# THE INFLUENCE OF GENDER AND RANK ON H-INDEX SCORES: A REVIEW OF THE CONTEMPORARY LITERATURE ON SOCIAL WORK FACULTY FROM ISRAEL, CANADA, AND THE UNITED STATES

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## Abstract

*This study reviews the contemporary literature comparing how differences in research productivity are affected by gender and faculty rank among social work academics in Israel, Canada, and the United States. Faculty rank indicated the greatest amount of variance on h-index scores; little variance was attributed to gender or to the interaction of gender and rank. Statistically significant relationships between h-index scores and gender, and the interaction between rank and gender were found only in the United States. Mid-career female faculty in Israel had higher mean h-index scores than their male counterparts. Female Full Professors from Canada had higher levels of productivity than men of the same rank. Further studies are recommended to explore such differences.*
***Keywords:*** *H-index, bibliometrics, gender, social work, productivity, scholarship, Canada, Israel*

**Introduction:**

The influence of gender and faculty rank on publication output has been examined across specific disciplines (Carter, Smith, & Osteen, 2017; Holosko, Barner, & Allen, 2015; Eloy et al., 2013; Geraci, Balsis, & Busch, 2015; Nakhaie, 2002; Panisch & Smith, 2016; Panisch, Smith, Carter, & Osteen, 2017; Stack, 2002). Bibliometric measures, such as the h-index, are used to

analyze productivity of faculty members, particularly those in the social sciences (Barner, Holosko, Thyer, & King, 2015; Geraci et al., 2015; Hodge & Lacasse, 2011; Linton, Tierney, & Walsh, 2011). Barner and colleagues (2015, p. 6) have noted that scholarly productivity is one of the primary determinants of success in the career of a faculty member. Because of this, it is important to explore the possibility of bias when bibliometric measures are used to make decisions about promotions, tenure, and other important factors that impact the career trajectory of an academic.

Researchers have expressed concern about the role of gender as a source of bias on the publication patterns of female academics (Geraci et al., 2015). Relatively small gendered differences in h-index scores were observed in departments where female faculty members were in the minority (Hopkins, Jawitz, McCarty, Goldman, and Basu, 2013; Nakhaie, 2002; Toren & Kraus, 1987). Female faculty in these fields also had higher publication rates than their counterparts in disciplines that are dominated by women, such as the humanities and social sciences. Gendered biases have been noted in psychology departments, with lower h-index scores of female faculty members being attributed to barriers that prevent women in academia from being as productive as their male counterparts (Geraci et al., 2015). A decrease in research output among Sociology and Linguistics faculty members with more children has been observed, with women being more strongly affected by this relationship than men (Hunter & Leahy, 2010). This was in contrast to an earlier study in 1991 by Toren, who found that women without children published less than their female colleagues who were mothers.

Studies have found that over 60% of social work faculty members are female (Carter, 2017; Schilling, Morrish, & Liu, 2006). Holosko and colleagues (2015) noted that social work is a discipline in which men are outnumbered by women at every faculty rank. As a social science

discipline that is dominated by women, it is important to explore the possibility of gendered bias in the publication patterns of social work faculty members.  This possibility has been examined among social work faculty members in Israel (Panisch et al., 2017), Canada (Panisch & Smith, 2016), and the United States (Carter et al., 2017).  This article will review and compare these studies, which comprise the existing contemporary literature examining the influence of gender and rank on h-index scores for social work faculty.

**A Comparative Review of the Literature: Israel, Canada, and the United States**

These studies each attempted to obtain information on the rank, gender, and h-index scores of all tenure track social work faculty with doctoral and related professional degrees in universities offering a PhD in social work.  Faculty members in universities with social work doctoral programs housed in interdisciplinary departments were not included.  The Israeli study by Panisch et al. (2017) included information about faculty members at five universities.  Of the 126 faculty members comprising the Israeli population, the authors were unable to locate information about the rank of 34 individuals, leaving a sample of 92 academics.  Information was obtained on 139 faculty members at seven Canadian universities (Panisch & Smith, 2016).  A study by Carter et al. (2017) included data on the entire population of social work faculty in the United States ($N = 1699$) from the 76 universities offering doctoral degrees.

**The Role of Faculty Rank and Gender**

The sample in the Israeli study ($N = 92$) was comprised of 23 Lecturers, 19 Senior Lecturers, 21 Associate Professors, and 29 Full Professors (Panisch et al., 2017).  These are the four levels of faculty rank for tenure-track positions in Israel.  Thirty-eight of the Canadian faculty members ($N = 139$) were Assistant Professors, 64 were Associate Professors, and 37 were

Full Professors (Panisch & Smith, 2016).  The United States population ($N$ = 1699) consisted of

467 Assistant Professors, 640 Associate Professors, and 592 Full Professors (Carter et al., 2017).

Women accounted for the majority of faculty positions in Israel, Canada, and the United

States.  Israeli faculty members were 70% female ($N$ = 64) and 30% male ($N$ = 28).  In Canada, a

minority of 33.8% of the faculty were men.  The population of United States faculty members

was comprised of 65% ($N$ = 1107) women and 35% ($N$ = 592) men.  In all three countries, men

were outnumbered by women at each faculty rank.

Regarding h-index, rank explained 39% ($\eta_p^2$ = .39) of the variance in scores of Israeli

faculty members, 27% ($\eta_p^2$ = .27) of the variance for Canadian faculty members, and 29% ($\eta_p^2$ =

.29) of the variance in the h-index scores for United States faculty members.  A minimal amount

of variance in h-index scores was associated with gender in Israel ($\eta_p^2$ = .001), Canada ($\eta_p^2$ =

.003), and the United States ($\eta_p^2$ = .01).  The interaction between rank and gender displayed little

variance in faculty members' h-index scores in Israel ($\eta_p^2$ = .02), Canada ($\eta_p^2$ = .01), and the

United States ($\eta_p^2$ = .01).

Rank had a statistically significant effect on h-index scores in Israel ($p$ < .001), Canada ($p$

< .001) and the United States ($p$ < .001).  Statistically significant differences in faculty member's

h-index scores based on gender were not found in Israel ($p$ = .76) or Canada ($p$ = .51), but a

statistically significant relationship was indicated in the United States ($p$ = .001).  Similar results

were gleaned in regards to the interaction effect between rank and gender, as no interaction was

identified with Israeli ($p$ = .65), or Canadian, ($p$ = .39) samples, but a statistically significant

interaction was observed in the United States ($p$ = .001).

The h-index scores for male Lecturers in Israel were higher than those of females.  This

rank is the equivalent of an Assistant Professor in other Western countries (Toren, 1991).  Male

Assistant Professors in Canada had higher h-index scores than female faculty members of the same rank, as did male Assistant Professors in the United States. For additional details, see Figure 1.

Female Israeli Senior Lecturers and Associate Professors had higher h-index scores than their male counterparts. In Israel, tenure is awarded at the rank of Senior Lecturer (Toren & Moore, 1998; Toren, 1993), making it similar to the rank of Associate Professor in Israel and Canada. The h-index scores of female Associate Professors in the United States were lower than those of male Associate Professors. In contrast, Canadian female Associate Professors had higher h-index scores than their male peers. For more information, see Figure 2.

Male Full Professors in both Israel and the United States had higher h-index scores than female Full Professors. Full Professors in Canada who were women had higher H-index scores than male Full Professors, a result that differed from a study examining gendered differences in the productivity of Canadian Full Professors in other academic areas (Nakhaie, 2002). The mean h-index scores for Full Professors are provided in Figure 1.
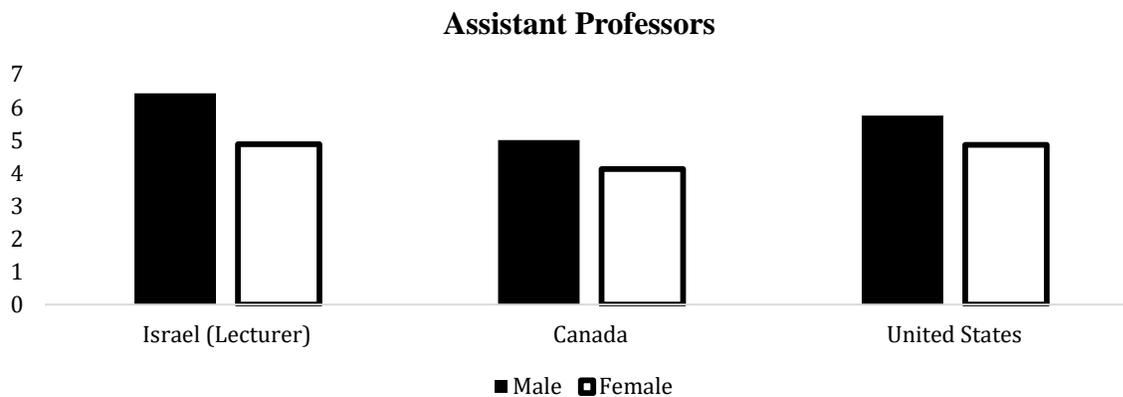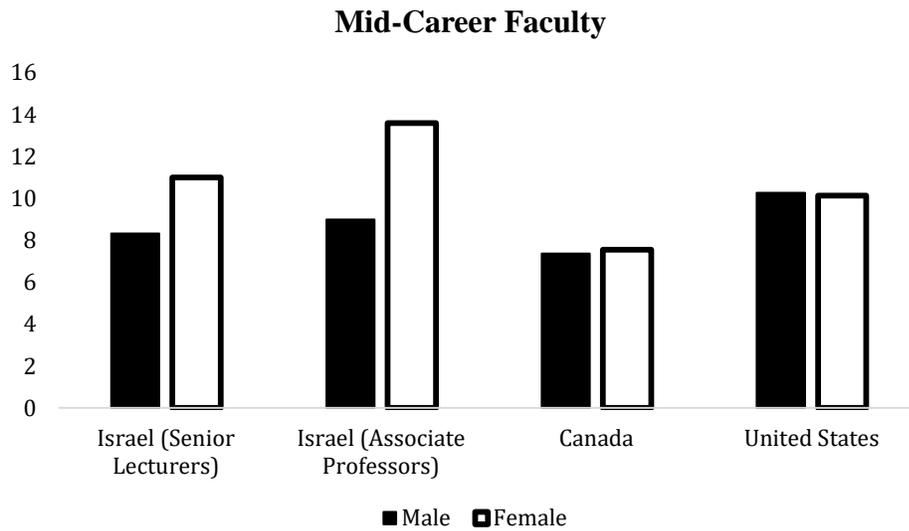
**Assistant Professors**



*Figure 1*. Mean H-Index of Assistant Professors by Gender

**Mid-Career Faculty**



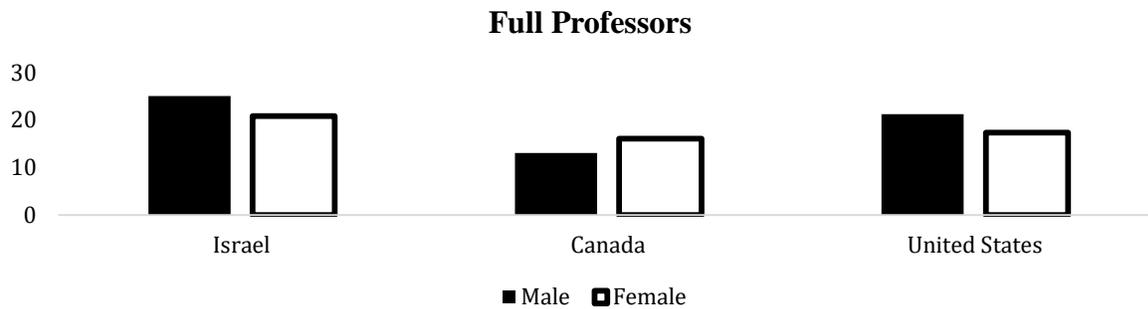*Figure 2.* Mean H-Index of Mid-Career Faculty by Gender

**Full Professors**



*Figure 3.* Mean H-Index of Full Professors by Gender

Lecturers, Associate Professors, and Full Professors in Israel had respectively higher H-index scores than Assistant Professors, Associate Professors, and Full Professors in Canada and the United States. Overall, faculty members in the United States had the highest h-index scores of the three countries. Canadian professors had the lowest h-index scores of the three countries across all ranks. For full details, see Table 1.

Table 1, *Mean H-index of Faculty Rank by Country (Confidence Intervals)*

| Country | Assistant Professor/Lecturer | Senior Lecturer | Associate Professor | Full Professor | Total |
|---|---|---|---|---|---|
| Israel | 5.35 (3.61, 7.09) | 8.79 (5.85, 11.73) | 13.10 (10.17, 16.02) | 22.41 (17.63, 27.20) | 10.95 (9.11, 12.79) |
| Canada | 4.39 (3.03, 5.76) | N/A | 7.50 (6.34, 8.66) | 14.76 (11.63, 17.88) | 8.58 (7.36, 9.80) |
| United States | 5.10 (4.75, 5.45) | N/A | 10.18 (9.71, 10.65) | 19.37 (18.34, 20.41) | 11.99 (11.49, 12.48) |

**Discussion**

The variance in h-index scores for faculty members in all three countries was explained by rank. Because the quantity and impact of faculty member's publications are connected with promotions and tenure (Holden, Rosenberg, & Barker, 2005), senior faculty members would understandably have higher h-index scores than their junior colleagues.

In regards to gender and rank, differences were noted between the three countries. The United States was the only country that found a statistically significant interaction effect between rank and gender on h-index scores. Furthermore, mid-career academics in Israel and Canada who were female had higher h-index scores than men of the same rank, as did female Full Professors in Canada (Panisch & Smith, 2016; Panisch et al., 2017). Both examples are in contrast to the results of the study by Carter et al. (2017) of social work faculty in the United States. This indicates a need to explore differences that are unique to each country. The existing literature on academic publication patterns also suggests a justification for exploring differences that may be unique to social work departments in Israel and Canada.

In the social work studies, minimal differences were found in the mean h-index scores of male and female Associate Professors in Canada and the United States, with those of Canadian female Associate Professors being slightly higher, and the opposite being true for male Associate

Professors in the United States (Panisch & Smith, 2016; Carter, et al., 2017). This is consistent with research on publication patterns across academic departments in Canada (Nakhaie, 2002), and on professors of academic medicine in the United States (Eloy at al., 2013). However, the findings of the Canadian social work study showing higher levels of productivity among female Full Professors were in inconsistent with the results of Nakhaie, who found the opposite was true.

The study of Israeli social work professors by Panisch et al. (2017) is in contrast to the aforementioned studies on mid-level career faculty members, with female Senior Lecturers and Associate Professors showing markedly higher mean h-index scores than their male peers of the same rank. The fact that this trend is reversed at the level of Full Professor in Israel is congruent with research that is specific to Israel. A study by Toren and Moore (1998), indicates that most of the senior faculty positions in Israeli universities are occupied by males, and that being a man is a more accurate predictor of promotion than publication quantity. Although male Israeli Full Professors were outnumbered by female Full Professors in the study by Panisch et al., this is consistent with faculty trends specific to social work. Toren (1991) has posited that female academics in Israel are more likely to begin their academic career later in life, for the purpose of starting a family. Building upon Toren's suggestions, Panisch et al. (2017) speculated that the discrepancy in mean h-index scores at the Full Professor rank could be attributed to this delay, which would grant male Full Professors more time to accumulate a larger quantity of high impact publications. However, it is important to note that these authors did not collect any data on career length in their study that would allow them to make empirical statements on this topic. The need to look deeper into this possibility is underscored by Stack (2002) who asserted that

gender was a less accurate predictor of publication quantity than the rank and time a faculty member had worked since earning their doctoral degree.

**Conclusions**

The study found differences among social work doctoral programs in three countries. By itself, that is not a surprising finding. The study was notable in providing a glimpse of the comparisons of gender and rank the three countries' social work doctoral programs. The use of a population versus a sampling strategy was also a strength in all three studies. Based on these strengths, it is possible that the comparisons among the three studies are stable and will not change over time. Israel differed sharply from the United States and Canada in the accomplishments of mid-career female faculty compared to their male counterparts. In the United States, males had higher h-indices at all three ranks; that was not true in the other two countries. In fact, the scholarly impact of Canadian women faculty exceeded those of their male colleagues in both mid- and senior levels. Additionally, the gender ratio was the same for all three countries, thus eliminating it as a reason for the remarkable differences.

The limitations are consistent with those in any survey study. It is difficult to get the in-depth understanding of respondents as would be possible in a qualitative study. It is also entirely possible that all relevant variables were not captured in this study. Further, the use of the h-index is rife with weaknesses, such as a bias towards refereed journal articles as opposed to books or book chapters, as well as towards publications written in particular languages (Yitzhaki, 1998; Hicks, 1999). Finally, the cultural traditions in the three countries were not captured, introducing another weakness in the research strategy.

This paper provides a baseline for the interaction between gender and rank of social work faculty in three countries. The next studies should seek to identify variables that were not

examined here. They will add color and substance to the findings of this study. Adding a qualitative study will fill out the picture of how rank and h-index affect women in their careers as social work faculty.

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