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# How Are We Doing? An Examination of Gender Representation in Industrial and Organizational (I-O) Psychology

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*There has been an explosion of within-profession studies examining standings on gender representation in advancement, publication patterns, and conference presentations. However, industrial and organizational (I-O) psychology has yet to take such an introspective look and fully join these conversations. This manuscript aims to initiate and encourage such discussion. Through a brief review of relevant background information and the collection and analysis of recent archival data, we seek to examine where we have been with regard to gender representation, where we currently stand, and what steps are needed moving forward. We aim to stimulate continued examinations on this topic while recommending appropriate action items relevant to achieving equity in representation in our field.*

Keywords: gender representation, gender equity, female advancement, recognition

Despite women now comprising the majority of college students and bachelor degree recipients (Goldin, Katz, & Kuziemko, 2006), men continue to retain majority representation in many fields of academia (Council of Canadian Academies, 2012) and the business world (Catalyst, 2017; Faccio, Marchica, & Mura, 2016). As the gender composition of those entering professions changes, special attention has been drawn to any gender disparities in advancement or outcomes in the workplace. Although topics such as rates of advancement, the glass ceiling, and the like have long been a target of workplace research (e.g., Morrison & von Glinow, 1990), there has been an explosion of within-profession studies in the sciences examining gender differences in advancement (e.g., computer science, Way, Larremore, & Clauset,

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2016; medicine, Economou, 2014), publication patterns (e.g., in mathematics, Mihaljevic-Brandt, Santamaria, & Tullney, 2016; across science, technology, engineering, and math (STEM) fields, Zeng et al., 2016), and conference presentations (e.g., anthropology, Isbell, Young, & Harcourt, 2012).

Although a number of disciplines have introspectively evaluated their own standings with regard to gender representation, industrial and organizational (I-O) psychology has yet to fully join these discussions. Consequently, this article seeks to initiate such conversation. Our goal is to provide some basic gender representation information in relation to our field and to encourage subsequent commentary, research, and actionable next steps. Such an examination is important for many reasons, but we note in particular three that prompted our attention. First, as researchers who investigate topics related to discrimination, we are acutely aware of both the prevalence of bias and barriers in workplaces as well as the misattributions to discrimination that can be made. Our aim is to spur people in our field to gather the data needed to take an objective look at these topics rather than to conclude inequities do or do not exist based on limited and often ambiguous information. Second, relative silence on a topic may signal there is nothing to talk about, but it also may signal lack of interest, inability to voice, and/or unwillingness to address a topic. Although there are occasional conference sessions targeted toward women's advancement within our profession, and there is a very recently formed women's network within the Society for Industrial and Organizational Psychology (SIOP), fostering greater conversation will likely be a positive outcome for our field. Third, as our professional society strives to put best practice to work in its operations (e.g., selection of staff, member surveying), reflecting on best practices put forth from gender equity research and whether, how, and when they might be applied to our practice, teaching, and research endeavors is in keeping with a broader desire to practice what we preach.

After providing a very brief historical synopsis of research on gender in the I-O profession and a quick snapshot of current gender composition of the field, we explore gender representation in a number of areas typically discussed in evaluating gender equity (e.g., salary, advancement, recognition), as well as in work outcomes more specific to scientific fields (e.g., publications, presentations, editorships) with the aim of applauding evidence of equity in our field, pointing out any potential gaps, and stimulating discussion and research. We acknowledge upfront that our review is quite cursory and our analyses merely descriptive; strong inferences regarding any potential gender inequity and its causes require richer data and more sophisticated examination. However, we feel that this overview can provide some useful information to start such examination, point to where energies might best be focused, and create an appropriate agenda for the profession in this regard.

## Relevant Background Information

### *Briefest Historical Lens*

In her review of American female pioneers of I-O psychology, Koppes (1997) noted that “compared with other sciences, women constituted a larger proportion of psychologists during the formative years” (p. 500). Despite that, I-O had the lowest proportion of women in the applied areas. Koppes also pointed out that there was solid evidence of women’s early scholarly contributions, as DeMeuse’s (1987) review of *Journal of Applied Psychology (JAP)* articles from 1917–1919 showed that 16.7% of senior authors were women, and between 1920 and 1929 24.6% of senior authors were female. Fast forwarding to the end of the century, one also finds some examinations of authorship and gender. In 2000, Ones and Viswesvaran found that women published less than men in two leading journals in the field (*JAP* and *Personnel Psychology*) in the 1990s (standardized mean difference in number of papers was .28 favoring men).

In 2004, Judge, Kammeyer-Mueller, and Bretz published a paper on I-O academic psychologists’ career outcomes that indicated that women had significantly lower levels of success (extrinsic success was a composite of rank, salary, citation rates, prestige of current job, fellowships, and presence on editorial boards; intrinsic success was defined as career satisfaction). They noted that although variables in their model (e.g., career publications) explained to some extent why the gender differences in career success occurred, they did not account for all the factors that might explain gender differences. Judge et al. suggested that there may be an accumulated advantage for gender, such that men’s better initial success (i.e., more likely to obtain better initial jobs, more likely to work with productive chairs) leads to an advantage that accumulates so that the gender effect becomes stronger over the course of a career. Although they advocated for further research on this possibility, little attention to gender has occurred since then. Further, the focus of attention has primarily been on publications and academic success rather than a broader view that would include women’s success in the practice domain.

### *Current Representation*

Data obtained from the SIOP Administrative Office (personal communication, December 21, 2016) indicate that of those SIOP members who indicated gender (only 60% provided this information), 52.0% were female. The membership data provided by SIOP also indicates some small differences in gender balance across primary employment settings, with 42.6% of academics who provided information indicating they are female, 49.2% of those in private sector female, and 53.7% of those in government settings female. Similarly, Table 1 outlines the gender breakdown of individuals in various fields based on the 2011 SIOP Membership Survey (25% response rate; 800

**Table 1. Gender Breakdown of Major Employment Settings for Those in the I-O Psychology Field Based on the 2011 SIOP Membership Survey**

Setting	Male	Female
Consulting firm/private practice	56%	44%
University/private college	56%	44%
Private sector	52%	48%
Nonprofit research organization	28%	72%
Public sector organization	44%	56%
Other academic institution	38%	63%
Retired	86%	14%
Other	52%	48%

female, 797 male). From examining the table, we notice a relative equal split across the most common work settings (consulting firm/private practice and university/private college), with more women in the less “traditional” settings of nonprofit and other academic institutions.

In terms of whether the composition of the field is changing, 56.8% of student members who provided gender information were female. To gain a sense of the gender breakdown of recent I-O graduates entering the field, we contacted faculty representatives at each of the 40 I-O PhD programs identified by Beiler, Zimmerman, Doerr, and Clark (2014), requesting the number of male and female graduates between 2012 and 2016. Of these 40 programs, we received gender information for 451 graduates of 29 programs. The collective gender breakdown tended to be female skewed, in that 273 (60.5%) of graduates were women and 178 (39.5%) were men.

Thus, overall the field of I-O psychology appears relatively gender balanced in membership according to SIOP membership statistics and recent member surveys; however, there is also evidence that the field is tilting female based on demographics of recent graduates. We encourage readers to note these baseline estimates of gender balance in numbers within the field when considering the topics that follow, including salary, advancement, recognition, conference presentations, and journal publications.

### **Examination of Gender Representation in I-O Psychology**

#### ***Income***

There is a sizeable body of research on gender equity in pay, including studies that focus in on particular sectors and levels (e.g., in academia, Lee & Won, 2014; in executive level jobs, Burrell & Zucca, 2004). To address gender equity in income within our profession, we look at available data, pose areas that might be fruitful to examine, and suggest next steps.

**How are we doing?** The most recent SIOP salary survey (<http://www.siop.org/tip/Jan17/Report.pdf>) provides detailed gender comparisons of salary, noting that the 2015 median income for men in I-O was \$116,779 (mean of \$138,873) and for women was \$104,750 (mean of \$117,985), with both mean and median indicating significant differences. The report notes that the salary gap in I-O has been narrowing over time, with the median income for women in I-O rising at a higher rate than men's since 1982, and that the female-to-male ratio in income in I-O (89.7%) is higher than the typical range (80–83%, U.S. Bureau of Labor Statistics, 2015). Although the report notes this is favorable information, it also notes that the gender wage gap in I-O is persistent and will not be eradicated at current growth rates for at least another decade.

**What do we need to explore?** Quality gender equity studies do not simply look at income differences but consider all the various human capital and market factors that relate to pay, any number of which might demonstrate gender differences (e.g., hours worked, O'Neill & O'Reilly, 2010). To really understand any gender pay gap in our field, we need to assess and account for such factors, but such data are not readily available. There are other topics related to gender and pay that we might consider as well. For example, considerable research exists on gender differences in pay negotiation (e.g., Leibbrandt & List, 2015): To what extent do women and men approach pay negotiation differently in our field? In addition to the helpful information in the salary survey, how might SIOP provide resources for those seeking to negotiate raises and better starting salaries? Research also has focused on gender differences in pay expectations (e.g., Hogue, DuBois, Fox-Cardamone, 2010; Jackson, Gardner, & Sullivan, 1992): What are the expectations of new graduates in I-O? Other research points to task segregation within occupations (e.g., more female than male doctors, nurses, and physicians assistants in certain sub-specialties). To what extent is there differential gender representation within I-O in sub areas of specialization (e.g., less women in selection and psychometrics), and how might that relate to salary? With regard to the growth rates of salary within I-O, a considerable body of research suggests that as the proportion of females in an occupation increases, there is a net negative effect on pay—a phenomenon often explained by devaluation theory that suggests women's work is culturally devalued (see Magnusson, 2009, for a review). The SIOP salary survey shows salary growth from 1982 on, although examining devaluation theory would necessitate examining gender composition over time along with relative growth rates in other professions not experiencing changes in gender composition (or controlling for those changes).

**What are needed next steps?** In order to be able to do an adequate study of pay equity in our field, we need sufficient individual motivation to

provide accurate information on salary and human capital factors to interested researchers, and sufficient profession-wide motivation to set aside resources to conduct a thorough study. Given how much work individuals on the SIOP Income and Employment Survey Team put into that effort to get us this far in terms of information, overcoming this information gap appears to be a significant challenge.

### **Advancement**

Considerable research has focused on advancement rates of women relative to male counterparts in many disciplines (e.g., in economics, McDowell, Singell, & Ziliak, 2001; vision sciences, Cooper & Radonjic, 2016). Within academic settings, comparisons of gender representation by rank are common, with studies typically showing that women comprise lower proportions of higher ranks (e.g., 42.6% of assistant professors and 21.7% of full professors in Canada, across humanities, life sciences, and physical sciences, Council of Canadian Academies, 2012; 15% of full professors in computer science, Way et al., 2016). This is often described as a “leaky pipeline,” where comparisons of proportions at entry to advance ranks differ [e.g., while 47% of medical school graduates in 2011 were female, Economou (2014) found that women only occupied 37% of full time faculty and 13% of full professor positions]. Looking specifically to psychology, Geraci, Balsis, and Busch (2015) found that 35% of full professors were women despite the majority of individuals in the field being female (i.e., a female to male ratio of 2.1:1, APA Center for Workforce Studies, 2015). Outside of academic settings, there is also substantial research on gender and advancement, with particular attention to the “glass ceiling” or lack of advancement beyond a certain point (e.g., Cook & Glass, 2014; Russo & Hassink, 2012).

**How are we doing?** Descriptive data on job level in our field is more readily available on the academic side. To gain a glimpse, we identified the top 40 industrial-organizational PhD programs ranked by overall faculty productivity (Beiler et al., 2014), and using each program’s website information, we recorded faculty members’ gender and rank. We specifically looked at tenure-track/tenured faculty members and did not include teaching faculty, visiting scholars, or emeritus faculty within our data set. One school did not provide information on faculty rank, so it was not included in our analyses. The final data set included 220 faculty members from 39 I-O PhD programs, of which 131 (59.5%) were male and 89 (40.5%) were female. Significant differences existed between male and female faculty members in rank, such that men tended to hold higher ranked positions ( $M = 2.41$ ,  $SD = 0.73$ ) than women ( $M = 2.10$ ,  $SD = 0.84$ ),  $F(1,219) = 8.48$ ,  $MSE = 0.61$ ,  $p = .004$ . That is, women are holding more assistant faculty positions than men in these programs, and men hold more associate and full professorships than

women. Note that this analysis does not speak at all to promotion rates, time to advance, or criteria used in evaluating candidates but simply reflects representation at current job levels. Finally, we found no significant differences in gender representation by program ranking  $F(1, 219) = 0.64$ ,  $MSE = 139.32$ ,  $p = .425$ .

**What do we need to explore?** On the practice side, there are not readily available data to draw upon to even begin to consider questions of advancement in I-O. Addressing advancement in practice would require methodologies employed in studying the issue more broadly (e.g., Konrad & Cannings, 1997; Lyness & Thompson, 2000; Tharenou, 1999) such as considering the nature of work experiences and other human capital factors. However, we would note that such efforts are worth pursuing and would encourage SIOP to include gender as a variable in future practitioner surveys so as to shed light upon issues of gender and advancement in that context. Further, our analysis describing rank on the academic side speaks only to current composition of faculty ranks in a subset of I-O programs (not to faculty in business schools, masters programs, or the full range of PhD and PsyD programs, or to those teaching I-O at undergraduate institutions); it does not speak to gender equity in representation (as we do not have data on how many women enter the faculty pipeline in these types of programs), nor does it address issues of rates of advancement or factors considered in advancement decisions. Other analyses that would be helpful would involve tracking all entrants to our field over time: Of those who graduate from I-O programs, how many stay in the field? Are there gender differences in retention rates such that we have a leaky pipeline, or is this not a problem? At a broader level, we know there are sex differences in the likelihood that PhDs will apply for assistant professor positions in a number of fields, especially at research-intensive universities (Ceci, Ginther, Kahn, & Williams, 2014), but we also know that women who apply are often interviewed and hired at greater rates than men (Valla & Ceci, 2014). As a profession, are we tracking individuals' career experiences through the transition from PhD to placement? For example, what jobs are individuals seeking? Are they obtaining them? What data can we bring to bear on the practice side, where advancement rates post-PhD may be more difficult to quantify? Further, some researchers (Gino, Wilmuth, & Brooks, 2015) have argued that women view high-level positions as less desirable and prioritize other life goals (see also Litzky & Greenhaus, 2007). Others have noted gender bias in perceptions of derailment potential (Bono et al., 2016): How is the future potential of early career individuals in our field viewed? What do we know about the views of women in I-O regarding career expectations?

Another area that has been examined in a number of professions is whether there are differences in training or in treatment of entrants to the

field. For example, Sheltzer and Smith (2014) showed that in the life sciences, male faculty, particularly those who might be considered of elite status, train fewer female graduate students and post-docs relative to their representation. Within I-O, we might wish to invest in better tracking of the recruitment, retention, and training of those entering our field. This might include consideration of more indirect interpersonal discrimination, as indicated by Milkman, Akinola, and Chugh (2015), who showed, across a number of fields, that emails from prospective graduate students with male names are responded to more frequently than those written with female names.

An additional area that might deserve further research attention on both the academic and practitioner side is whether there are any gender differences in professional networks. There are a number of studies that have examined men's and women's networks inside organizations (in terms of access and advancement; e.g., Brass, 1985; Ibarra, 1992), in terms of finding jobs and/or obtaining contract work (Lutter, 2015; Merluzzi & Sterling, 2017), and specifically in terms of academic success (e.g., Brink & Benschop, 2014; Parker & Welch, 2013). Within I-O psychology, we might gather data to consider the extent of homophily in networks, and also research the relation of gender to mutuality, density, and centrality metrics.

**What are needed next steps?** As a profession, we do devote considerable time and energy to training and development issues (e.g., issuing guidelines for degree programs, providing continuing education opportunities, arranging mentoring sessions at conferences), but we are not adequately studying our pipeline and whether the leaks along the way are problematic or healthy selection and self-selection (regardless of any relationships to gender). Further, although there is a large body of research on women's advancement to draw from, outside of some advice pieces in *The Industrial-Organizational Psychologist (TIP)* or conference sessions, we know little about the career stories of women in practice in our field and if any of the barriers discussed in that broader literature apply to their advancement. We also need to devote resources to better track the experiences of those seeking a career in our field (applicants to graduate programs, graduate students). The pieces of the picture that are missing on the academic side in terms of representation in other types of programs (MA, PsyD, business schools) can be filled in with just a small amount of effort; the missing information in terms of advancement in practice and in terms of pipeline will require much more effort and resources to obtain.

### **Recognition**

Indicators of success and prestige, such as fellow status, awards, editorial board membership, and elected office positions can signal what kinds of contributions the field rewards. For example, the percentage of women achieving



fellow status has been examined for underrepresentation in many disciplines (e.g., 37% of recognized fellows in the Australian psychiatric workforce are female, Golding, 2015; 18% of National Academy of Science members are women, Sheltzer & Smith, 2014). Within the field of psychology as a whole, APA's Center for Workforce Statistics indicates that 32.6% of APA members in 2015 were fellows, indicating that this is viewed as an honorific in our field.

Further, previous research has identified a potential gap between the number of male and female award winners in a number of disciplines (e.g., men were found to be eight times more likely than women to win a scholarly award in STEM; Lincoln, Pincus, Koster, & Leboy, 2012; men are more likely to win Young Investigator Awards, Cooper & Radonjic, 2016). Men and women may differ in the types of awards received. For example, Golbeck and Molgaard (2013) found that women were more likely to receive awards associated within service and teaching rather than awards linked to scholarship. Lincoln et al. (2012) identified a similar trend, finding that women were awarded 10% of scholarly awards, 32.2% of service awards, and 37.1% of teaching awards.

Editorial board membership has often been examined in the literature as a form of recognition, with many fields noting female underrepresentation on boards (e.g., in mathematical sciences, Topaz & Sen, 2016; management, Metz & Harzing, 2009; political science, Stegmaier, Palmer, & van Assendelft, 2011). Finally, leadership in professional societies might also be considered a form of recognition for accomplishments.

**How are we doing?** To examine recognition via awarded fellowship, we obtained the complete list of Fellows from SIOP's website ( $N = 357$ ) and coded for some of the factors that might influence awarding of fellowship. Specifically, we coded for each Fellow's gender, citation count, H-index, year of PhD graduation, year of Fellow status achievement, and whether the Fellow worked primarily in an academic or applied setting. To obtain each citation count and H-index, we used the Web of Science database. If we could not obtain reliable data for an author through this method (i.e., results included information for additional authors beyond the intended author), we instead obtained the citation count and H-index through the Scopus database ( $N = 55$ ). For analyses involving year of PhD graduation, 24 Fellows were not included, as this information could not be obtained. Further, analyses involving year of Fellow status achievement excluded 10 Fellows whose information could not be located. As the Fellows whose PhD years were missing were unique from the individuals missing year of Fellow status, analyses involving both year of PhD graduation and year of Fellow status achievement omitted 34 Fellows.

We found that of the 357 Fellows, 249 (69.7%) are male and 108 (30.3%) are female. We next looked to our samples' citation counts and H-indices

to see whether there were differences in productivity between male and female Fellows. Specifically, we were interested if potential differences in these metrics could speak to whether certain genders are held to lower or higher standards prior to obtaining Fellow status. We recognized that these indicators of productivity are more relevant for academic than applied Fellows, so we conducted our analyses such that gender differences were examined within each work context. We conducted a one-way MANOVA to examine potential differences in citation counts and H-indices by gender, controlling for year of Fellow PhD graduation. Within our academically oriented sample, we found no significant differences in citation counts [ $F(1, 271) = 1.64, MSE = 9304448.58, p = .201$ ] or h-indices [ $F(1, 271) = 1.05, MSE = 164.79, p = .308$ ] between male and female Fellows. Further, no significant differences were found between male and female applied-oriented Fellows in either citations counts [ $F(1, 56) = .01, MSE = 979084.22, p = .91$ ] or h-indices [ $F(1, 56) = .03, MSE = 63.71, p = .875$ ].

Additionally, we were interested in examining the potential differences between men and women in the number of years it took to become a Fellow after receiving one's PhD. We found no significant differences [ $F(1, 321) = .04, MSE = 61.20, p = .851$ ] between male and female Fellows on this metric; specifically, it took on average 18.20 years ( $SD = 7.81$ ) for both men and women to become SIOP Fellows after PhD completion. Finally, we examined whether there were any differences in when the Fellows achieved their status by Fellow gender, ultimately finding that female Fellows tended to receive status more recently ( $M = 2007.61, SD = 8.19$ ) than male Fellows ( $M = 2002.15, SD = 12.36$ ),  $F(1, 345) = 17.43, MSE = 126.44, p < .001$ . Specifically, of the Fellows within this sample, the earliest female to achieve such status did so in 1982, in comparison to 1964 for the earliest male Fellow.

The complete list of SIOP award winners was obtained from SIOP's website, from which we recorded the year of each award and the gender of each award winner. The awards ranged from prominent recognitions such as Distinguished Contributions Awards to small grants and graduate student scholarships. Of the 805 awards given by SIOP between 1970 and 2016, 487 (60.5%) were received by men and 318 (39.5%) were received by women. Female winners were more likely to have received awards more recently ( $M = 2006.42, SD = 8.09$ ) than male award winners ( $M = 2005.14, SD = 9.35$ ),  $F(1, 803) = 4.00, MSE = 78.74, p = .046$ . Such a finding could potentially reflect the increasing representation of women in the field over the course of history or alternatively speak to increased efforts to improve gender representation in award winners within recent years. We additionally examined representation of men and women among some of the most prestigious awards presented by SIOP. Specifically, we looked at the subset of award winners who have received the Distinguished Professional Contributions Award,

Distinguished Scientific Contributions Award, Distinguished Service Contributions Award, Distinguished Early Career Contributions Award (Practice and Science), and the Distinguished Teaching Contributions Award. Of the 153 award winners recognized in these areas from 1977 to 2016, 124 (81.0%) were male and 29 (19.0%) were female. Of the science-oriented Distinguished awards (Distinguished Scientific Contributions Award and Distinguished Early Career Contributions Award-Science), only 2 (4.3%) of the 46 winners were female. Women appear to be more highly represented among Distinguished Teaching Award (46.0%) and Distinguished Service Contributions Award winners (34.4%).

Over the years, SIOP has changed the configuration of which positions are elected officers and which positions are appointed committee heads, making it difficult to evaluate data on offices held over time. However, one can look at the key leadership position of president. Of the 72 SIOP presidents, 10 were female, with 9 of these since 1999; the president-elect is also a woman.

Editorships are also key leadership positions within a field, and we looked at *JAP* and *Personnel Psychology* as the highest ranked journals most closely associated with I-O psychology. Koppes (2007) indicated that all the editors of *JAP* from 1917 to 2008 were male, a tradition that has continued in the ensuing years as well (up to 2017). In terms of the current associate editors of the journal, there are equal numbers of men and women. Among the 253 contributing editors (i.e., board members), there are more men than women (66.8% compared to 33.2%). For *Personnel Psychology*, the current editor is female, while the associate editors are majority male (three men to one woman). Similarly to *JAP*, *Personnel Psychology's* editorial board features more men than women (65.4% male).

**What do we need to explore?** There are obviously many other ways members in the field are recognized, there are other leadership positions, and there are other journals whose boards could be examined, so our snapshot here is hardly a complete picture. In particular, practitioners in our field may be more likely to be recognized by external professional organizations as well as organization-specific awards and accolades. Although SIOP certainly publicizes the accomplishments of members, there is no central ability to track recognition in all its forms. Note that our analyses here are limited, as they focus simply on describing outcome rates and do not address deservingness (i.e., factors that might contribute to a particular recognition).

**What are needed next steps?** As individuals we can all work to make sure that the accomplishments of others (regardless of gender) are recognized by taking time out of our busy lives to nominate them, write in support of nominations, and serve on committees that have the task of making recognition decisions. We need to remain vigilant as to the adequacy of criteria for

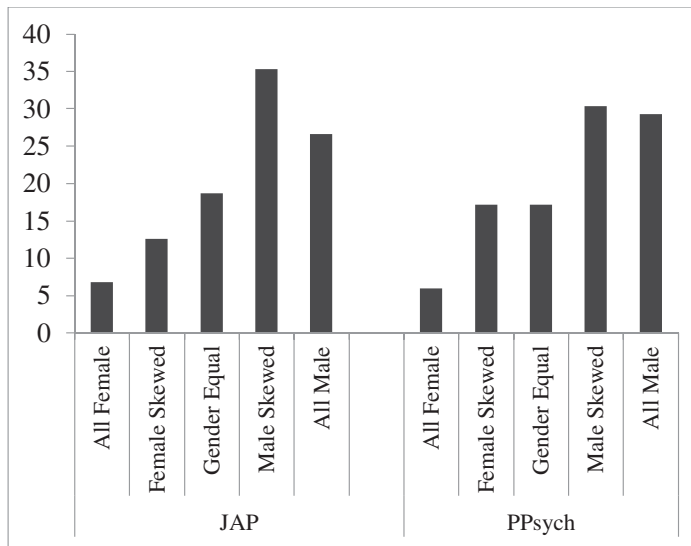
making these decisions. As outlined by the shifting standards model (Biernat & Fuegen, 2001; Biernat & Vescio, 2002), it is possible that men and women are judged relative to the expectations associated with their gender rather than on equivalent criteria; this possibility should be considered in the case of recognition within our field and addressed appropriately. Further, as a field we may consider tracking metrics relevant to these recognition decisions; that is, breakdowns of who is being nominated, who has been nominated on multiple occasions, and rates of acceptance/rejection, as such information could indicate whether any concerns are warranted.

### ***Publications and Presentations***

A look at scholarly authorship can potentially speak to gender representation within a given field. Although much literature has reported a historical increase in female authorship across fields (Jagsi et al., 2006), women still comprise the minority of published authors (Jagsi et al., 2006; West, Jacquet, King, Correll, & Bergstrom, 2013; Knobloch-Westerwick & Glynn, 2013; Maliniak, Powers, & Walter, 2013; McDowell, Singell & Stater, 2006). Such patterns hold even after controlling for a number of relevant factors, including year of publication, venue of publication, theoretical perspective, methodology, tenure status, and institutional affiliation (Maliniak et al., 2013). In a relevant study examining the JSTOR database, Knobloch-Westerwick and Glynn (2013) found that women comprised 27.2% of article authors, men were more likely to hold coveted first and last authorship positions, and women were less likely to write solo-authored papers. Zeng et al. (2016) found that, across six STEM disciplines, women had fewer distinct coauthors and a lower probability of repeating collaborations.

In terms of presentations, researchers in a number of disciplines have considered whether women present as often and, when they do present, whether they are more likely to be first authors on the less prestigious poster presentation and less likely to be part of an invited panel or symposium (e.g., in physical anthropology Isbell, et al., 2012; mammology, Genoways & Freeman, 2001). There has recently been popular press attention regarding whether women are invited to speak as experts on a variety of topics (Evans, 2016). Indeed, the website <http://allmalepanels.tumblr.com> documents events, symposia, and more in a wide variety of fields where the panels of experts are only male (Brown, 2017).

***How are we doing?*** Using *Journal of Applied Psychology's* website, we coded author gender for all articles published in the last five volumes of the journal. Note that this does not necessarily mean that the authors are I-O psychologists, as individuals from many fields can and do publish in our top outlets. This resulted in gender information for 1,612 authors of 458 articles. Additionally, we coded each individual's order of authorship for that article,



**Figure 1.** Percentages of gender group composition types for author groups of 2012–2016 *Journal of Applied Psychology* and *Personnel Psychology* articles.

as well as the number of authors who wrote each article. This allowed us to examine the gender breakdown among all authors, the gender breakdown among first authors, and whether or not differences exist between men and women on authorship order. Moreover, we examined gender composition of authors within articles. Specifically, we coded each article using a five-point scale based on Kanter's (1977) numerical proportions model of gender composition within a group (1 = all female, 2 = female skewed, 3 = gender equal, 4 = male skewed, 5 = all male).

Of the 1,612 authors, 1,054 (65.4%) were men and 558 (34.6%) were women. We found a similar pattern when examining the gender breakdown of first authors, as 266 (65.3%) were men and 159 (34.7%) were women. We next examined whether order of authorship differed as a function of author gender, ultimately finding no differences between men and women on author order,  $F(1, 1610) = .04, p = .834$ . We additionally explored whether men or women tended to author articles with more or fewer coauthors, again finding no differences on this metric,  $F(1, 1610) = .45, p = .502$ . Finally, we examined gender composition among authors grouped within articles. As seen in Figure 1, the gender composition of author groups tended to be skewed toward being male dominated. Specifically, the "male skewed" category, representing articles written by a group of authors containing more men than women, was the most frequently coded category, with the "all male" category being the second most represented category. Articles written solely by female authors (the "all female" category) was the most infrequently coded

grouping, representing only 31 of the 458 articles. However, the composition of groups is not surprising given the gender base rates for publication.

To examine whether these patterns were journal specific, we also coded author gender, order, and author group composition for articles published in *Personnel Psychology* between 2012 and 2016. This resulted in information for 413 authors of 116 articles. We found that the proportion of male and female *Personnel Psychology* authors (63.2% male, 36.8% female) was similar to that of *JAP*. Further, in testing whether men or women tended to author articles with more or fewer coauthors, we again found no significant differences,  $F(1, 411) = 0.87, p = .352$ , as was the case for *JAP*. However, in contrast to *JAP*, we found evidence of differences in author order as a function of author gender; specifically, results showed that male authors of *Personnel Psychology* articles tended to hold earlier authorship positions ( $M = 2.79, SD = 2.44$ ) than female authors ( $M = 3.41, SD = 4.08$ ),  $F(1, 411) = 3.77, MSE = 9.88, p = .053$ . Finally, in examining the gender composition among authors grouped within *Personnel Psychology* articles, we found a pattern similar to that identified in our *JAP* analyses. As seen in [Figure 1](#), we again found that the gender composition of author groups tended to be skewed toward being male dominated, with the “all-male” and “male-skewed” groups representing the majority of articles.

Using the conference’s electronic program available on SIOP’s website, we coded authorship and presentation information for all posters, symposia, and panels for the 2016 conference. For the posters, we coded each author’s order and gender, as well as the gender breakdown of the authorship groups again using a five-point scale based on Kanter’s (1977) numerical proportions model of gender composition within a group (1 = all female, 2 = female skewed, 3 = gender equal, 4 = male skewed, 5 = all male). For the symposia, we coded each participative member’s role (chair/co-chair, presenter, discussant) and gender, as well as the gender composition of the group itself. We did not code information for coauthors of presented works, instead only focusing on presenters’ information. For panels, we coded each member’s role and gender, and again coded for the group’s gender composition.

Of the 1,777 authors of presented posters, 943 (53.1%) were men and 834 (46.9%) were women. Of first authors, 304 (53.0%) were women and 270 (47.0%) were men, and there was a pattern of relatively equal representation of composition types, with the “gender equal” comprising the slight majority of posters, as seen in [Table 2](#). We found no significant differences between men and women in authorship order [ $F(1, 1775) = 0.18, p = .837$ ] or number of coauthors,  $F(1, 1775) = .84, p = .432$ .

We coded presenter role, presenter gender, and gender composition of presentation groups for the 115 symposia held at the 2016 SIOP conference. Of all 728 individuals involved in symposia, 355 (48.7%) were women and

**Table 2. Percentages of Gender Group Composition Types for Each Presentation Form at the SIOP 2016 Annual Conference**

	All female	Female-skewed	Equal	Male-skewed	All male
Posters	18.5	15.9	22.6	21.6	21.4
Symposia	4.3	32.2	14.8	43.5	5.2
Panels	1.7	31.7	12.5	32.5	5.8

373 (51.2%) were men. Of those in a chair/co-chair role, 96 (51.6%) were women and 90 (48.4%) were men. Of those in a presenting role, 239 (49.7%) were women and 242 (50.3%) were men. Finally, of those in a discussant role, 20 (32.8%) were women and 41 (67.2%) were men. Table 2 displays the frequency of gender composition types within symposia groups, with “female skewed” and “male skewed” as the most frequent compositional make-ups.

In line with our coding of symposia, we coded panelist role, panelist gender, and gender composition of the 101 panels at the 2016 SIOP conference. First looking at the gender breakdown of all individuals involved in a panel, we find that 287 (48.2%) are women and 308 (51.8%) are men. Of those in a chair/co-chair role, 78 (55.3%) were women and 63 (44.7%) were men. Of those in a panelist role, 209 were women (46.0%) and 245 (54.0%) were men. In a similar pattern to the symposia data, Table 2 shows that the “female skewed” and “male skewed” gender composition types were the most frequent among SIOP panels.

**What do we need to explore?** Studies looking at gender differences in publication patterns go beyond our cursory look here and examine (and often find) differences in journal quality, publication rates over the course of a career, levels of coauthorship and collaboration, and distribution across specialized subfields (e.g., Mihaljevic-Brandt et al., 2016). These studies point to questions we can address within our field: Do women publish at equivalent rates in higher and lower impact outlets? Do women publish at similar rates to men early in their careers (i.e., have different publication records at the time of applying for first job, at time of tenure)? Are there gender differences in subfields or research topics of publications? Although research seems to suggest that men and women are cited by others at equal rates, research has also consistently shown gender differences in self-citation rates, with male authors more likely to self-cite (Descharcht & Maes, 2017; King, Correll, Jacquet, Bergstrom, & West, n.d.; Malinak, et al., 2013). A recent examination of citations in I-O psychology textbooks by Aguinis et al. (2017) found that only 17% of the most cited authors were female. One also could look at the factors that lead to greater work outcomes of an academic nature. For example, in a study of economists, Harter, Becker, and Watts (2011) found

that male professors, especially those at early career stages, spent less time on teaching and more time on research than women. One area we did not examine is funding. In other fields, there have been some inconsistent findings regarding whether the distribution of grants is equitable across gender groups (see for example Pohlhaus, Jiang, Wagner, Schaffer, & Pinn, 2011; van der Lee & Ellemers, 2015).

***What are needed next steps?*** While more detailed analyses of any gender gaps in publication rates may provide useful insights, greater focus on uncovering causal influences is needed, and, should any of those influences represent a bias or barrier, work to remove them should be a concerted professional effort. Because gender differences in outcomes such as publications can be a contributor to any gender differences in pay and recognition outcomes (at least for those in academia), understanding the magnitude and causes of any gender gaps in publications may be important to understanding any differences in those outcomes as well. The field might also question—as researchers have done in enhancing our definitions of performance and considering the relationship between weighting of criteria and adverse impact (Campbell & Wiernek, 2015; Hattrup & Roberts, 2010)—whether our criterion space is defined too narrowly (i.e., publication rate as one quantifiable indicator of task performance) in ways that undervalue certain types of contributions (e.g., to practice, to training).

### **Limitations**

The present study has several limitations that should be noted. First, our analysis is US-centric, and gender representation and equity issues among I-O psychologists in other locations may present very different pictures. Second, the data examined were often restricted to a subsample (e.g., faculty from only a subset of I-O PhD programs, authors from one journal) and therefore present only a limited view of the field. Third, the data described here alternate between historical (e.g., awards) and current (e.g., faculty rank, board membership) snapshots of gender representation in the field. A final limitation that needs strong emphasis is that the data collected here tend to speak more to those working in academic than applied areas of I-O psychology. Despite these limitations, the data discussed here can initiate further investigation on a larger scale.

### **Conclusion**

The purpose of the current article was to (a) briefly review relevant background information regarding gender representation in our field, (b) collect and analyze archival data speaking to representation within our field, and (c) initiate conversation and suggest next steps appropriate to achieving equity in representation across various metrics. Having noted the clear limitations



of our analyses throughout this article, especially the inability to make any statements regarding causes of differences, we still suggest that the information gathered here may guide us toward key action items in addressing gender representation and equity within our field. In the aggregate, our analysis does put forth a mixed picture, signaling gender equity in many areas and signaling potential concerns in others.

Equitable access and representation across all demographic groups within our profession is likely something to be widely agreed upon as an important value, but without actually gathering information, discussing it, and taking actions, the profession as a whole falls into the category of “not walking the talk.” We have provided a number of suggested areas where our collective resources via our professional organization might be directed to do this gathering, monitoring, and changing. However, there are clear limits to what a professional society can do to influence the salary, advancement, training, and work outcomes of those in our field, who pursue their graduate training and careers in many different organizational contexts. Individual members of the field must commit to working toward gender equity within their own spheres of influence. We hope this piece provides a nudge to readers to do so.

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