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Women in Academia: Representation, Tenure, and Publication Patterns in the STEM and Social Sciences Fields

By Jennifer M. Krebsbach¹

Abstract

Women in the workplace experience inequity in their professional career options and in their upward mobility. One place this occurs frequently is in higher education. Whether it be their representation at various levels of professorship (wherein male full professors far outweigh the number of female full professors), the interactions with others on campus (especially regarding student expectations of professors), or the expectations that are placed upon them for success (over recruitment for teaching and service to the university; under recruitment for research opportunities and grants), women in academia are finding barriers that are preventing them from succeeding at a similar rate or frequency to that of their male counterparts. This review examines women's experiences in academia, specifically those items related to promotion. The author describes the individual aspects of tenure (student evaluations, service to the university, and research) and the barriers that women have reported experiencing within each category, the previous data regarding the inequity between male and female professors, and how publication impacts promotion. Inequity exists in each of the three primary areas of the tenure process, but one area that has shown the greatest impact is within academic publication. The author reviewed the literature across Science, Technology, Engineering, and Math (STEM) and social sciences regarding 1) the role of sex in publication (from both the authors of submissions and the editors-in-chief of the journal), and 2) discrepancies in acceptance rates. The article ends with recommendations for future study surrounding tenure for women in higher education. Although outside the scope of the current research, future researchers should further expand reviews of this type to include people of colour in academia.

Keywords: Academic publication, Gender equity, Higher education, Tenure, Women

Introduction

Men and women have been, and still are, treated differently across environments within our culture in the United States. One area that women are affected negatively is in the workplace (American Association of University Women, 2019). Women are three times more likely to leave professional jobs than men (Deutsch & Yao, 2014). Ortega-Liston and Soto (2014) discussed that women are more likely to be impacted by outside factors leading to gaps in full-time employment;

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they may leave to care for elderly family members, children, etc. Further, women working in higher education are underrepresented in comparison to men (Dolan, 2009). In addition to being underrepresented in higher education, women are less likely to maintain their positions long term or to be promoted to higher levels within academia (i.e., full time, tenure-track, or tenured full professor positions) (Dolan, 2009; Ortega-Liston & Soto, 2014). There are many barriers that may affect women working in higher education, but some of the more prominent include raising a family, long-working hours, or disproportionate requirements for promotion.

While raising a family and experiencing long working hours are key factors, American Association of University Women (2019, p. 3) found that a significant reason for inequity in higher education employment stems from “occupational segregation” and tenure requirements. Much research has been done on these topics; however, they often focus on one or two areas within the system. This article aims to make transparent the current underrepresentation of women in higher education (compared to their male counterparts) and will outline some of the inequities found within the areas reviewed during the process of academic promotion and tenure: teaching, service to the university, and research. The article ends with a thorough review of research by way of inequities found in academic publication.

Women Employed in Higher Education

The differences in sex by role in education, continues into post-secondary education as well. Without accounting for the difference in department, women made up 49.6% of instructors in academia in 2017 (Organisation for Economic Co-Operation and Development, 2020). However, even though the rate of women teaching in higher education is similar, there is a vast difference when this figure is divided up by academic rank. Parker (2015) showed that in 2015, women made up only 25% of full professors and only 14% of “presidents, provosts, and chancellors” (p. 9). In the 2020-2021 academic year, men outnumbered women in the highest academic ranks for undergraduate, graduate, and doctoral level education (table 1) (American Association of University Professors, 2021). Winchester and Browning (2015) found that in the 2000s, women represented around 40% of academic staff, but only 20% of senior academic staff. Burkinshaw and White (2017) explained that women in higher education leadership are more likely to experience *othering*, a feeling of not fully belonging, and more likely to be “affected by heavy workloads... due to the precariousness of their contracts” (p. 3). While research has found that these same (or similar) feelings and experiences occur for people of colour, this article focuses solely on women. Future research should be done on inequity for people of colour including any experiences of othering felt due to interactions with administrators and colleagues.

Table 1: Percent of Representation of Faculty by Type of Program, Sex, and Rank

Rank	Bachelor's Level (%)		Master's Level (%)		Doctoral Level (%)	
	Women	Men	Women	Men	Women	Men
Professor	40.0	60.0	40.3	59.7	29.8	70.2
Associate	49.4	50.6	49.1	50.9	44.5	55.5
Assistant	55.3	44.7	56.4	43.6	50.4	49.6
Instructor	58.3	41.7	61.6	38.4	56.8	43.2
Lecturer	57.7	42.3	57.6	42.4	55.7	44.3

Note: The table was adapted from summarised data provided by the American Association of University Professors (2021).

Higher education teaching has become more gender equitable, on average, regarding the actual number of individuals working in the field. However, the college, department, and rank are all variables that impact true equity between the sexes. Previous research found that when rank, field, and years of service were accounted for, women, on average, earned between \$3,278 and \$5,400 less annually than their male counterparts (Rosser & Mamiseishvili, 2014; Travis et al., 2009). These differences in pay shows that women are still fighting for pay equity. Zimmerman et al. (2016) found that nearly all of the 1,223 subjects surveyed were in male-dominated² departments. The authors also found that regardless of the percentage of women in a department, women rated themselves as feeling ostracised by their peers more than their male counterparts. These findings show that women are still fighting for equity in representation, and women may not be helping to support their female junior faculty members getting tenure or moving into tenure-track positions (Faniko, et al., 2017). In fact, many female junior faculty members are bullied by seasoned faculty, whether intentionally or unintentionally, perpetuating common occurrences in higher education, leading faculty to other departments (i.e., from the hard to soft sciences) or to look for employment on other campuses (Fenstermaker, 2011). Pyke (2014) found that on her campus, the Academic Senate committee (the committee that decided on hiring and promotions, among other things) included only 212 female faculty members (representing only 33% of the committee) potentially leading to the hiring or promotion of more men than women due to the prevalence of individuals hiring or promoting those that look more like themselves (i.e., men are more likely to vote in favour of other men) (Myung et al., 2011).

Several reasons for this inequity could exist, one being the fact that our current societal expectation for raising a family while young, inherently places women behind men in their career pursuits (Burkinshaw & White, 2017) and could lead to fewer opportunities to conduct research.

Academic women are therefore often building their careers later than their male colleagues and are less likely to have a traditional trajectory starting

² For the purposes of this review, male-dominated fields are those in which the makeup is at least 60% male; conversely, female-dominated fields are those in which the makeup is at least 60% female.

as a lecturer and then progressing through the ranks to senior lecturer, associate professor and full professor... [and] face increasingly precarious career paths due to lack of job security, the impact of managerialism and heavy workloads (Burkinshaw & White, 2017, p. 2-3).

These factors are contributing to the disparity in pay and representation of women compared to men. In higher education, “female professors, when compared to males, move up the career ladder slower, are less productive, have heavier teaching loads, and have lower salaries” (Parker, 2015, p. 9) even though they are earning professional degrees at a higher rate than males. The author also discussed the increased level of representation by women in community colleges³, versus four-year institutions⁴, but this improvement still follows the historical notion that women are found more frequently in positions of lower prestige than in those of higher prestige (i.e., two-year versus four-year institutions).

Another reason for the inequity could be the area of merit. Merit indicators are subjective and include the number of publications, number of citations, impact factor of the journal in which articles are published, book chapters versus articles, authored versus edited books, amount and continuity of external grant money as principal investigator, number of doctoral students supervised, teaching evaluations, classroom innovation, contributions to institutional governance, service to a profession, local or national awards, and collegiality (Travis et al., 2009, p. 416-417).

If women are not given the opportunity to conduct research, then many of the merit indicators above would be irrelevant to making the case for their continued role, promotion, or raise in pay. These indicators are used commonly in universities, but in some more than others. The next section goes further in depth to some of these merit indicators, represented as tenure requirements.

Tenure Requirements

Promotions in academia are often based on a combination of student evaluations, service to the university, and research, also called the tenure trifecta (Deo, 2018). The requirements for promotion at California State University Sacramento (CSUS) include teaching, scholarly activities, university service, and community service (California State University Sacramento, 2005, p. 22), while the requirements for the University of California Davis require teaching, research, professional competence, and university/public service (University of California Davis, 2019), and the requirements for the University of California Riverside (UCR) require “research, teaching, and service” (University of California Riverside, 2012). While tenure decisions are more likely to be in the form of quantitative value, promotion decisions are based more on qualitative/subjective measures (and can also lack transparency) (Murray et al., 2012). For instance, the faculty manual at CSUS requires “an analytical qualitative [emphasis added] statement establishing an observable and valid relationship between the criteria/standards and the faculty member's performance in each of the prescribed categories” during the process of considering a potential faculty member’s promotion to tenured faculty (California State University Sacramento, 2005, p. 22). This subjective approach may disproportionately impact a woman’s opportunity for advancement, due to their higher likelihood to describe the tenure process as

³ A two-year institution often results in either a technical certificate, an associate degree, or transferability to a four-year institution.

⁴ A four-year institution or university in which undergraduate students can earn a bachelor’s degree. May or may not have master's or doctoral level graduate programs.

unclear (Lisnic, 2018) and especially when considering that the practices of tenure evolved from “universities of mediaeval Europe, when higher education was the exclusive province of men” (Pyke, 2017, p. 84). Much research has been done regarding the gendered nature of these indicators of merit: student evaluations, service to the university, and published research. Student evaluations are one of the easiest merit indicators for faculty to find, however, the way that the students evaluate their professor is variable based on the sex of the professor being evaluated.

Student Evaluations

The main way that professional competence or teaching is determined is through student evaluations (University of California Davis, 2019; California State University Sacramento, 2005). Student evaluations hold much more weight on a professor’s ability to get a promotion than students may realise. If more students realized the impact of their evaluations, they might rate female professors differently, especially when considering the sex of the instructor. Female professors are generally rated as strong in all aspects related to empathy (nurturing, caring, supportive, etc.), but rated poorly if they are assertive, fluent in their field, or consistently use the field’s terminology (Bachen et al., 1999). In addition, regardless of teaching style, women are rated as less professional than their male counterparts. If student evaluations contribute to the potential for promotion or advancement, these stereotyped responses by students may contribute to slowing the process for female professors up the ladder in academia (Bachen et al., 1999), but stereotypes from outside sources are not the only issue.

Women are socialised from an early age to be person-oriented; this orientation may become an employment preference later in life. If women are taught to pursue these types of jobs, then they are being set up for lower paying positions from childhood on (Kessler et al., 2014). This socialisation can even invade higher education institutions, pushing female PhD candidates into specific career paths (Burkinshaw & White, 2017). And if they do continue into academia, female professors are more likely to be rated negatively by students if they are not exhibiting elevated levels of frequent *support and nurturance* (traditionally feminine traits), compared to the ratings of male professors (Carlson, 2008). This further stresses to women the need to focus on person-oriented work. Due to this bias, female professors spend much more time with their students (providing the necessary support and nurturance for them) which severely impacts their limited time to work on other things (support of the university, academic research, etc.). One respondent said,

[Being able to conduct research is] something that you expect to do when you accept a position like this because as a professor you assume that that is going to be a large portion of your day and, in fact, when you get here and you figure out that that's not how it's going to be, as least not now, it takes you back (Carlson, 2008, p. 6).

This implies that junior women professors are finding it difficult to make other important contributions to the university (merit indicators) since they are so focused on appeasing their students (both personally and in the eyes of those in leadership). Another respondent in the same study said, “The thing that is amazing is how accessible you are all the time when you're here...students are constantly with you, or talking to you, or needing, or emailing, or calling, or whatever it may be” (Carlson, 2008, p. 6). These findings indicate that research (in addition to any other merit indicator) is difficult to conduct when the professor is inundated by student

interactions. Jacobs and Winslow (2004) found similar issues wherein under 20% of men but 24% of women expressed job dissatisfaction based on the time needed to work with students. Given these examples of common circumstances, it makes sense why balancing time would be more difficult for female professors. While balancing the needs of students, the faculty is also responsible for serving their university. Research has found that type and quantity of service, too, is impacted by the sex of the faculty member.

Service to the University

When reviewing merit indicators, higher education leadership will review a candidate's previous service to the university. This can include serving on university committees which is often pushed upon a select group of faculty members.

It is common for research-intensive universities to over-recruit women faculty for service on university committees and task forces to ensure gender diversity. Ironically, this practice is an institutional barrier to women faculty's advancement because it deprives them of precious time needed to conduct research, the requisite activity for promotion (Pyke, K., 2014, p. 83).

Pyke (2014) began their article with this poignant statement, illustrating the biggest problem with some of the tenure requirements of four-year institutions. Women are hired and subjected to workloads (Burkinshaw & White, 2017) that make the other measures of merit nearly impossible to be simultaneously successful in. Women are often asked to join several committees, more so than their male counterparts who often feel no obligation to join committees—wherein women are more likely to feel pressured to oblige (Pyke, 2014).

Feeling obligated to join various committees, along with the subjective nature of the service indicator, also influences a person's success at achieving appropriate standards. UCR (the campus in which Pyke teaches) does not have any clear definition as to what amount of service is required or desired, leaving that entirely up to the individual to determine (Pyke, 2014). Some department chairs will *ask* "an assistant or associate woman professor to serve [on a committee, but] she may not know if this is a sincere question or an assignment to which saying no could have negative repercussions" (Pyke, 2014). Again, the lack of clear definition of expectations makes the subjective nature of the merit indicator nearly impossible to navigate.

When newly higher women feel more compelled than their male counterparts to join committees, there ends up a larger proportion of younger committee members, and those members are more likely to be working above their skill level (Pyke, 2014). These women are more likely to put extra time in to "catch up" rather than focusing on the other indicators of merit. Further, they are less likely than men "to receive resources to mitigate the time they lose from their research" (Pyke, 2014, p. 93). So, while women may be overrepresented on committees, serving their university, they may be underrepresented in the other areas: namely research.

Research

One of the major requirements for consideration for promotion (whether to full time assistant professor all the way through tenured full professor positions) is a portfolio of academic research. McSweeney et al. (2000) found that as little as 15% of published research included a female first author. Further, they found that women in general were vastly underrepresented

compared to the overall number of females working in the field at large. In a related study, Ortega-Liston and Soto (2014) found that female scholars are cited less frequently in academic research than male scholars. As mentioned previously, research is a key component of the tenure trifecta. Without accurate representation in research, the opportunity for advancement in academia is severely limited.

Doctoral universities, those with a heavier research requirement, have an average of only 25% female tenured professors (Pyke, 2014). These universities, “value research [emphasis added] above all other academic activities and especially value and reward academics who bring external funding to the organisation... [which] disproportionately [impacts] women who often have less success in accessing funding” (Burkinshaw & White, 2017, p. 2). In their review of literature surrounding review, promotion, and tenure (RPT) practices, Schimanski and Alperin (2018) found that research has recently become prioritised, and some faculty have expressed frustration with their institutions in that there were instances that devalued teaching. Further the authors found that publication alone was not entirely clear: does the value lie in quality, quantity, prestige, topic area, novelty, etc.? Some institutions have a written requirement for the number of articles published, but most do not specify (Schimanski & Alperin, 2018).

Although it is unclear the variables required for what a university would consider to be successful research, there are other factors that may lead to fewer women publishing. For instance, women are more likely to be dissatisfied with the amount of time spent in research (Lisnic, 2018), more likely to feel “stuck in teaching” (Keisu et al., 2015, p. 83) and more likely to be interested in research outside of more traditional disciplines and/or topics (Deo, 2018). In a study outlining the academic culture between men and women in Australian higher education, Winchester and Browning (2015) found that most women were taking on teaching roles while most men were taking on research roles. This led men to be more qualified applicants into teaching positions or when applying for promotions, which means that the majority of those teaching (men) are less versed in teaching practices (as their teaching-focused female counterparts are less versed in research practices). However, Winchester and Browning (2015) argue that research is harder for women to get into because male-dominated fields (those in Science, Technology, Engineering, and Math; STEM) tend to be given larger amounts and a greater frequency of grant funding opportunities, in which men gladly accept (Winchester & Browning, 2015). If grant funding is not made more readily available across disciplines, then female-dominated fields are less likely to be able to contribute to research.

Bardolph and Vanderwaker (2016) constructed a thorough analysis of the reasons archaeology professors refrained from submitting research for publication and analyzed patterns for sex. They found that female professors were limited by a position that required no publication while male professors were limited by administrative work. Both male and female professors were limited by the amount of time spent with students (teaching and/or mentoring), but this was an issue for 37.2% of female professors while that was a problem for only 29% of their male counterparts. Research has found that inequities exist in publication patterns between male and female authors. The next section outlines where these inequities may stem from and some current publication rates across several fields.

Females Published in Academic Journals

Since research holds such a strong impact on the likelihood of tenure, it is important to look at where female researchers stand in the larger publication pool. Rather than focus on all academic departments, the author chose to study the sciences (both STEM and social sciences).

Future research will expand to include other fields, including female-dominated fields (like education and social work). Many journals still use invitations to get more submissions for their journals, and those invitations are usually network associates of the journal's editor (Bardolph & Vanderwarker, 2016). Considering that people tend to network with those who look like themselves, the editor's sex might influence those who are asked to contribute to future issues of the journal (Myung et al., 2011). Academic research and subsequent publications may be impacted due to 1) the sex of the journal's editor (McSweeney & Swindell, 2001); and 2) the rate of women being published compared to their male counterparts (Bardolph & Vanderwarker, 2016; West et al., 2013).

Female Editors of Academic Journals

Research on the publication rates of women has often led to the question of the role of the journal's editor. Several research articles have reviewed the prevalence of female authors of journal articles, but few have compared that to the sex of the editor. One study argued that when the editor was female, female authored articles were more likely to be published (McSweeney et al., 2000).

General STEM

The role of the editor's sex within the larger STEM field in general is a potential concern. In the mathematics field, Topaz and Sen (2016) found that women made up only 8.9% of editorships leading to a lack of "women's contributions and perspectives" (p. 3) and networking opportunities made available to those in positions of power. In the field of Southeastern Archaeology, Bardolph & Vanderwarker (2016) found that women represented only 37.5% of editors, overall, with a range between 0-56% of all editors. In only one case did females earn editorships more frequently than men. In the accounting field, female editors were only present in 21% of journal issues (Dhanani & Jones, 2017). In their review of 131 top ranked Spanish scientific journals (made up of social sciences, humanities, and experimental and life sciences), Mauleón et al. (2013) found that only 24% of journals had a female head-editor and women were represented on editorial boards between 6-26% of the time. de Camargo and Hayashi (2017) found that the total number of women on an editorial board ranged from 0-2. In total, they made up as much as 12% of board members. Women are not equally represented in general STEM journals as editors.

Social Sciences

Female editors may shine light as to the current state of the glass ceiling in academic publishing. McSweeney et al. (2000) found that there were years of increased editorial participation by women that seemed to plateau and, in some cases, drop lower in more recent years. McGee et al. (2004) studied this same phenomenon in the field of organisational behaviour management (OBM) and found that women occupied an average of 16.75% of associate editors between 1988-1992 that increased to 35% in 1993-1997, however, there was a reduction in 1998-2000, wherein the percentage of female associate editors was an average of 27.75%. This finding further supports McSweeney et al.'s (2000) argument that the glass ceiling is present in academic journals, at least regarding editorial staff.

McSweeney and Parks (2002) continued researching the frequency of female representation in editorial staff within the realm of psychology. They found that the mean percentage of women on editorial boards ranged from 15% to 48% from 1988-1992. That range rose slightly on the lower end but reduced on the upper end from 21% to 46% in 1993-1997.

Clearly women are represented on editorial boards less frequently than men, but an interesting finding is that there were never more women than men on any editorial boards between the years of 1978-1997 (McSweeney & Parks, 2002). Porter et al. (2003) reviewed eight journals on the topic of intellectual disability between 1991-1999 and found that women were represented on editorial boards between 3% and 49% (depending on the journal). Throughout each of these studies it was clear that women are not equally represented in social science journals as editors. McSweeney and Swindell (2001) found that not only are women underrepresented on editorial boards, but two of the six journals studied had zero women in a senior level editorship and one of the six journals had women in senior level editorships for only one of the 5-year intervals.

Publication Rates of Women in Academic Journals

One of the major requirements for tenure and academic promotion, as previously discussed, is research. If women are underrepresented on editorial boards, are they also underrepresented as article authors? Further, the question of order of authorship can make an impact on the weight of a given publication when being considered for tenure or promotion. The following discussion outlines the participation of women in academic journals in the sciences: general STEM and social sciences.

General STEM

As Sherrie Carinci (a professor at CSUS) is known to say, “how can I be you, if I can’t see you?”, de Camargo and Hayashi (2017) noted that in fields that are male dominated, women are unlikely to find a mentor that resembles themselves; the higher up the metaphorical ladder one goes, the fewer women one finds. When students are in graduate school, reading countless journal articles and research, female students find a severe lack of representation of women as authors to those articles. Could this be one factor (of many) that leads fewer women to enter science fields (de Camargo & Hayashi, 2017)? These authors found that women co-authored articles at the same level of men in 12.6% of articles and men outnumbered women in 63.5% of the remaining articles. Further, de Camargo and Hayashi (2017) found that women were first authors in only 41% of articles and last author in only 30% of articles.

Considering that first and last authors tend to be those that either produced most of the research or were the senior researcher, respectively (Li et al., 2018; de Camargo & Hayashi, 2017), women must not be participating in a leadership role at the same rate as men. Kaufman and Chevan (2011) found that although 60% of faculty members in the physical therapy department were women, the average number of publications throughout faculty members’ careers and in the most recent two years were vastly different by sex (table 2). Although women were found to be dominating the academic field, they were only being published at 55-72% that of men. This means more men are publishing than working in academia, and that female students are more likely to see a male author than a female one during their academic career.

Table 2: Publication Rate by Sex and Timeframe in the Physical Therapy Department

Timeframe	Sex	Average Number of Publications	Average Difference for Females
Career	Male	12	55%
	Female	6.6	
2-year span	Male	2.5	72%
	Female	1.8	

Note: The table was adapted from summarised data provided by Kaufman and Chevan (2011)

Social Sciences

The number of women in the social sciences has been increasing over the years (Feinberg et al., 2011), yet journal articles are being published with male authors more frequently than female authors. Male authors are more likely to be involved in collaborations with other people—possibly leading to the ability of publishing more frequently, while female authors were found to be less likely to collaborate with other female researchers (as well as a lower likelihood of producing research on their own) (Feinberg et al., 2011). Porter (2002) looked at the number of single authors by sex across 8 different journals on the topic of intellectual disability. The author found that of the 10% of articles with a single author, that single author was female in an average of 34.75% of articles. Of the articles with more than one author, 46.35% of the total authors were female and 47.13% of female authors were in the first author position (Porter, 2002). McSweeney and Parks (2002) went further to look at the percentage of women represented as a first author versus included in authorship across nearly 20 years and 17 different journals. They found that although the overall number of women included in authorship or as first author has increased since 1978, the average percentage of participation is still drastically less than what would be considered equal to that of men.

Li et al. (2018) expanded on McSweeney et al.'s (2000) work by looking at the same seven journals in the years 2014-2017. They found that women authored only 3.6% of single-author articles while men authored 14.2%. They also found that women were included in authorship at a greater number than in previous studies, both when included in authorship and when first author (table 3). However, women have yet to gain parity with men regarding authoring articles in the first author position.

Table 3: Percentage of Participation by Women in Applied Behaviour Analysis Journals by Authorship and Timeframe

	1978-1982	1983-1987	1988-1992	1993-1997	2014-2017
Included in Authorship	24%	32%	35%	38%	62% ^a
First Authorship	22%	26%	29%	32%	42.7%

Note: This table was adapted from summarised data provided by McSweeney et al. (2000) and Li et al. (2018)

^aData was not explicitly stated, but presented on a graph—number is approximate

Publication Rates of Women When the Editor Is Male Versus Female

There are limited existing studies to date regarding the impact of a journal editor's sex on the likelihood of an article being accepted for publication. Helmer et al. (2017) found both in their review of existing literature and in their review of articles published in *Frontiers* journals that women accept publications by women at a higher rate than that of men. Although much of their work was aimed at researching any inherent bias by editors in the review process, they discussed the higher propensity of women approving submissions made by other women, at a higher rate than men, without providing exact data.

In their study of the participation of women in applied behavior analysis (ABA), McSweeney et al. (2000) found that the rate of female authors represented in each journal's issue was statistically linked to the sex of the editor of that issue. For instance, in one of the reviewed journals (across a 20-year span) female authors took part in 47 different articles when the editor was male, versus 77 articles when the editor was female (McSweeney et al., 2000). Considering that the rate of acceptance into an academic journal is lower for women than that of men, it seems like the best chance of publication exists when the editor of the journal is female.

Female scientists have slowly started to gain traction in their respective field over the last few decades: higher rates of professorial positions, publications in academic journals, representation on editorial boards, and as senior editors (Rehfeldt, 2018; Helmer et al., 2017; McSweeney et al., 2000). However, women are still fighting for equity across these positions, and across disciplines. What is more concerning is the fact that these inequities exist even in female-dominated fields, wherein one might expect more women to be the expert and earning the more prestigious position. To summarise, there are four distinctive concerns regarding the lack of parity in academic publishing by women: 1) women are less likely to be promoted or hired into tenure/tenure-track positions than men (Pyke, 2014); 2) the more senior the position (i.e., senior editorship, full professor) the lower the rate of women found (Rehfeldt, 2018; McSweeney et al., 2000); 3) women are less likely to be published in academic journals than men (Bardolph & Vanderwarker, 2016; West et al., 2013); and 4) women appear more likely to be published when the editor of the journal is female (McSweeney et al., 2000).

Conclusion

Men have been overrepresented in female-dominated scientific fields as practitioners, in leadership, and as professors. This has led women to experience occupational segregation, pay disparities, fewer opportunities for advancement, and difficulty in conducting and publishing academic research. Although the data suggests that these inequities have lessened in the most recent past, the inequity may still exist in some fields. Further research is needed to identify changes in publication rates across a larger diversity of fields (especially in female-dominated fields) based on sex. Without first understanding the problem, society can't take the necessary steps to find solutions that lead to a closure in that gap.

The gaps and inequality between men and women are substantial but improving over time. However, people of colour (POC), and women of colour (WOC) more specifically, are impacted much more significantly. It is recommended that thorough research is conducted to better understand the dynamics and barriers for P/WOC in gaining tenure. Further, these barriers should be addressed at the institutional level. Further research should include 1) testing the overall impact of student evaluations on tenure decisions, 2) searching for way to more equitably evaluate the teaching component of the tenure trifecta, 3) assessing the role of women versus men in serving

the university, 4) looking at the number of committees men and women are currently involved in, 5) analysing the number of committees that seek out new faculty, and 6) ensuring that all faculty have equal support in conducting their research. While journals have a responsibility to remain as unbiased as possible, the institutions have the responsibility to ensure equal access to all aspects of the tenure trifecta. If women and WOC have been inundated with other tasks or are not given sufficient resources to conduct their research to begin with, publication is just not possible.

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