



Gendered Citation Patterns in International Relations Journals¹

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This paper applies a methodology utilized in economics to study citation patterns in two International Studies Association journals. The paper analyzes articles published in *International Studies Quarterly (ISQ)* and *International Studies Perspectives (ISP)* in 2005. Comparisons are made based on the sex of the authors of articles and the sex of the cited authors in each paper's bibliography. Empirical analyses suggest that male authors of *ISQ* and *ISP* articles are less likely to cite work by female scholars in comparison with female authors. Mixed-gender author teams are also significantly less likely to cite research by female scholars relative to female article authors.

Keywords: citations, gender, journals

The status of female faculty in the academic profession has been the concern of many professional organizations such as the International Studies Association (ISA). Members of the ISA's Committee on the Status of Women and the Women's Caucus have examined issues related to women's representation in the ISA (Henehan and Sarkees 2009), gender differences in bargaining and service (Mitchell and Hesli 2013), and factors that influence the success of women in the tenure track (Hancock, Baum, and Breuning 2013). Findings from these studies comport with the larger academic literature on the gender gap in the academic discipline (Monroe, Ozyurt, Wrigley, and Alexander 2008). These studies identify gender differences in salaries (Bell 2001; Blackaby, Booth, and Frank 2005; Henehan and Sarkees 2009), publication rates and journal/book press placement (Young 1995; Mathews and Andersen 2001; Breuning, Bredehoft, and Walton 2005; Breuning and Sanders 2007; Hesli and Lee 2011), rank achievement (Sarkees and McGlen 1999; Hesli, Lee, and Mitchell 2012), placement at research versus teaching institutions (Sarkees and McGlen 1999), and satisfaction with graduate school training (Hesli et al. 2003). While these studies show that female scholars lag behind their male peers on a variety of dimensions, we know less about whether this gap extends to the professional impact of women's scholarship. We approach this question by answering Ferber's call to determine "whether men's and women's accomplishments are judged the same way" (Ferber 1988:82) through an examination of citation patterns in academic journals.

Citations to published research are a natural benchmark for assessing the impact of a scholar's work. Citations are often utilized in tenure cases as a measure of scholarly impact. Journals evaluate their overall reputation by calculating impact factor scores based on the average number of citations to each article in

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the journal in a given time period. Scholars have devised a number of measures to aggregate information about citations, including the h-index, which captures the number of published papers (h) with the same number of citations (or more). Google Scholar draws attention to highly cited research through its search algorithm, which can further increase the number of citations that papers can accrue. Citations can also result in higher salaries, with one estimate rating the dollar value of a citation between \$50 and \$1300 (Diamond 1986). In short, citations to one's research are important for the success of tenure and promotion cases as well as the long-standing reputation and salary of academic scholars.

It is important to discover whether women's research is accorded the same level of citations and attention as men's research. We analyze this topic in the context of the ISA by analyzing papers published in 2005 in two journals supported by the ISA: *International Studies Quarterly (ISQ)* and *International Studies Perspectives (ISP)*. *ISQ* is a general journal that publishes research by scholars from a wide range of constituencies in the ISA organization. *ISP* is designed to create dialogue between researchers, teachers, and practitioners of international relations (IR). Both journals are well known among ISA members and have been in print for over a decade. We selected the year 2005 in the interests of striking a balance between having more recent journal publications in which the number of female authors would reflect the current state of the discipline, while providing a long-enough period after publication for citations to accrue when considering the overall impact of the published articles. In the future, we plan to compare the results from these journals to citation patterns in a broader set of IR and political science journals over a longer time period.

We begin by summarizing the research findings of a study in economics that serves as the design for our research (Ferber 1988). We then describe our data collection process and present our empirical findings. Like Ferber (1988), we find strong evidence for a gender gap in citations, with male authors being less likely to cite women's work than female authors. These findings point to the importance of descriptive representation for women in the ISA, as the presence of a critical mass of female scholars can serve to equalize the accomplishments of male and female scholars in our profession.

Previous Research

Ferber (1986) examined citations to research in the *Journal of Economic Literature* and discovered that scholars were more likely to cite research of other scholars that share their biological sex. To determine whether these findings generalized beyond labor economics, a follow-up study (Ferber 1988) expanded the analysis to a number of journals across several academic disciplines. Ferber collected data on articles published by one or more women in US and Canadian academic journals in economics, mathematics, psychology, and sociology. This sample was then combined with a random sample of articles by all authors based on the lists of publications contained in the *Journal of Economic Literature*, *Mathematical Abstracts*, *Psychological Abstracts*, and *Sociological Abstracts*. The percentage of citations to work by male and female scholars was then constructed for each discipline.

Ferber's (1988) expanded data set confirms her earlier findings that male scholars are more likely to cite the work of other male scholars, while female scholars also cite the work of female peers more frequently. Among male authors, the gender gap ranged from 15% in development psychology to <5% in mathematics. For example, in development psychology, articles written by men cite research by men 67% of the time in comparison with 52% of female-authored work citing research by men, generating a 15% gap. Yet the fields in

which the gap is small show patterns where male and female authors cite mostly male authors in their research. In mathematics, 98% of works cited by men are written by men, while 94% of works cited by female authors are written by men. In development psychology and sociology, on the other hand, Ferber found that research by women constituted 7.5–18.1% of male authors' citations and 15.8–29.1% of female authors' citations. Given the larger density of female scholars in psychology and sociology,² this suggests that both male and female scholars' decisions about what work is important to cite are influenced by the overall representation of women in the profession. Ferber (1988:86) reaches a similar conclusion: "The 'citations gap' appears to decrease as the proportion of women in the field, and of articles written by women, increases. The larger the proportion of women in a field the less invisible they are; first because there are more articles written by women, in which women are more often cited; second, because men cite them more frequently."

Analyzing more than 3,000 journal articles in every first and third issue for 12 political science journals from 1980 to 2006, Maliniak, Powers, and Walter (2012) also find evidence for gendered citation patterns. After controlling for a variety of factors such as year of publication, substantive focus, methodology employed, and institutional affiliation, the authors find that articles published by women are significantly less likely to be cited than articles written by men. Female-authored papers receive only 73% of the citations that a single male-authored paper receives. A further analysis of the citation network shows that women's articles are systematically less central in the political science article citation network and that authors of the most influential articles cite women's work less frequently.³

There are a variety of factors that could generate a gender gap in academic citations to scholarly research. First, as noted above, in fields where women make up a small minority of the profession, their work may simply be less visible relative to the majority group. The University of Washington's Eigenfactor Project compiled a large N database on articles and citations for a wide variety of academic fields from 1665 to 2010. The political science portion of their data set suggests that women constitute 14.7% of authors in this time period relative to 22% for all disciplines (<http://chronicle.com/article/About-These-Data/135244/>). The project also shows that while the percentage of female authors is increasing over time, there is still a gap between the percentage of women in a given discipline at a particular point in time and the percentage of female authors in that same period. Women might need to reach a critical mass before a systemic change in citation patterns can occur. A more recent analysis by Ferber and Brun (2011) finds that the gender gap in citations has decreased, especially in the field of labor economics, where women constitute close to one-third of scholars in the field. In the general field of economics where women are still a relatively small group, however, the gender gap in citations is larger.

Second, scholars may have a subconscious gender bias when considering what research to cite. Many course syllabi and textbooks in the IR field are filled with the work of white, male scholars (Alker and Biersteker 1984; Goldstein 2007). Women's research may be devalued more than men's research, which might be perpetuated by younger scholars' training including the message that men's research constitutes the dominant paradigm for the discipline. Third, male

²Ferber (1988) reports the percentage of women in developmental psychology as 48% and the percentage of women in sociology as 34%; this compares to 19% in labor economics, 12% in finance economics, and 13% in mathematics. Data provided to the authors by ISA for 2011 show the percentage of female members of ISA to be 39.5% (which includes scholars of all academic ranks).

³On the other hand, analyses of over 1,000 articles in *Journal of Peace Research* from 1983 to 2009 show no evidence of a gender gap in average citations per article (Østby et al. 2013).

scholars may be networked into the “old boys” network more fully, which could bring visibility to their research. Women’s research is underrepresented in edited volumes authored by men (Mathews and Andersen 2001), which could reflect a male-dominated culture at conferences where one must receive an invitation to attend. Fourth, there could be a contagion effect as scholars often use other scholars’ bibliographies when generating references for their own research.

One tactic for thinking through this question is to simply compare the amount of published research by men and women in a given academic field and to compare citations to their work (Østby et al. 2013). This type of comparison across scholars is useful for identifying general patterns. On the other hand, such an approach makes it difficult to see who is citing whom. Only by matching the author of a published paper to the authors being cited in their bibliographies can we determine whether gender biases exist at the level of the individual researcher. We employ this research design in our analyses.

Data and Analysis

We created a data set where each case is a specific entry in the bibliography (or references) section of a journal article. We examined all articles published in *ISQ* and *ISP* in 2005. The sex of each author was determined using Web searches, with <1% missing data across all articles. Table 1 presents a summary of the articles analyzed from each journal. We coded a total of 57 articles with 3,414 total reference entries coded. Seventy percent of the articles were authored by one or more men, 16% were authored by one or more women, while the remaining 14% were written by mixed-gender teams. *ISP* has a larger percentage of articles in 2005 authored by men (75% vs. 65% in *ISQ*).

Table 2 presents a cross-tabulation of citation data for articles in *ISQ*. We can see that in articles published by one or more male authors, the proportion of references to research by other male authors is 83%, 11% of total citations are to female authors, while the remaining 6% of references are to mixed-gender publications. These numbers look quite different for female authors, with 57% of citations to research by male authors, 33% for citations to research by female authors, and the remaining 10% of cites to mixed-gender papers. These differences are statistically significant ($\chi^2(4) = 155.1$; $p < .001$) and sizable substan-

TABLE 1. Articles in Sample (2005)

<i>Author(s) sex</i>	<i>Male (%)</i>	<i>Female (%)</i>	<i>Male and female (%)</i>	<i>Total (%)</i>
<i>ISQ</i>	19 (65)	6 (21)	4 (14)	29 (49)
<i>ISP</i>	21 (75)	3 (11)	4 (14)	28 (51)
Total	40 (70)	9 (16)	8 (14)	57 (100)

TABLE 2. Gender and Article References, *International Studies Quarterly* (2005)

<i>Author(s) sex</i>	<i>Sex of author(s) in references (%)</i>			<i>Total</i>
	<i>Male</i>	<i>Female</i>	<i>Male and female</i>	
Male	1,009 (83)	139 (11)	73 (6)	1,221 (59)
Female	298 (57)	177 (33)	52 (10)	527 (26)
Male and female	247 (81)	35 (11)	24 (8)	306 (15)
Total	1,544 (76)	351 (17)	149 (7)	2,054 (100)

(Note. $\chi^2(4) = 155.1$ ($p < .0001$).

tively; the proportion of citations to women's research is three times higher for female authors compared to male authors. When an *ISQ* paper is authored by a mixed gender team, the citation patterns look similar to those for male authors, with 81% of total cites accruing to men's research. This finding is quite important, as it shows that the presence of female authors alone does not close the citation gender gap. Female scholars publishing solo-authored work or coauthoring with other women are much more likely to cite women's research.

In Table 3, we report the same data for *ISP* articles. In articles published by one or more male authors, the proportion of references to research by other male authors is 84%, 9% of total citations are to female authors, while the remaining 7% of references are to mixed-gender publications. For female authors, 71% of citations are to research by male authors, 21% for citations to research by female authors, and 8% of cites to mixed-gender papers. For *ISP*, the gender gap is smaller primarily because the percentage of references to men's research is higher for female authors in this sample (82% vs. 76% in *ISQ*). Yet the gender gap is statistically significant ($\chi^2(4) = 62.1$; $p < .0001$). In papers written by women, 21% of all references are to research by women, whereas for male authors, only 9% of total references are to research by women. Thus, we observe a similar pattern where female authors in *ISP* are more than twice as likely as their male counterparts to cite research by female scholars.

In Table 4, we conduct a multivariate logit analysis which allows us to control for specific author effects. One article that appeared in the 2005 *ISQ* volume, for example, was a paper by J. Ann Tickner, a reputable feminist scholar in the field of IR. We wanted to ensure that the results are not driven by a small set of authors given the small size of the author sample (57 articles). We examine two dependent variables in these analyses. The first variable is coded one when a female author or a team of all female authors is cited and zero otherwise. The second variable includes citations to mixed-gender articles where women appear

TABLE 3. Gender and Article References, *International Studies Perspectives* (2005)

Author(s) sex	Sex of author(s) in references (%)			
	Male	Female	Male and Female	Total
Male	983 (84)	103 (9)	82 (7)	1,168 (86)
Female	69 (71)	20 (21)	8 (8)	97 (7)
Male and female	59 (62)	10 (11)	26 (27)	95 (7)
Total	1,113 (82)	133 (10)	116 (8)	1,360 (100)

(Notes. $\chi^2(4) = 62.1$ ($p < .0001$).

TABLE 4. Multivariate Analysis of Gender and Citation Data (*ISQ* and *ISP*, 2005)

Independent variables	M1: Female (only) [†]	M2: Female (only) [‡]	M3: Female and Mixed	M4: Female and Mixed [‡]
Male author	-1.303 (0.115)*	-1.303 (0.289)*	-1.235 (0.103)*	-1.235 (0.286)*
Male and female coauthors	-1.272 (0.180)*	-1.272 (0.350)*	-0.808 (0.143)*	-0.808 (0.348)*
<i>ISQ</i>	0.344 (0.115) *	0.344 (0.180)	0.065 (0.093)	0.065 (0.193)
Constant	-1.067 (0.132) *	-1.067 (0.258) *	-0.412 (0.113) *	-0.412 (0.281)
Observations	3,414	3,414	3,414	3,414
Wald chi-square	169.32*	25.12*	159.29*	20.5*

(Notes. Standard errors in parentheses; * $p < .05$.)

[†]Dependent variable: sex of author being cited (1/0).

[‡]Clustered by article.)

as coauthors in addition to the coding for citation to articles authored by a solo female or a team of female authors. We include three independent variables: (i) Male Author equals one if the author(s) of the paper is male and zero if the article was written by females or mixed-gender teams; (ii) Mixed Author equals one if the authors of the paper include men and women, and zero if the article was written by male authors or female authors; and (iii) a dummy variable for *ISQ* to see whether there are differences across the two ISA journals.

The first column in Table 4 reports the results using female-only authors as the dependent variable. The second column reports the same model clustering the standard errors by article author to ensure that the results are not driven by specific authors. We reach similar conclusions in both models, as the coefficients for male author and mixed author are negative and statistically significant at the 95% level. This confirms what we observed in Tables 1 and 2, whereby male scholars are significantly less likely to cite work by female scholars in comparison with female authors, the omitted reference category. The *ISQ* dummy variable is positive and statistically significant, showing a higher likelihood of citations to female research in this journal compared to *ISP*. This reflects what we observed in Table 3, whereby overall citations to work by women was lower in *ISP*.

The third and fourth models in Table 4 count citations to mixed-gender teams as citations to female research. The results are similar, showing that male and mixed-gender author teams are less likely to cite work by women relative to female authors. The journal fixed effects differences become insignificant when we include mixed-gender citations in the coding of the dependent variable. In all four models, a clear gender gap exists in citations to research in IR journal articles, driven at least in part by the tendency for men to disproportionately cite other male authors.

These findings have many significant implications for female scholars in academic fields such as IR and political science. First, if citations are being used to evaluate the overall impact of women's research for tenure and promotion decisions, our analyses suggest that the gender bias in citations could negatively influence the perceived impact of women's research in that process. This may help to explain why the total number of publications reported by a political science scholar has no statistically significant influence on whether a woman achieves the rank of associate professor relative to the rank of assistant professor; for male professors, in contrast, the total number of publications is positively and significantly associated with achieving a higher academic rank (Hesli et al. 2012). Published research constitutes one part of the tenure record, but does not take into consideration the broader impact of scholarly research. If women's research is afforded less attention and visibility through citations, this could help to account for the leaky pipeline in political science whereby women constitute a much smaller percentage of professors at associate and full professor ranks (Mitchell and Hesli 2013).

Second, we observe some interesting distinctions across the two ISA journals that we analyze. *ISQ* appears to be more representative of the ISA organization as a whole, as women publish more articles in the journal (21%) relative to articles published in *ISP* (11%). Women's research is also cited more frequently in *ISQ* articles (17% of total references to female authors) than in *ISP* articles (10%).

Third, we have conducted similar citation analyses for other political science journals published in 2005, such as *Conflict Management and Peace Science (CMPS)* and *Journal of Conflict Resolution (JCR)*, journals affiliated with the Peace Science Society and *Political Analysis*, which is affiliated with the American Political Science Association's Political Methodology section (Dion and Mitchell 2012).⁴

⁴Detailed results can be obtained from the authors of this study.

These areas of political science are more male dominated relative to ISA, as women constitute 28% of presenters at the Peace Science annual conferences (since 1995) and 24% of presenters at the annual summer meetings of the Society for Political Methodology (since 1984). We find a similar pattern for citations in journals sponsored by these groups to what we have reported in this article. In *CMPS*, 87% of citations of male-authored articles are references to work by other male scholars, while only 5% of male authors' citations are to female-authored work; this compares with 78% of female-authored papers citing male-authored research and 14% of citations to female-authored work. Thus, female authors in *CMPS* are about three times more likely to cite the work of other female scholars in comparison with male authors, an effect that is very close to what we reported for *ISQ*.⁵ In *Political Analysis*, the citation gender gap is even larger with only 3% of total citations in male-authored papers being references to research by female authors. This compares to 10% of citations by female authors to the research of other female authors. Thus, the pattern observed in ISA-sponsored journals appears to generalize to other journals in similar fields.⁶

Conclusion

In this paper, we analyze the professional impact of research written by women in journals published by the ISA and compare that to the professional impact of research written by men. We look at references in articles published in the 2005 volumes of *International Studies Quarterly* and *International Studies Perspectives* to determine whether there are gender gaps in academic citations in these journals. Our research design, adapted from a study in economics (Ferber 1988), allows us to more carefully match the biological sex of an author with the sex of the authors whose work is cited in the bibliography section of an article. We find that women are three times more likely to cite the research of other female scholars, while <10% of all bibliography entries in articles written by men contain any reference to work by women in IR.

It is important to explore these patterns for additional journals and additional years. We also hope to understand the mechanisms behind these general patterns more fully. Given that women constitute 39% of ISA members, but that they are disproportionately located in lower academic ranks, we need to consider how to increase the number of women in the organization and to bring awareness of this gender gap citation problem to men in the profession.

In future research, it would be interesting to consider how citation patterns vary in special issues relative to regular journal issues. Prior work suggests that women's research is less well represented in edited issues, and thus, women's work may also be cited less frequently in such contexts. We would also like to explore the types of topics that scholars are working on. If female authors are more likely to write about certain topics, then the gendered citation patterns we observe could be a product of women being able to cite one another more easily in certain substantive areas. There could be systematic differences in the overall accumulation of citations in various topical areas, and we do not know whether these dynamics negatively affect female scholars. We also hope to understand why mixed-authored teams have citation patterns that are more similar to male-

⁵In *JCR* in 2005, only one article was published by a female (only) author (Beth Simmons), and there were no statistically significant differences in the patterns of her citations compared to other *JCR* authors that year.

⁶It is interesting to note that the total number of citations for the articles we coded (as reported in Google Scholar as of December 2012) is not statistically different across the articles based on the biological sex of the authors. The mean number of citations is higher for female-authored papers (52.8 vs. 35.5 for male-authored papers), but once we take into account the variance in the samples through an ANOVA estimation, the differences are not statistically significant.

authored research, rather than striking a balance between the citation decisions of male and female authors.

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