights into how to measure important outcomes related to equity; that is, to translate tacts of broad cultural

importance, words like "sexism," "racism," and "discrimination" into measurable human actions. In essence, the strategy is the same one that we would use to devise meaningful measures of any problem that was initially presented as a tact, as when we endeavor to help parents who describe their child as "highly aggressive."

We initially would ask those parents what, exactly, the child does to earn the label. Then, we would observe the child, operationally define aggressive responding, and devise a technique for quantifying it. Next, we would ask the parents whether the definition and measurement system were adequately capturing "high aggression," and revise our definition and measurement system until the parents were satisfied, as were we. Finally, we would ask the parents what level of the target response (aggressive responding) was acceptable. That is, we would set a treatment goal. Finally, we would intervene. If the treatment goal was not met, then we would alter the intervention or revisit the treatment goals. This process would be repeated until success was achieved.

In principle, "sexism" could be quantified in the same way. That is, we would ask women what responses they tact with the word, then sort out a way to quantify those responses. But to our knowledge, there is no published study in which a behavior analyst has objectively measured sexism in any setting. Moreover, although general strategies for reducing sexism, like those provided by the authors whose work we have summarized, have often been proposed, to our knowledge no behavior analyst has implemented and evaluated them. Of course, some behavior analysts who engage in sexist behavior may be unwilling to acknowledge their harmful actions, or to participate in a study intended to change those actions. But this will not hold for all potential participants, and work in this area would be worthwhile. So would research focused on building opportunities for, rather than removing impediments to, female behavior analysts.

Although discrimination directed at women undoubtedly still exists within behavior analysis, women in the discipline have collectively made massive gains over the past half-century. Numerically, the discipline is dominated by women, and women are rapidly filling leadership positions. This is not necessarily a bad thing, but it may be time to ask whether an effort should be made to recruit more men. There surely are good reasons to increase the field's diversity along other dimensions, such as race, ethnicity, and gender identity. Significant progress is being made on this front, such as the founding of the Black Applied Behavior Analysts (https://babainfo.org/membership/), a nonprofit organization created to promote diversity in the field. The women whose work we have reviewed and the men who supported them laid the foundation for a discipline in which diversity, equity, and inclusion are more than buzzwords. Do not let their effort be in vain.

Concluding Comments

Data reported in a substantial sequence of articles, and the data we collected, clearly show that women's participation as authors of articles published in behavior-analytic journals and as members of the editorial boards of those journals has increased greatly over the past 4 decades. Women, including the seven whose contributions were highlighted by Nosik and Grow (2015), currently hold leadership positions in the discipline, and most young behavior analysts are female. Women clearly have an opportunity to succeed and excel as behavior analysts. But opportunity does not ensure fair and equitable treatment. It is distressing that male behavior analysts in academia are paid considerably more than females and that, even today, women's participation declines as the selectivity, and apparent status, of activities increases. The glass ceiling to which McSweeney and Swindell (1998) called our attention years ago may be cracked, but it is not broken. Many of the authors whose work we summarized made suggestions for destroying it, and those suggestions may have fostered behaviors that benefited female behavior analysts. Be that as it may, there is more work to be done. Part of that work should involve systematically evaluating programs intended to benefit women, and members of other historically disadvantaged groups, by removing barriers or increasing opportunities.

Sexism, racism, and other forms of bigotry are patterns of learned behavior that, in principle, behavior analysts should be able to functionally analyze and to change, at least within the confines of their discipline. There is a real and urgent need for evidence-based practices that reduce discrimination. Unfortunately, many popular interventions, such as implicit bias training as usually arranged, rarely lead to meaningful behavior change (see Akpapuna et al., 2020). If one's goal is to help historically disadvantaged people, it is not enough to *do something* with that intent. What is needed is to *do something that works*. The required effort will be great, but the reward will be greater.

Declarations

Conflicts of interest/competing The authors declare that they have no conflicts of interest or competing interests.

Ethical approval The manuscript was written in compliance with all applicable ethical standards. No research involving humans or nonhumans; hence, no human subjects institutional review board or institutional animal care and use committee approval was required.

Authors' contributions All authors contributed to planning, writing, and editing the manuscript. Their order of appearance reflects their relative degrees of contribution to these activities. All authors approved the submitted manuscript.

Data availability The data sets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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