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In Response

Reflections on the Glass Ceiling: Women in the Experimental Analysis of Behavior

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McSweeney and Swindell (1998) sought to determine whether men and women are treated equitably in the experimental analysis of behavior. They purported to show that women participate less in the *Journal of the Experimental Analysis of Behavior* than in similar journals and that the participation of women decreases with increases in selectivity. Their data were difficult to interpret, however, because they did not present the variability in the mean data drawn from different individuals over time. My analyses were not in accord with their conclusions. When the percentage of associate editors who are women was considered along with the mean percentages McSweeney and Swindell reported for other measures, participation did not systematically decrease with increases in selectivity in recent years. As quantified in terms of their number of publications in the *Journal of the Experimental Analysis of Behavior,* women who were editorial board members and associate editors were not more highly selected than their male counterparts. Finally, in the recent period from 1996 to 1998, although women submitted fewer manuscripts to the journal, rejection ratios did not differ for men and women. Efforts to increase the participation of women in the experimental analysis of behavior may best be directed toward recruitment and retention rather than some of the suggestions proposed by McSweeney and Swindell (1998), which could inadvertently create different standards for women's work.

Key words: participation of women, gender equity, experimental analysis of behavior, *Journal of the Experimental Analysis of Behavior*

Historically, fewer women than men have participated in behavior analysis. Several previous papers have provided documentation and discussion of the participation of women in various aspects of behavior analysis (Iwata & Lent, 1984; Laties, 1987; Myers, 1993a, 1993b; Neef, 1993; Poling et al., 1983). In a recent article on this topic in *The Behavior Analyst*, McSweeney and Swindell (1998) addressed *why* fewer women than men participate in the experimental analysis of behavior in particular.[1] Their inquiry deserves careful consideration. On one hand, it could be useful for the development of effective strategies to increase participation by women in the experimental analysis of behavior. On the other hand, it could have unintended effects on the evaluation of women's work and could inadvertently promote quotas, implicit or otherwise. I first summarize the rationale and data presented by McSweeney and Swindell and then suggest a criticism of their analysis. I next present three analyses, in response to their conclusions and

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[1] I was given the opportunity to read a preprint of McSweeney, Donahoe, and Swindell (2000), which examines the status of women in applied behavior analysis journals. Although I have not conducted the same type of analyses for applied behavior analysis as I present here for the experimental analysis of behavior, their new critique does not change my conclusions about *JEAB*.

suggestions, that show no compelling evidence of unfair treatment of work by women in the experimental analysis of behavior. I conclude by suggesting that efforts to increase the participation of women in the experimental analysis of behavior may best be directed toward recruitment and retention rather than differential treatment.

Rationale and Analysis Presented by McSweeney and Swindell

McSweeney and Swindell (1998) sought to determine whether men and women are treated equitably in the experimental analysis of behavior. In light of previous discussions of the relevant comparisons to address this question (Myers, 1993a, 1993b; Neef, 1993), they examined the participation of women as authors in the *Journal of the Experimental Analysis of Behavior* (*JEAB*) compared to the participation of women in journals similar in subject matter and selectivity. Unlike comparisons with the percentage of women in the general population, the percentage of women who receive doctorates in psychology, or the percentage of women who are members of the Association for Behavior Analysis (ABA), differences in participation by women between *JEAB* and similar journals are less plausibly due to differences in background or interests. The authors acknowledged that any differences found may not demonstrate gender inequity conclusively, but hoped to at least "provide information that will contribute to a broader understanding of the status of women in the experimental analysis of behavior" (p. 194).

McSweeney and Swindell (1998) compared, using visual inspection of means for 5-year intervals from 1978 to 1997, the percentage of articles with at least one female author, the percentage of all authors who were female, and the percentage of articles with a female first author for *JEAB* and three other journals. Their figures showed that in almost all measures for all journals, the percentages were below 50%, and usually substantially so. They noted that the percentages in all categories increased for all journals across the years considered, but also concluded that participation by women in *JEAB* "lags behind" the participation of women in the other journals (p. 197). They also compared for *JEAB* the percentage of all authors who were female, the percentage of all first authors who were female, and the percentage of editorial board members who were female and concluded that "participation by women decreases with increases in selectivity in more recent years" (p. 200). McSweeney and Swindell suggested that women are "increasingly excluded from more selective positions" in *JEAB* (p. 200) and that "gender inequity still exists in the experimental analysis of behavior" (p. 201).

Critique of Their Analysis

Behavior analysts are accustomed to using visual inspection to examine data from individual subjects and have argued eloquently against the use of inferential statistics to evaluate individual-subject data (e.g., Baer, 1977; Michael, 1974). The data under consideration here, however, are of a different type and arguably should be subjected to inferential statistical treatment. Although I certainly do not condone blind adherence to inferential statistical tests, such tests can provide a useful aid in evaluation of mean data drawn from different individuals over time. Minimally, interpretation of the data presented by McSweeney and Swindell (1998) requires indication of the variability in the points contributing to the 5-year percentage means. Regardless, these percentages should be interpreted cautiously because the absolute numbers are not large, and an absolute difference of even one author or editor could make a difference of several percentage points (see also Iwata & Lent, 1984, p. 78). In conclusion, these data, though provocative, are difficult to interpret.

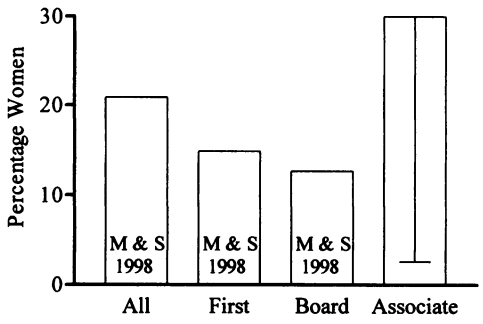

Figure 1. Mean percentage of women occupying each of four increasingly selective positions (author, all; first author, first; editorial board member, board; associate editor, associate) from 1993 to 1997 for the *Journal of the Experimental Analysis of Behavior* (*JEAB*). Data in the three left bars are reproduced from McSweeney and Swindell (1998). The vertical line in the right bar shows one standard deviation below the mean. Standard deviations were not reported for McSweeney and Swindell's data.

New Analyses

First, in their analysis of the participation of women in *JEAB* as a function of the level of selection, McSweeney and Swindell (1998) did not include the associate editors. They reported (p. 200) that the participation of women decreased with increases in selectivity for the period of 1993 to 1997 (percentage all of authors > percentage of first authors > percentage of board of editors). To examine whether this relation held true at an even higher level of selection, I analyzed data from this same period for the associate editors. Figure 1 shows the results, along with the data from other levels of selection as reported by McSweeney and Swindell. The mean percentage of associate editors who were women was 30% (*SD* = 27.39). The variability is large because the number of associate editors at one time is small ($N = 4$). When the percentage of associate editors who were women is considered along with the mean percentages McSweeney and Swindell report for other measures, there is no systematic decrease in participation with increases in selectivity in recent years.

Second, I evaluated the statement by McSweeney and Swindell (1998) that "it could be argued that today's female editorial board members are more highly selected ... than their male counterparts" (p. 201), indicating that "a 'glass ceiling' is developing for the participation of women in the experimental analysis of behavior" (p. 200). To examine this suggestion, I determined the number of *JEAB* publications through 1998 for men and women who were editorial board members and associate editors of *JEAB*, as identified in the January 1999 issue. Although board members and Associate Editors are chosen on the basis of criteria in addition to number of publications in *JEAB* (e.g., expertise in a particular area, skill at reviewing manuscripts), this measure is straightforward and readily quantified.

For each member of the board of editors and for each associate editor, I searched the *JEAB* abstracts online at the *JEAB* electronic homepage[2] using their last names as the key word. I examined each abstract found to ensure that the person was indeed an author on the paper (i.e., I eliminated those published by authors with the same last name but who were not editors, and ones in which the abstract referenced an editor's work). This strategy could not be used for two editors whose last names are also common colors of stimuli used in experiments in *JEAB* (Green and White). For these individuals, I examined the author index in the cumulative index for 1958 to 1973, 1974 to 1983, and 1984 to 1993. From 1994 to 1998, I examined the author index published in the final issue of each volume.

Figure 2 shows that the median number of *JEAB* publications for female editorial board members and associate editors is not higher than that for males. For all contributions to *JEAB*, the median numbers were six and eight for women and men, respectively. Analysis of the medians using

[2] www.envmed.rochester.edu/wwwrap/behavior/jeab/jeabhome.htm

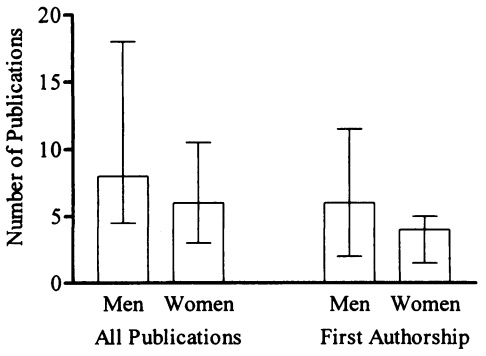

Figure 2. Median number of publications in the *Journal of the Experimental Analysis of Behavior* (*JEAB*) (1958–1998) by members of the January 1999 editorial board and associate editors as a function of gender. Bars above and below the medians show the 75th and 25th percentiles, respectively. Data are shown for all publications (left bars) and first author publications (right bars).

the Mann-Whitney exact test indicated that the number of all *JEAB* publications for women did not differ at a level of conventional statistical significance from the number for men, $U = 120.5$, $p > .32$. For first author contributions, the median numbers were four and six for women and men, respectively. The number of first author *JEAB* publications for women did not differ at a level of conventional significance from the number for men, $U = 113.5$, $p > .24$. I used nonparametric tests based on the median because the distributions were skewed, but the results were similar using t tests to evaluate the means. The results were also similar when calculated without data for the associate editors and when I considered only empirical contributions to *JEAB*. Thus, at least as quantified in terms of the number of publications in *JEAB*, women who are editorial board members and associate editors are not more highly selected than their male counterparts.

Third, I evaluated the recommendation by McSweeney and Swindell that editors could "take special steps to ensure that manuscripts by men and women are treated similarly in the review process" (p. 201). They suggested conducting blind manuscript reviews or sending articles by female authors to female reviewers and implied that the work of women may not currently be treated fairly in review at *JEAB* (p. 201). To examine whether current editorial practices are gender equitable, I obtained the number of noninvited manuscripts submitted by men and women and the number of those manuscripts that were rejected for publication in *JEAB* during the three most recent complete years (1996 to 1998; R. L. Shull, personal communication, June 18, 1999). In all but a few cases, the submitting, corresponding author was the first author. The overall probability of rejection during this period was .56. The probability of rejection for manuscripts submitted by women and men was .60 and .55, respectively. The difference does not approach conventional statistical significance as evaluated by a chi-square test, $\chi^2(1, N = 308) = 0.56$, $p > .45$. In fact, the number of submissions by women is small enough that reversing the decision on just one manuscript per year yields a probability of rejection for women of .56. In addition, out of 308 manuscripts submitted to *JEAB* during this period, only 63 (20.5%) were submitted by women. Thus, in the recent period from 1996 to 1998, women submitted fewer manuscripts, but there is no compelling evidence that their work was treated differently from that of men.

Conclusions and Recommendations

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 choice of people for selective positions at the journal. My analyses do not rule out the possibility of inequitable treatment of the work of women in the experimental analysis of behavior in the past or of current differences that I have not examined or that may not be readily subject to quantification. The data do suggest, however, that

some of the solutions McSweeney and Swindell (1998) recommended to increase the participation of women in the experimental analysis of behavior may not be the most beneficial.

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.

The data suggest that the lower percentage of female participation in authorship at *JEAB* stems from the lower percentage of manuscripts submitted by women and not from inequitable treatment. Thus, the situation in the experimental analysis of behavior may be related more to the long-standing disproportionate participation by women in science in general than to current discriminatory practices within our field. If so, efforts to modify participation may best focus on the recruitment and retention of women in the experimental analysis of behavior rather than differential, though well-intended, treatment of their work.

Finally, although McSweeney and Swindell (1998) worried that women may use unequal treatment as an excuse for failure (p. 202), my fear is the opposite. Some of their recommendations presuppose that differential participation results from unfair treatment of women's work within the field (p. 201). If women's work is already treated fairly, however, as my analyses suggest, and differential participation stems from causes at the level of the broader culture (see also Neef, 1993; Poling et al., 1983), then some of their suggestions could have a chilling effect on the evaluation of the work of women in the experimental analysis of behavior. This type of sentiment could even conceivably promote the use, implicit or otherwise, of different standards or quotas for women. I wish that no one, man or woman, need wonder if a woman's *success* is due to her gender.

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