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Sage on the Stage

Permalink

<https://escholarship.org/uc/item/7rp9f1tt>

Journal

Personality and Social Psychology Bulletin, 43(4)

ISSN

0146-1672

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Publication Date

2017-04-01

DOI

10.1177/0146167216688213

Peer reviewed

Sage on the Stage:

Women's Representation at an Academic Conference

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in press, *Personality and Social Psychology Bulletin*

WORD COUNT: 10,566

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Abstract

Who presents at conferences matters. Presenting research benefits speakers, and presenters shape the conclusions audiences draw about who can succeed in a field. This is particularly important for members of historically underrepresented or disadvantaged groups, such as women. We investigated gender representation over a 13-year period among speakers at the largest social and personality conference. On average, women were underrepresented as speakers, though this effect diminished over time. Chairs appeared to serve as gatekeepers: in symposia chaired by women almost half of the invited speakers were women, whereas in symposia chaired by men it was a third. The representation of women as speakers varied significantly by academic rank, with women underrepresented at lower ranks but not as full professors, and by topic. Women also tended to present with a smaller, less varied array of individuals than men, though this was explained by women's lower average academic rank.

Keywords: gender, higher education, diversity, gender representation, social network development

Sage on the Stage:

Women's Representation at an Academic Conference

Presenting research at a conference has obvious positive consequences for speakers. Talks increase visibility for the speakers and their research, particularly among colleagues and high-status others who may cite their work, write their evaluation letters for tenure, recommend them for grant review boards, and invite them to future conferences, panels, and editorial boards (Kite et. al, 2001). Less obvious are the consequences for audience members. Beyond the specific knowledge conveyed by the presentations, audience members also learn about what kind of person is likely to be successful in their field. For example, when graduate students and junior faculty who are women or members of other underrepresented or historically disadvantaged groups see speakers who share their identity, this signals that they too can succeed (Asgari, Dasgupta, & Cote, 2010; Stout, Dasgupta, Hunsinger, & McManus, 2012). Conversely, a lack of similar others implies that success is unlikely for them (Ceci, Williams, & Barnett, 2009). Given these important potential consequences of who is "on stage" at conferences, we analyze women's representation in peer-reviewed symposia at the annual conference of the Society for Personality and Social Psychology (SPSP), the largest organization for social and personality psychologists, from 2003 to 2015.

The Issue of Representation

A variety of scientific fields have focused on female representation on speaker panels and enacted policies to address inequities (e.g., Casadevall, 2015). They document underrepresentation, having proportionally fewer women speakers on panels than women members of a society, because it may suggest bias against women. They also document

absolute representation because the salience of women speakers may increase perceptions that a field is women-friendly and improve women audience members' beliefs about the ease with which they can succeed (Sanders, Willemssen, & Millar, 2009). Therefore, fields in which women predominate (e.g., Isbell, Young, & Harcourt, 2012; Simon, Morris, & Smith, 2007) and those in which women are a numerical minority (e.g., Casadevall & Handelsman, 2014; Roberts & Verhoef, 2016) have concerns about representation.

This work stems from a larger concern that members of historically disadvantaged and/or underrepresented groups leave many academic fields at disproportionate rates at more senior ranks, a pattern called the "leaky pipeline" (Pell, 1996). This pattern has been identified in STEM fields (Hill, Corbertt, & St. Rose, 2010) and within American psychology (e.g., APA Task Force on Women in Academe, 2000). Women enter social psychology at a higher rate than men but are underrepresented at the professorial levels. In 2014, 66.5% of U.S. doctorates in social psychology¹ were awarded to women (National Science Foundation, 2015), but only 54.1% of assistant professors, 45.8% of associate professors, and 28.8% of full professors in social/personality psychology in U.S. graduate departments of psychology were women (Wicherski, Hamp, Christidis, & Stamm, 2014). Data on psychology as a field suggest that gender differences in promotion from assistant onwards may no longer exist (Box-Steffensmeier et al., 2015; Ginther & Kahn, 2014), but it is unclear whether such patterns hold for individual specialties like social psychology. For example, from 1994 to 2014 women earned on average 63% of social psychology PhDs, and in all but 3 of those years (1995, 2001, and 2002) women earned over 60% of social psychology PhDs (National Science Foundation, 1994-2014). Given

¹The most recent available data for personality psychology are from 2006, when 70% of U.S. personality psychology PhD recipients were women (Hoffer, Hess, Welch, & Williams, 2007).

this data, assistant and associate professor percentages for 2014 should be over 60% if men and women's careers progressed at equal rates (e.g., Ginther & Kahn, 2014).

Access to resources

Analysis of speakers at a conference illustrates how women are represented at the conference and in the field. Analysis of the connections between speakers illustrates the access women versus men have to different resources (Burt, Kilduff, & Tasselli, 2013). Using co-occurrences on symposia as a measure of presenters' connections to each other (i.e., Professor A and B are considered connected if they presented in the same symposium), social network analysis can be used to examine how men's and women's professional networks provide them with access to resources. One relevant network characteristic, structural holes, is the degree to which people are members of overlapping networks and provides a means of measuring access to unique resources. For example, imagine Professor A was in one symposium with Professor B, a neuroscientist, and in another symposium with Professor C, a developmental psychologist, and Professors B and C never appeared together. Professor A's network would be characterized as having a structural hole, because Professor B and C are not connected. If a person's network has more structural holes, that person likely has greater access to different and unique kinds of information and resources (Burt et al., 2013). Moreover, as the bridge between two non-overlapping networks (i.e., Professor B's and Professor C's networks), Professor A can serve as a gateway for information and is central to the research relationship. Such networks are associated with greater creativity and innovation (Perry-Smith, 2006), such as receiving more patents (Wang, Rodan, Fruin, & Xu, 2014).

In addition to analysis of overlap between the members of an individual's network, analysis of the number of connections a speaker has with other speakers, known as degree centrality, indicates the extent of their network and their position within the field (Borgatti & Everett, 2006). A large network can be beneficial to career success. For example, if excluded from men's networks, women faculty may face challenges in their professional socialization and advancement, especially when men hold most high-status positions (e.g., Brass, 1985). Limited access to professional networks can decrease women's access to information and support (Ibarra, 1993; Rose, 1985; Xu & Martin, 2011).

Current research

The present work examines gender representation among speakers and chairs in peer-reviewed symposia at the annual SPSP conference between 2003 and 2015. We drew on a variety of theories and empirical findings to generate a series of testable hypotheses. First, we considered gender representation generally. Then, drilling down, we examined how different symposia characteristics were associated with differences in women's representation (i.e., chair gender, symposia topic). Next, stepping back, we examined women's representation compared to various base-rate measures, and whether the pattern of representation changed over time. Finally, taking a broader look at the connections between speakers across all years, we examined the characteristics of women's research networks, as a proxy for their access to resources and position within the broader fields of social and personality psychology. In the sections that follow, we provide the hypotheses generated at each stage of analysis and the rationale for each hypothesis.

Representation in General and in Context

H1a: Representation: There are more men speakers than women speakers in symposia.

H1b: Representation: There are more men chairs than women chairs of symposia.

H2: Representation: Women invited speakers are of higher status than men invited speakers.

Based on patterns of women's participation in meetings of other academic societies (e.g., Casadevall & Handelsman, 2014; Isbell et al., 2012; Simon et al., 2007), as well as of women's authorship in psychology (Brown & Goh, 2016; Ceci, Ginther, Kahn, & Williams, 2014; Cikara, Rudman, & Fiske, 2012), we predicted there would be more men in speaking and chair roles in symposia than women (H1a-b). In addition, as research suggests that members of minority or stigmatized groups must be exceptional performers to succeed (Biernat, Manis, & Nelson, 1991), we used academic rank as a proxy for experience and status and predicted women would need to be of higher rank to be invited to present (H2).

H3: Representation in Context: There are more women invited speakers on symposia with women chairs.

H4: Representation in Context: Gender representation differs by topic.

We also predicted that symposia would have a greater percentage of women speakers if at least one chair was a woman (H3). Previous studies of academic conferences have found that symposia with only men chairs have the smallest percentage of women speakers, relative to a mix of men and women chairs and only women chairs (Casadevall & Handelsman, 2014; Isbell et al., 2012). Our prediction was also based on the extensive evidence for gender-based homophily (McPherson, Smith-Lovin, & Cook, 2011). In organizational settings, the proportion of men's networks that is other men is greater than the proportion of women's networks that is

other women, even when the organization is relatively gender-balanced (Ibarra, 1992, 1997; Brass, 1985; Xu & Martin, 2011).

Within personality and social psychology there are many topic areas, although the boundaries between them may be permeable. Given that women, relative to men, are more likely to endorse communal goals and prefer domains that feature a focus on others, tenderness, and warmth (Diekmann, Clark, Johnston, Brown, & Steinberg, 2011), we predicted that topics more associated with communal values that are stereotypically female (e.g., collaborative, prosocial) would have a greater representation of women speakers than topics more associated with stereotypically male and agentic qualities (e.g., competitive, quantitative).

Underrepresentation and Bias

H5a: Women are underrepresented as speakers in accepted symposia.

H5b: Women are underrepresented as speakers in submitted symposia.

H5c: Women are underrepresented as chairs in submitted symposia.

H5d: Gender representation in symposia influences acceptance.

It is important to determine whether women's level of representation constitutes *underrepresentation* by comparing it to the percentage of women in relevant comparison populations. Studies of other academic conferences have found that women are often underrepresented as speakers relative to their presence as attendees (Casadevall, 2015; Casadevall & Handelsman, 2014) and to their membership in relevant organizations (Isbell et al., 2012; Simon et al., 2007). As a result, we predicted that women would be underrepresented as speakers in accepted symposia relative to their membership in SPSP (H5a).

To explore some potential explanations for gender representation differences, we also examined women's representation as speakers and chairs across all submitted symposia (H5b-c) and compared representation in accepted and rejected symposia (H5d). If women are underrepresented across submitted symposia but have similar representation in accepted and rejected symposia, this would suggest that gender representation differences are caused by differences in submission rates. If women are better represented in rejected than accepted symposia, this would be consistent with a bias against symposia with more women speakers (e.g., Knobloch-Westerwick, Glynn, & Huge, 2013; Roberts & Verhoef, 2016) and/or decreases in symposium quality with more women speakers.

Additionally, we examined women's representation in accepted and submitted symposia (H5a-c) separately for different academic ranks. Given the decreasing percentages of women at increasing academic ranks in social and personality psychology (e.g., Wicherski et al., 2014), if most presenters are at higher academic ranks, women could be underrepresented in the aggregate but well-represented at some academic ranks (i.e., Simpson's Paradox; for an example involving gender representation, see Bickel, Hammel, & O'Connell, 1975).

Patterns over Time

H6: Women's representation has changed over time.

One explanation for women's underrepresentation in various fields and positions has been historical limitation of women's access to education and opportunities. According to this argument, gender equity will be achieved over time as increasing numbers of women attend college, pursue advanced degrees, and enter academia. This hypothesis is in line with recent data documenting reduced or eliminated gender differences in promotion to different academic

ranks (e.g., Box-Steffensmeier et al., 2015; Ceci et al., 2014; Ginther & Kahn, 2014), and with improvements over time in women's representation among presenters at conferences in other fields (Simon et al., 2007). To test whether women's representation increased over time, we looked for temporal effects for Hypotheses 1a-b, 2, and 3.²

Access to Resources

H7a: Women presenters have less access to non-overlapping resources (i.e., their networks have fewer structural holes) than men presenters.

H7b: Women presenters are less connected to social resources (i.e., have lower degree centrality) than men presenters.

Previous research has found that men in organizations are connected to more people than women are (e.g., Ibarra, 1992; Mehra, Kilduff, & Brass, 1998). Additionally, some research suggests that women's social networks are denser, consisting of more interconnected people and therefore having fewer structural holes, than men's networks (e.g., Mehra et al., 1998; Moore, 1990; but see Ibarra, 1993, 1997, for an opposing viewpoint). Therefore, we predicted that women's research networks, as defined by co-occurrence on symposia, would have fewer structural holes than men's. Researchers' networks were considered to have more structural holes to the extent that their co-presenters did not present with each other and did not share other connections. We also predicted that, using a measure of degree centrality, women's networks would reveal them to be less central to the field than men. Researchers were considered more central as they co-presented with a larger number of different people.

²Temporal effects could not be assessed for Hypothesis 4 due to too few symposia on a particular topic in a given year. Temporal effects could not be assessed for Hypotheses 5a-d due to small sample sizes and a lack of relevant baselines for most years.

Method

Data Collection

All programs from 2003-2013 were downloaded from the SPSP website. Spreadsheets corresponding to the 2014 and 2015 conferences, which included both accepted and rejected symposia, were obtained from the program chairs. Symposia that were submitted but rejected were unavailable for other years. SPSP had its first stand-alone conference in 2000 and the reviewing procedures and submission pool for the early years of the conference may not be representative. For the downloaded programs, research assistants manually copied symposia titles, names of chairs, discussants, and first authors of presentations, along with their affiliations, into a spreadsheet. Presidential symposia, special sessions, and data blitzes were excluded from analyses to maintain our focus on peer-reviewed symposia organized by chairs rather than invited by a committee.

The resulting database included all accepted symposia from 2003 through 2013, and all accepted and rejected symposia from 2014 and 2015. Each entry ($N = 6415$) corresponded to a role: symposium chair ($n = 1813$, 28.3%), speaker ($n = 4476$, 69.8%), or discussant ($n = 126$, 2.0%).³ During this time period SPSP restricted individuals from having two or more speaking roles in the same year, but not from holding other combinations of roles (e.g., chair and speaker), so the same person could be represented multiple times within one year. These data were cleaned to standardize participant names (so the same individual was always listed under the same name) and institutional affiliations.

³Symposia were only permitted to include discussants in 2003-2008, providing limited data, so discussants were not analyzed.

Data Preparation

People. Research assistants and the first two authors coded each individual in the database for gender (0 = male) and academic rank at the time of the presentation (see supplemental materials for coding instructions). They drew upon personal knowledge, online information, the Social Psychology Network, and personal networks, with decisions based on names, photographs, and pronouns used in biographical sketches. Gender identification at the time of the conference was used. Of the 6415 entries, 3452 (53.8%) were filled by individuals identified as men, 2962 (46.2%) by individuals identified as women, and 1 by someone whose gender could not be identified. These represented 2612 unique individuals: 1329 men (50.9%), 1282 women (49.1%), and 1 individual whose gender could not be identified. Using the U.S. academic ranking system as a framework, rank was coded as undergraduate ($n = 4$, < 0.1%), graduate student ($n = 1574$, 24.5%), post-doc/lecturer ($n = 631$, 9.8%), assistant professor ($n = 1729$, 27.0%), associate professor ($n = 962$, 15.0%), full professor ($n = 1420$, 22.1%), or non-academic ($n = 54$, 0.8%). Twenty-six positions (0.4%) were academic but did not fit these classifications (e.g., lab coordinator), and the position for 15 entries (0.2%) could not be identified. Undergraduate research assistants completed a first round of coding, flagging ambiguous cases. The first two authors created equivalents for different European systems and evaluated titles such as “research scientist” or “research fellow” on a case-by-case basis. In some cases, academic rank was extrapolated from other data available on CVs (e.g., years since earning PhD, time in an academic position). Individuals could appear multiple times in the database ($M = 2.46$ times, $SD = 2.32$, range 1-29), with their rank changing from year to year.

Symposia. The average accepted symposium had 3.98 speakers ($SD = 0.36$, range 2-5) and 1.58 chairs ($SD = 0.51$, range 1-4). We used keywords to classify each symposium by topic area. Keywords were first used by SPSP in 2009 and were created by the program chairs, Wendi Gardner and Sam Gosling (personal communication, 2016). Keywords were initially used to categorize poster presentations, so they could be grouped by topic area. Keywords were also used to ensure that symposia on similar topics would not be scheduled at the same time. Program chairs coded the symposia idiosyncratically. The keywords were passed from one program chair to the next without instructions for coding. Chairs added and eliminated keywords as they saw fit (personal communication, 2016).

For the purpose of this analysis, the list of keywords used in 2014 was used to classify all symposia. Each symposium was assigned at least one keyword. Keywords were assigned based on a symposium's title and abstract, as well as the abstracts of its individual presentations. In the first round of coding, undergraduate psychology student research assistants coded the symposia, and all codings were reviewed by the first or second author. Any symposia that were ambiguous were coded by the first two authors, based on their experience in the field and the rules detailed in the supplemental materials, as well as symposia titles and abstracts. Of the accepted symposia, 15 (1.8%) were only assigned one keyword. Rules for classification and new keywords were created when several similar symposia did not align with existing keywords. For example, the original keyword list did not include "social cognition" but did include "person perception," the origin of the field of social cognition. Therefore, this keyword was expanded to include social cognition. If a single symposium did not clearly align with any keywords or with

other symposia, it was classified as “other.” We tried to avoid creating overly narrow categories while also keeping the categories meaningful.

Results

Analysis Strategy

Except where indicated, analyses were run at the level of symposium because during the studied time period, symposia, not individual talks, were submitted to the SPSP conference, and acceptance decisions were made only for entire symposia. Except for testing of Hypotheses 5b-d, only accepted symposia were examined ($n = 840$). Throughout, the term “speaker” refers only to first authors of talks presented in a symposium and the term “presenters” refers to speakers and chairs of symposia. When used in analyses, academic rank was coded as 0 = undergraduate student, 1 = graduate student, 2 = postdoctoral fellow/lecturer, 3 = assistant professor, 4 = associate professor, and 5 = full professor. Table 1 presents descriptive information by year of conference.

Tests of Hypotheses

H1a: There are more men speakers than women speakers in symposia.

Of the 3344 speakers in accepted symposia, 1879 (56.2%) were men and 1465 (43.8%) were women. Figure 1 shows the frequency with which different percentages of women within a symposium occurred. As can be seen, a larger percentage of symposia had majority men speakers (45.1%) than had majority women speakers (28.3%). A one-sample t-test revealed that the average percentage of women speakers in a symposium ($M = 43.8\%$, $SD = 28.7\%$) differed significantly from 50%, $t(839) = -6.26$, $p < .001$, 95% CI_{dif} [4.26%, 8.15%], $d = .22$. Thus, there were more men than women in speaking roles in the average symposium.

One could reason that with increasing opportunities to speak (e.g., having 5 speakers rather than 3), there might be greater diversity of speakers. To test this, we ran separate chi-square analyses for each symposium size comparing the distribution of women's representation in symposia against an equal distribution. There were fewer women than men speakers in symposia, regardless of size (see Table 2). Among symposia with 3 ($\chi^2(3) = 9.10, p = .028$, Cramer's $V = .22$), 4 ($\chi^2(4) = 130.13, p < .001$, Cramer's $V = .21$), and 5 ($\chi^2(5) = 15.68, p = .008$, Cramer's $V = .26$) speakers, the distribution significantly differed from an equal distribution. (Only one symposium had two speakers so no analysis was run for this amount.) The correlation between the number of speakers on a symposium and the percentage of women speakers was nonsignificant, $r(838) = .006, p = .86$, Fishers's $Z_r = .0006$, also indicating that increasing the number of speaker slots on a symposium did not increase women's participation.

H1b: There are more men chairs than women chairs in symposia.

A one-sample t-test revealed a marginally significant tendency for symposia ($M = 47.1\%$, $SD = 43.1\%$) to have fewer than 50% women chairs, $t(839) = -1.945, p = .052$, $CI_{diff} [-.03\%, 5.8\%]$ $d = .07$. Most symposia had one ($n = 360$) or two ($n = 473$) chairs, with the remaining few having three ($n = 6$) or four ($n = 1$). Because having multiple chairs provides more opportunities to have a woman chair, we separately examined symposia with one versus multiple chairs. For symposia with one chair, a man ($n = 191, 53.1\%$) was as likely as a woman ($n = 169, 46.9\%$), to be chair $\chi^2(1) = 1.34, p = .246$, Cramer's $V = .004$. Symposia with multiple chairs were more likely to have a mix of men and women chairs⁴ ($n = 212, 44.2\%$), than all men chairs ($n = 147, 30.6\%$) or all women chairs ($n = 121, 25.2\%$), $\chi^2(2) = 27.46, p < .001$, Cramer's $V = .03$. There was

⁴Of the 212 symposia with a mix of men and women chairs, 208 had two chairs: one man and one woman. The remaining 4 symposia had 3 chairs. In one case, the mix was two women and one man; for the rest it was one woman and two men.

no relationship between the number of chairs in a symposium and the percentage of women chairs, $r(838) = -.003$, $p = .934$, Fishers's $Z_r = .0003$.

H2: Women invited speakers are of higher status than men invited speakers.

We examined the academic rank of invited speakers to determine whether women had to be more experienced in the field or have higher status than men to be invited to present. Non-chair speakers, by definition, were invited to present. Speakers whose academic rank was not identified, whose rank was classified as "other," or who held non-academic positions were not included in this analysis. This left 2381 invited speakers, 1389 men (58.3%) and 992 women (41.7%).

Contrary to the hypothesis, a Mann-Whitney test revealed that women invited speakers ($Mdn = 3.00$) were of lower rank than men invited speakers ($Mdn = 4.00$), $U = 527335.00$, $Z = -10.065$, $p < .001$, $r = .21$. The distributions of men and women invited speakers were not equal at different career stages, $\chi^2(4) = 104.72$, $p < .001$, Cramer's $V = .10$. As shown in Figure 2, congruent with the fact that the majority of individuals receiving social psychology PhDs during this time period were women, invited speakers who were graduate students were more likely to be women than men, $t(418) = 3.41$, $p = .001$, $d = .17$. Invited speakers who were postdocs were just as likely to be women as to be men, $t(184) = 0.37$, $p = .71$, $d = .03$. In all faculty categories (i.e., assistant, associate, and full professor), invited speakers were more likely to be men, with the gender gap growing from assistant professors, $t(661) = -3.53$, $p < .001$, $d = .14$, to associate professors, $t(426) = -4.19$, $p < .001$, $d = .20$, to full professors, $t(687) = -12.49$, $p < .001$, $d = .48$.

These findings highlight the importance of academic rank in understanding women's representation at the SPSP conference. They are best interpreted in conjunction with

information about the percentage of women at different academic ranks in the broader population, so we later explore the role of academic rank for Hypothesis 5.

H3: There are more women invited speakers on symposia with women chairs.

Of the 839⁵ symposia with speakers who were not also chairs, 337 (40.2%) had all men chairs, 212 (25.3%) had a mix of men and women chairs, and 290 (36.4%) had all women chairs. A Kruskal-Wallis test revealed that the gender of the chairs was related to the gender of the invited speakers, $p < .001$. When all chairs were men, 33.8% ($SD = 29.4\%$) of the invited speakers in a symposium were women. This percentage increased as the proportion of women chairs increased, to 42.5% ($SD = 32.8\%$) when there was a mix of men and women chairs and 49.6% ($SD = 33.0\%$) when there were only women chairs.⁶

As shown in Figure 3, a chi-square test testing the hypothesis that the distributions of the proportion of women invited speakers in symposia were the same across the different proportions of women chairs revealed that women were more likely to be invited speakers in symposia with at least one woman chair, $\chi^2(18) = 84.06$, $p < .001$, Cramer's $V = .07$.⁷

H4: Gender representation differs by topic.

We predicted that women's representation would differ by topic area. We used one-sample t-tests to compare the average percentage of women speakers in symposia associated with each keyword to 50%. (Since the keyword "other" does not represent a substantive topic,

⁵One accepted symposium had four speakers (all men) who were all also chairs of the symposium.

⁶The percentage of women invited speakers is lower than the percentage of women speakers because more women chairs (74.9%) than men chairs (67.4%) were also speakers in their own symposium, $\chi^2(1) = 8.92$, $p = .003$.

⁷It could be argued that a more stringent test would only consider symposia with 2 or more chairs. Of the 479 symposia with 2 or more chairs, 146 (30.5%) had all men chairs, 212 (44.3%) had a mix of men and women chairs, and 121 (25.3%) had all women chairs. Again a Kruskal-Wallis test revealed that the gender of the chairs influenced the gender of the invited speakers, $p = .002$, with 32.6% women invited speakers for all men chairs, 42.5% for a mix, and 46.8% for all women chairs, and the distributions of the proportion of women speakers differed across the different proportions of women chairs, $\chi^2(14) = 31.74$, $p = .004$.

we will not discuss results for it, though it is included in Table 3 for reference.) As shown in Table 3, the percentage of women deviated significantly from 50% for 15 of the 30 substantive keywords. Only three topics had on average more women than men speakers in their associated symposia. For the 15 most frequently occurring substantive keywords, statistically significant differences were found 8 times, with six topics (social cognition, motivation, methods, self-regulation, norms and social influence, and judgment and decision-making) having majority men speakers, and two topics (close relationships and stereotyping/prejudice) having majority women speakers.

We predicted that perceptions of a topic area as stereotypically masculine versus feminine would be associated with the percentage of women speakers (Diekman et al., 2011). To test this, we conducted a brief study examining social and personality psychologists' perceptions of the 15 most frequently occurring substantive keywords (which were each associated with at least 50 symposia). Social and personality psychologists were recruited via Facebook and the SPSP Connect Forum for a study of "Perceptions of Social and Personality Psychology." Participants ($N = 101$) completed a Qualtrics survey online in which they were presented with a list of these 15 keywords (presented in random order) and asked to rate how well each of six adjectives (competitive, collaborative, quantitative, creative, high-status, prosocial) described each of the areas. Participants responded using a 5-point scale (1 = *not at all descriptive*, 2 = *a little descriptive*, 3 = *somewhat descriptive*, 4 = *mostly descriptive*, 5 = *very descriptive*). Ratings of competitive and quantitative ($r(13) = .55, p = .03$) were averaged for a measure of how stereotypically masculine a topic was, and ratings of prosocial and collaborative ($r(13) = .60, p = .02$) were averaged for a measure of how stereotypically female a topic was (see

Table 3 for means by keyword). These two measures were negatively correlated, $r(13) = -.82$, $p < .001$. We then tested whether gender representation was associated with perceptions of topic areas. Topics rated as more stereotypically feminine had a higher percentage of women speakers, $r(13) = .86$, $p < .001$, and topics rated as more stereotypically masculine had a lower percentage of women speakers, $r(13) = -.60$, $p = .02$. There were no significant correlations between the percentage of women speakers and perceptions of how much a topic was described as high status, $r(13) = -.34$, $p = .21$, or creative, $r(13) = -.27$, $p = .33$. While these results cannot speak to causality, they do provide one framework for understanding differences in gender representation.

Underrepresentation

Women's underrepresentation relative to the population in the field was examined among three groups: speakers in accepted symposia, speakers in submitted symposia, and chairs in submitted symposia. We used demographic information about 2015 SPSP membership as a comparison baseline. Reliable demographic data on SPSP membership for other years was not available, as response rates to voluntary surveys were low (less than 60%) or data were not maintained (C. Rummel, personal communication, August 24, 2016). In 2015, SPSP reported that women constituted 56.25% of the SPSP membership.

Women's representation in accepted versus rejected symposia was also compared, to determine if acceptance decisions were related to the percentage of women speakers in a symposium.

Finally, for each group, we examined underrepresentation at each academic rank. Post-doctoral students and lecturers were excluded from these comparisons because data on base-

rates by gender were not available. For graduate students, we used data from years 2003-2014 (2015 data were not yet available) of the annual census of U.S. social psychology PhD recipients by the National Science Foundation (the Survey of Earned Doctorates), as we could not obtain data on the gender distribution among social and personality graduate students. For assistant, associate, and full professors, we used data from years 2004-2014 (2003 and 2015 data were unavailable) of the annual survey of U.S. graduate departments⁸ by the APA Center for Workforce Studies (the Faculty Salary Survey). By averaging across the available years of data for a given academic rank, we arrived at base-rates of 64.7% women for graduate students, 50.8% women for assistant professors, 45.8% women for associate professors, and 28.1% women for full professors.

H5a: Women are underrepresented as speakers in accepted symposia.

A one-sample t-test comparing the average percentage of women speakers in 2015 accepted symposia ($n = 81$, $M = 50.2\%$, $SD = 28.8\%$) to the percentage of women SPSP members in 2015 revealed a marginally significant difference such that women were underrepresented relative to the SPSP membership, $t(80) = -1.89$, $p = .063$, $CI_{diff} [0.03\%, 12.4\%]$, $d = .21$.

Next, underrepresentation of women as speakers in accepted symposia by rank, relative to the base-rates listed above, was examined. Women were underrepresented among graduate student speakers ($M = 58.5\%$, $SD = 49.3\%$; $t(708) = -3.33$, $p = .001$, $d = .13$), assistant professors speakers ($M = 44.9\%$, $SD = 49.7\%$; $t(961) = -3.67$, $p < .001$, $d = .12$), and associate professors speakers ($M = 39.3\%$, $SD = 48.9\%$; $t(518) = -3.03$, $p = .003$, $d = .13$). However, women were well-

⁸These survey data include only colleges with a masters or doctoral program. Across U.S. academic fields, women are better represented at institutions that only reward bachelors or associates degrees (versus those with graduate programs; American Association of University Professors, 2015), so women's representation at different faculty ranks in the population is likely underestimated. In this way, our analyses are conservative tests of underrepresentation by rank.

represented among full professor speakers ($M = 29.0\%$, $SD = 45.4\%$), $t(815) = 0.59$, $p = .55$, $d = .02$). In short, women were underrepresented as speakers in accepted symposia at every academic rank, relative to the population, except at the highest rank of full professor.

H5b: Women are underrepresented as speakers in submitted symposia.

A one-sample t-test revealed that the average percentage of women speakers ($M = 51.8\%$, $SD = 27.1\%$) in all submitted symposia in 2015 ($n = 244$) differed significantly from the percentage of women SPSP members, $t(243) = -2.56$, $p = .01$, $CI_{dif} [1.0\%, 7.8\%]$, $d = .16$.

Next, we examined underrepresentation in all submitted symposia in 2014 and 2015 by rank. Women were well-represented among graduate student speakers ($M = 60.8\%$, $SD = 48.9\%$; $t(548) = -1.85$, $p = .06$, $d = .08$), assistant professor speakers ($M = 51.8\%$, $SD = 50.0\%$; $t(443) = 0.42$, $p = .67$, $d = .02$), and associate professor speakers ($M = 46.4\%$, $SD = 50.0\%$; $t(251) = 0.20$, $p = .84$, $d = .01$). However, women were overrepresented among full professor speakers ($M = 39.5\%$, $SD = 49.0\%$), $t(285) = 3.94$, $p < .001$, $d = .23$.

H5c: Women are underrepresented as chairs in submitted symposia.

To test whether women were underrepresented as chairs, we compared, for 2015, the average percentage of women chairs⁹ ($M = 52.9\%$, $SD = 41.2\%$) in submitted symposia ($n = 244$) to women's membership in SPSP that year. A one-sample t-test revealed that these two percentages did not differ significantly, $t(243) = -1.28$, $p = .20$, $CI_{dif} [-1.8\%, 8.6\%]$, $d = .08$. That is, in 2015 women were chairing and submitting symposia at a rate proportional to their percentage of the SPSP membership and were not underrepresented as applicants.

⁹For simplicity, we assume that in the case of multiple chairs, both chairs were active as applicants. If only the gender of the person listed as the first chair is examined, the average percentage of women first chairs in symposia submitted in 2015 ($M = 56.4\%$, $SD = 49.7\%$) also did not differ from women's membership in SPSP that year, $t(242) = 0.04$, $p = .97$.

Next, we examined underrepresentation in all submitted symposia in 2014 and 2015 by rank. Women were underrepresented among assistant professor chairs ($M = 42.2\%$, $SD = 49.5\%$; $t(191) = -2.41$, $p = .02$, $d = .17$), but well represented among graduate student chairs ($M = 63.1\%$, $SD = 48.4\%$; $t(232) = -0.51$, $p = .61$, $d = .03$) and associate professor chairs ($M = 46.1\%$, $SD = 50.1\%$; $t(114) = 0.06$, $p = .95$, $d = .01$). Women were overrepresented among full professor chairs ($M = 50.9\%$, $SD = 50.2\%$), $t(109) = 4.76$, $p < .001$, $d = .45$. As in the previous analysis of speakers in submitted symposia, women were overrepresented at the highest rank as chairs in submitted symposia. Additionally, they were underrepresented at the rank of assistant professor.

H5d: Gender representation in symposia influences acceptance.

We compared gender representation in accepted ($n = 160$) and rejected ($n = 291$) symposia using data from 2014 and 2015. The average percentage of women speakers in accepted symposia (51.7% , $SD = 28.4\%$) and rejected symposia (53.1% , $SD = 27.5\%$) did not differ significantly, $t(449) = 0.53$, $p = .60$, $CI_{dif} [-3.9\%, 6.9\%]$, $d = .003$. Thus, for 2014 and 2015 there was no evidence consistent with bias against women speakers at the level of accepting versus rejecting symposia.

To examine whether the gender of a symposium's chairs influenced whether it was accepted, a chi-square test compared the gender mix of chairs in accepted and rejected symposia (see Table 4). The distribution of women chairs was the same across accepted and rejected symposia, $\chi^2(2) = 2.95$, $p = .23$, *Cramer's V* = .06. If anything, a marginally significant correlation suggests that the likelihood of a symposia being accepted increased with the percentage of women chairs, $r(449) = .08$, $p = .09$.

H6: Women's representation has changed over time.

To understand how patterns of representation changed over time, we examined some of the previous hypotheses using longitudinal analyses.

We previously found that there were more men than women speakers (H1a) and a tendency toward more men than women chairs (H1b). To test whether these patterns changed over time, we conducted one-way ANOVAs on the average percentage of women speakers and chairs in symposia with year as a between-subjects factor. As can be seen in Table 1, over time, the increase in the percentage of women speakers in symposia was significant, $F(12, 827) = 2.19, p = .01, \eta^2 = .03$, for linear contrast $p < .001, \eta^2 = .01$, and the increase in the percentage of women chairs was marginally significant, $F(12, 827) = 1.73, p = .06, \eta^2 = .02$, for linear contrast $p < .001, \eta^2 = .01$.

We previously found that among invited speakers, women were of lower academic rank than men (H2). To examine this pattern over time, we conducted a 2 (gender) x 13 (year) between-subjects ANOVA on the average rank of invited speakers. In addition to confirming the previous finding that men were of higher rank than women, $F(1, 2355) = 97.14, p < .001, \eta^2 = .04$, a significant main effect of year emerged, $F(12, 2355) = 3.31, p < .001, \eta^2 = .02$. A linear contrast revealed that, over time, the average rank of invited speakers decreased, $p < .001, \eta^2 = .02$, as can be seen in Table 1. There was no evidence that rank differences between men and women invited speakers changed over time, as the two-way interaction was nonsignificant, $F(12, 2355) = 0.44, p = .95, \eta^2 = .002$.

In a more liberal test of this question, we ran a series of one-way ANOVAs looking at the effect of year on the percentage of women among invited speakers at each of the five academic

ranks. There was no significant effect of year on the percentage of women among invited speakers who were graduate students, $F(12, 406) = 0.71, p = .75, \eta^2 = .02$; postdocs, $F(12, 172) = 0.38, p = .97, \eta^2 = .03$; assistant professors, $F(12, 649) = 0.51, p = .91, \eta^2 = .01$; associate professors, $F(12, 414) = 0.85, p = .60, \eta^2 = .02$; or full professors, $F(12, 675) = 1.47, p = .13, \eta^2 = .03$. Again, we found no evidence that rank differences between men and women invited speakers changed over time.

We previously found that symposia with more men chairs had fewer women invited speakers (H3). To test whether this association changed over time, we conducted a 3 (chairs' gender: all men, mix of men and women, all women) x 13 (year) between-subjects ANOVA on the average percentage of women invited speakers in symposia. We replicated the earlier effect of chairs' gender, $F(2, 800) = 16.17, p < .001, \eta^2 = .02$. This pattern was not moderated by year, $F(24, 800) = 0.49, p = .98, \eta^2 = .005$, and there was no significant main effect of year, $F(12, 800) = 1.37, p = .17, \eta^2 = .007$. The pattern in which symposia that had more men chairs had fewer women invited speakers did not appear to change over time.

To summarize, women's representation as speakers and chairs in accepted symposia has increased over the 13-year period examined. However, gender differences in the academic rank of invited speakers in a symposium remained steady, as did the association between chair gender and invited speaker gender.

H7a: Women presenters have less access to non-overlapping resources (i.e., their networks have fewer structural holes) than men presenters.

H7b: Women presenters are less connected to social resources (i.e., have lower degree centrality) than men presenters.

To test these hypotheses, we employed social network analysis (SNA; Wasserman & Faust, 1994). The analysis examined all co-occurrences on symposia between all presenters on accepted symposia from 2003-2015. First, we examined the extent to which presenters had structural holes in their co-presenting network, indicating their access to non-overlapping resources. The extent of structural holes was calculated using the constraint model (see Wang et al., 2014, for relevant formulas), taking into account the size of a person's co-presenting network and the degree to which that person's co-presenters were directly or indirectly connected to one another. Women ($n = 886$) had fewer structural holes in their co-presenting networks ($M = 1.53$, $SD = 0.23$) than men ($n = 1014$; $M = 1.57$, $SD = 0.24$), $t(1898) = -3.31$, $p < .001$, $CI_{dif} [-0.056, -0.014]$, $d = .17$. Women's co-presenting networks offered access to fewer unique resources than did men's.

Next, we examined the number of different resources and connections presenters had using degree centrality, the number of co-occurrences on symposia with different people. Women had lower degree centrality ($M = 6.23$, $SD = 5.57$) than men ($M = 7.15$, $SD = 6.01$), $t(1898) = -3.44$, $p < .001$, $CI_{dif} [-1.44, -0.39]$, $d = 0.16$. Thus, women were less central in the field and had connections to fewer resources than did men.

As the women in our sample are on average of lower academic rank than the men, differences in social networks between genders might be explained by differences in rank. To test this possibility, we regressed a presenters' highest academic rank¹⁰ while at the SPSP conference, the presenter's gender, and the interaction of the two onto the measures of structural holes and degree centrality. Only presenters who had been in an academic position

¹⁰Results are similar if the presenter's average academic rank across appearances is used.

(e.g., graduate student) while presenting ($n = 1880$) were included in these analyses; all non-academic positions were coded as missing values. Academic rank was positively related to the number of structural holes, $\beta = 0.03$, $SE = 0.01$, $t(1876) = 6.81$, $p < .001$, but gender no longer had a significant effect, $\beta = -0.03$, $SE = 0.02$, $t(1876) = -1.24$, $p = .22$, and their interaction was not significant, $\beta = 0.01$, $SE = 0.02$, $t(1876) = 0.92$, $p = .36$. Similarly, academic rank was positively related to degree centrality, $\beta = 0.84$, $SE = 0.13$, $t(1876) = 6.69$, $p < .001$, but gender no longer had a significant effect, $\beta = -1.00$, $SE = 0.60$, $t(1876) = -1.68$, $p = .09$, and their interaction was not significant, $\beta = 0.25$, $SE = 0.19$, $t(1876) = 1.36$, $p = .17$. This suggests that the previously found differences in the networks of men and women presenters were accounted for by women's lower average academic rank.

Discussion

Social psychology is the scientific study of people and how they are affected by their environments. As such, the science should be informed by a diversity of voices and perspectives. The present research considers one facet of diversity by examining gender representation in SPSP symposia from 2003 to 2015, as well as exploring the characteristics of symposia, such as topic area and chair gender.

The Big Picture: Women are Underrepresented, but Not Always

At the highest level of analysis, the overall picture was mixed. There were reasons for optimism and areas for improvement. On the one hand, across all symposia, there were more men speakers than women speakers. When walking into a symposium, 28% of the time audience members saw only one woman presenting her research, and 15.5% of the time, no women at all. In addition, although many junior women participated in SPSP symposia, women

were underrepresented at every rank except the full professor level, relative to their percentage in the population. Finally, men chairs were more likely to invite other men to speak in their symposia than to invite other women. This last effect is notable, given that there were previously only two ways to speak at the SPSP conference: 1) organize a symposium, or 2) be invited to speak in someone else's symposium.

On the other hand, the disparities were not large, as can be seen from our effect sizes, and the representation of women has increased over time. In 2015, women were organizing and submitting symposia as chairs at a rate proportional to their membership in SPSP. In addition, in the years tested, having more women speakers or women chairs did not affect the likelihood that a symposium was accepted. The latter analysis is based on only two years of data, and the programs from those years are confounded with the motivations of the program chairs (in 2014, the program chairs actively attended to gender issues in creating the conference review panel and program [C. Kaiser, personal communication, April 27, 2016]), limiting the conclusions that can be drawn. However, this finding does suggest, as other fields have found (Casadevall, 2015), that conscious attention to the gender representation of panels can have meaningful effects.

Analysis of symposia by topic likewise provided a mixed picture of gender representation. Among the 15 most common topics, two (close relationships and stereotyping/prejudice) had on average significantly more women speakers than men speakers on their symposia, and seven did not significantly deviate from 50/50 representation (self/identity, emotion, culture, intergroup relations, mental health/well-being, social neuroscience, and groups/intragroup processes/power). However, six topics (social cognition,

motivation, methods, self-regulation, norms and social influence, and judgment and decision-making) had on average significantly more men speakers than women speakers on their symposia. We did not have base-rate information for the population of social psychologists studying each topic, so could not test underrepresentation relative to any population. As prolific researchers often presented on several topic areas, base-rate information may not be useful. We do know that perceptions of topic areas as collaborative and prosocial were positively associated with women's representation, and perceptions of topic areas as competitive and quantitative were negatively associated with women's representation. Just as low participation of women and minorities in STEM disciplines is a concern, researchers in areas with low women's participation may use these findings to consider issues of parity, as a lack of diversity in researchers may constrain the kinds of research questions that are pursued and the creativity of the field (e.g., Inbar & Lammers, 2012).

Looking at representation over time provided reasons for both optimism and concern. Representation of women is increasing over time. However, in the 13 years of conference data studied, there was no evidence that the pattern of women being underrepresented as speakers at all ranks except full professor was changing. Differences between men and women in productivity and impact (Brown & Goh, 2016; Cikara et al., 2012; Eagly & Miller, in press; Nosek et al., 2010) may explain overall gender differences in representation but cannot explain why these gender differences disappear among full professors, as men full professors still publish more and are better cited than women full professors (Eagly & Miller, in press). Another potential explanation for this pattern is that women must be more established and successful than men to be invited to join a symposium (Banaji & Greenwald, 1995; Biernat et al., 1991).

Or, less senior women may be more likely to turn down invitations to speak (Schroeder et al., 2013) because of childbearing and family obligations, more common at those ages, that may reduce their ability to attend conferences (Xu & Martin, 2011). Future research should test these and other explanations.

To further understand women's professional progress, we explored their access to professional resources through examination of their professional networks. In the present analysis, we found that men's and women's co-presenting networks, and therefore resources available to them, differed. Women were on symposia with fewer different individuals and with individuals that likely had overlapping resources. Men, on the other hand, were on symposia with researchers who were more independent from one another, which likely increased the range of resources to which they had access. These gender differences disappeared when the lower average academic rank of women was taken into account, suggesting that these deficiencies in women's networks may decrease and eventually disappear as more women achieve more senior academic positions. This analysis reflected how women and men interacted with their colleagues in the past; further understanding of network influence could help increase parity in the field.

Future Actions

In addition to suggesting future research directions, these results point to a number of actions that could be taken by those who convene and organize conferences. Encouragingly, the organizers of the SPSP conference have recently adopted some of these actions¹¹, in addition to greater vigilance and attention on the part of symposia chairs and program committees. For

¹¹In 2014, preliminary analyses of these data were provided to the SPSP Program Committee for the 2015 conference, and in 2016, these results were presented at the SPSP conference and to the SPSP Executive Committee.

example, in the years under review, the only way to speak at the SPSP conference was as part of a symposium, which relies heavily on having or creating a network. Such a policy may disadvantage women for several reasons. Women may be less likely to be invited as speakers because they are less central in social networks and have a less diverse set of connections than men, as suggested by our co-presenting network data. Furthermore, men chairs are less likely to invite women to speak than to invite men, but women chairs do not evidence a parallel preference in favor of women speakers. This means that even if women are well-represented as chairs (as was true in recent years; see Table 1), they will be underrepresented as speakers. In addition, women organizing symposia may have greater difficulty recruiting and attracting high-status speakers or speakers outside their network, than men. SPSP created opportunities for submitting single-paper oral presentations to the 2017 conference, in addition to symposia, which could address these issues by reducing reliance on social networks, reducing the role of symposia chairs as gatekeepers, and making it easier to submit a presentation.

In addition to changing the structure of the submission process, in 2015 SPSP adopted a double-blind review procedure. Prior to this, reviewers knew the identities of the submitting authors, limiting reviewers' ability to assess symposia quality independent of biases associated with author characteristics.¹² For example, reviewers might have been biased towards individuals who were members of their social networks or were of high status. In addition, gender bias could have emerged, as research of similar quality may receive lower ratings when

¹²We did not find evidence of this policy change affecting the relationship between gender representation and acceptance decisions in our limited data. The difference between accepted and rejected symposia in percentage of women speakers was nonsignificant for 2014, $F(1, 205) = 0.02, p = .88$, and 2015, $F(1, 242) = 0.43, p = .51$, and the magnitude of this difference did not change between the two years, $F(1, 447) = 0.11, p = .75$.

attributed to a woman scientist versus a man scientist (Knobloch-Westerwick et al., 2013; Roberts & Verhoef, 2016).

Finally, these analyses speak to the representation of women as speakers at the SPSP conference, but could not speak to the overall representation of women at the conference (e.g., as attendees, as poster presenters) or to the representation of other minority group members. Not only was it beyond the scope of the present research to examine poster presentations, but demographic information about submissions or attendees had not been obtained or maintained by SPSP. It is heartening that in response to requests for greater transparency and revelations of unequal representation, the SPSP program committee has begun to collect demographic information on membership, attendees, and submissions, which should aid future research.

Significance and Conclusions

Our data fit a larger pattern of recent work suggesting that women's impact on psychology is less than that of men's (Brown & Goh, 2016; Cikara et al., 2012; Eagly & Miller, in press; Nosek et al., 2010). Here, we focused only on women, but with accurate and transparent tracking of other demographic variables, a fuller picture of who is presenting at the conference and whether that representation is equitable can emerge. Representation matters. For individuals, presenting research at a conference increases the likelihood that research will be read (de Leon & McQuillin, 2015) and cited (Winnik et al., 2012). Given that citation counts are often considered when measuring the impact of a researcher's work, and factored into hiring, retention, and promotion decisions, increasing citation counts increases the likelihood of professional success. Although we cannot directly attribute differences to fewer conference appearances, recent research has shown that women's research is cited less than men's, in

general (Larivière, Ni, Gingras, Cronin, & Sugimoto, 2013) and specifically in social and personality psychology (Eagly & Miller, in press; Nosek et al., 2010).

For the audience, the identity of speakers matters (Murphy, Steele, & Gross, 2007; Sonnert, Fox, & Adkins, 2007). At early career stages, individuals are working to create a viable self-concept and construe role models as guides to the kinds of attributes they want to acquire and develop. In mid-career stages, role models help people refine their self-concepts. Successful similar others serve as role models for individuals developing their professional self-concepts (Gibson, 2003; Sealy & Singh, 2006). In the absence of such role models, individuals may not gain the socialization necessary for success. Relatedly, exposure to similar successful and counter-stereotypic women has been shown to change women's self-concepts and reduce negative self-stereotypes (Asgari et al., 2012; Dasgupta & Ansari, 2004). Finally, role model gender has more impact on women than men (Lockwood, 2006).

For these and many other reasons, we should attend to the visibility of women and other minority groups in positions of status. Social psychology is the study of humanity in different situations; because we know that who we are affects what we study (e.g., Inbar & Lammers, 2012), social psychologists should represent all aspects of humanity and a wide range of lived experiences.

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Table 1

Descriptive Statistics of Sample by Year of Conference

Year of conference	Number of symposia	Average % of women speakers in symposia	Average % of women invited speakers in symposia	Average % of women chairs in symposia	Median rank of women invited speakers	Median rank of men invited speakers
2003	36	37.4%	36.4%	39.8%	3	4
2004	39	40.0%	40.4%	39.7%	3	5
2005	40	38.0%	37.0%	35.0%	3	4
2006	51	38.4%	38.2%	36.3%	3	4
2007	61	40.9%	37.1%	43.4%	3	4
2008	66	49.8%	49.0%	50.5%	3	4
2009	73	37.4%	33.9%	47.7%	3	4
2010	75	42.0%	41.7%	40.9%	3	4
2011	74	42.7%	39.0%	52.0%	3	4
2012	75	44.7%	39.7%	50.0%	3	3
2013	90	44.1%	43.4%	45.6%	3	3
2014	79	53.2%	51.5%	57.6%	3	3
2015	81	50.2%	43.9%	56.2%	3	3

Note. Only accepted symposia are included. Only invited speakers with an academic position are included in the rank statistics. Rank was coded as 0 = undergraduate student, 1 = graduate student, 2 = postdoctoral fellow/lecturer, 3 = assistant professor, 4 = associate professor, and 5 = full professor.

Table 2

Representation of Women as Speakers across Accepted Symposia by Size of Symposium, 2003-2015

Size of symposium	Number of women speakers	Number of symposia	Percent of symposia
3 speakers (<i>n</i> = 61)	.00	15	24.6%
	1.00	18	29.5%
	2.00	22	36.1%
	3.00	6	9.8%
4 speakers (<i>n</i> = 731)	.00	110	15.0%
	1.00	206	28.2%
	2.00	223	30.5%
	3.00	136	18.6%
	4.00	56	7.7%
5 speakers (<i>n</i> = 47)	.00	4	8.5%
	1.00	11	23.4%
	2.00	14	29.8%
	3.00	11	23.4%
	4.00	6	12.8%
	5.00	1	2.1%

Table 3

Average Percentage of Women Speakers in Accepted Symposia by Keyword, 2003-2015

Keyword	# of symposia listing keyword	Average % of women speakers	One sample t statistic	p-value	Cohen's d	Rated masculinity	Rated femininity
Person Perception/ Social Cognition	141	39.6%	-4.86	<.001	0.41	3.84	2.93
Self/Identity	121	45.2%	-1.81	0.07	0.16	3.23	3.15
Other	114	34.3%	-6.09	<.001	0.57		
Close Relationships/Interpersonal	100	60.0%	3.76	<.001	0.38	3.25	3.64
Emotion	98	46.9%	-1.05	0.30	0.11	3.49	3.09
Motivation/Goals	82	36.7%	-4.40	<.001	0.49	3.37	3.04
Stereotyping/Prejudice	80	57.3%	2.28	0.03	0.26	3.48	3.57
Methods/Statistics/Research Integrity	70	29.8%	-6.49	<.001	0.78	4.15	2.79
Culture	68	53.0%	0.81	0.42	0.10	2.75	3.72
Self-Regulation	67	35.5%	-4.52	<.001	0.55	3.56	2.96
Intergroup Relations	59	51.4%	0.41	0.68	0.05	3.35	3.62
Mental Health/Well-Being	58	54.8%	1.29	0.20	0.17	3.07	3.73
Norms and Social Influence	58	40.2%	-2.89	0.01	0.38	3.14	3.30
Social Neuroscience	55	43.5%	-1.63	0.11	0.22	4.09	2.78
Groups/Intragroup Processes/Power	53	52.6%	0.67	0.50	0.09	3.49	3.34
Judgment/Decision-Making	51	33.0%	-4.77	<.001	0.67	3.94	2.89
Attitudes/Persuasion	47	34.9%	-3.99	<.001	0.58		
Personality Processes/Traits	45	32.7%	-4.76	<.001	0.71		
Morality	41	29.9%	-5.26	<.001	0.82		
Physical Health	32	57.0%	1.55	0.13	0.27		
Prosocial Behavior	32	35.2%	-2.55	0.02	0.45		
Individual Differences	30	46.9%	-0.74	0.47	0.13		

Politics	26	31.2%	-4.61	<.001	0.90
Evolution	23	46.7%	-0.53	0.60	0.11
Belonging/Rejection	19	61.8%	2.03	0.06	0.46
Gender	18	66.7%	2.29	0.04	0.54
Field Research/Interventions	17	49.7%	-0.04	0.97	0.01
Applied Social Psychology	17	44.8%	-0.76	0.46	0.19
Diversity	15	62.2%	1.63	0.13	0.42
Religion/Spirituality	15	30.0%	-2.70	0.02	0.70
Aggression/Antisocial	13	36.5%	-2.11	0.06	0.59

Note. Keywords are listed in order of descending number of symposia listing that keyword. 825 symposia were associated with two different keywords and are represented twice; 15 were associated with only one keyword and are represented once. The one-sample t-tests test the average percentage of women speakers against 50%. Rated masculinity is the average of ratings of competitive and quantitative, and rated femininity is the average of ratings of collaborative and prosocial, all on 5-point scales. These ratings were only collected for the 15 most frequently occurring substantive keywords (i.e., excluding “other”; see main text for details).

Table 4

Distribution of the Presence of Women Chairs in Accepted and Rejected Symposia, 2014-2015

	Gender of chairs			Total
	All men	One man and one women	All women	
Accepted Symposia	44	50	66	160
Rejected Symposia	102	87	102	290
Total	146	137	168	451

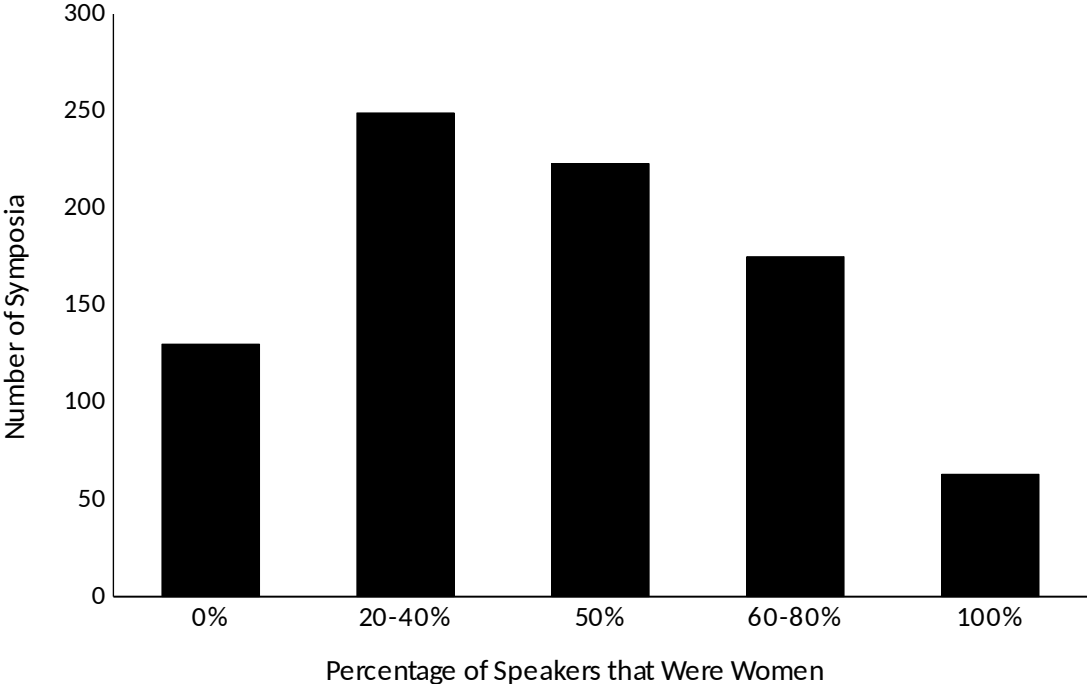


Figure 1. Representation of women as speakers in accepted symposia, 2003-2015

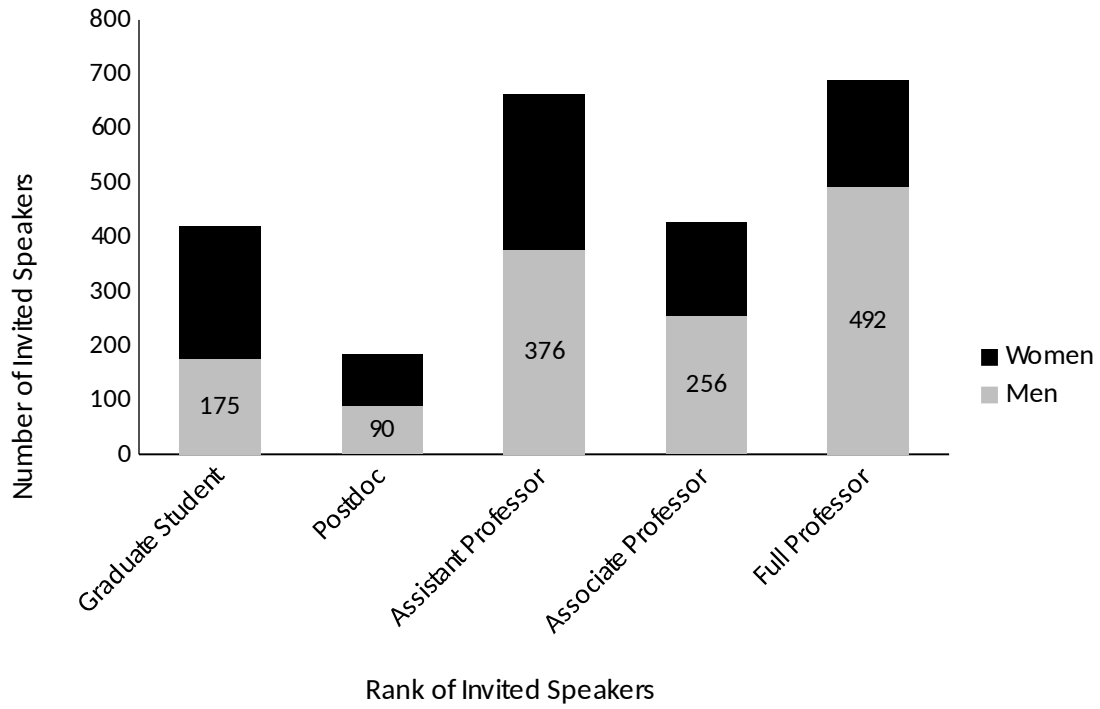


Figure 2. Distribution of invited speakers in accepted symposia by gender and academic rank, 2003-2015

Figure 3. Representation of women as invited speakers in accepted symposia by gender of chairs, 2003-2015