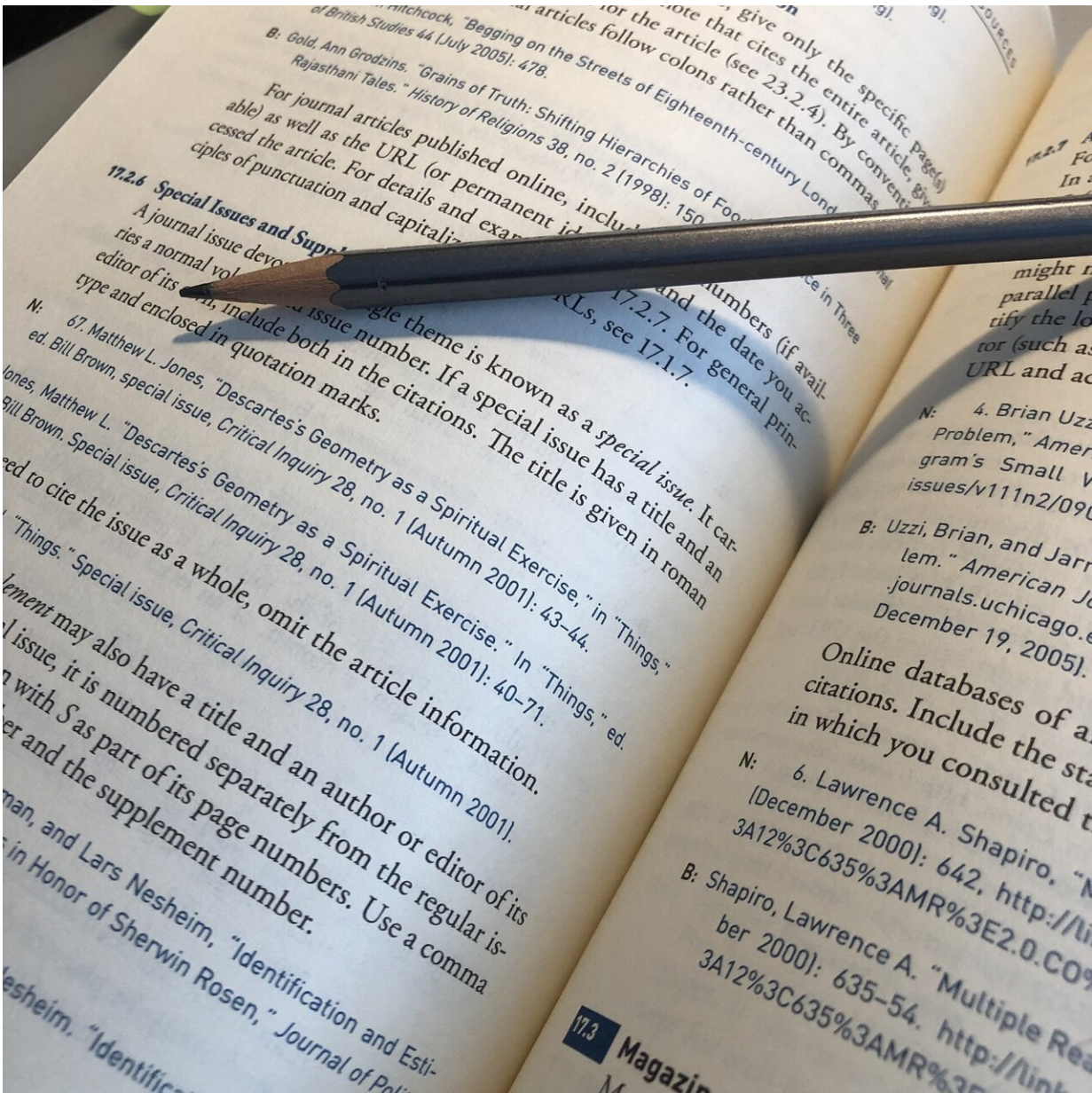


Why are women cited less frequently than men?

March 26 2024, by Cary Wu



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Citation counts count. The number of citations is commonly perceived as indicative of a researcher's productivity and academic impact. It weighs heavily in considerations for hiring, promotion, funding allocation, and salary increases within academic institutions.

For many scholars it is standard practice to have set up their Google Scholar profile to showcase their published work and the citation counts they received. Easy access to citation metrics has in turn made it common to see citation counts on academic CVs.

At the same time higher education institutions around the world are leveraging [the presence of scholars on the Stanford-Elsevier list](#) of the world's most-cited scholars as evidence of the extensive reach and influence of research conducted within their institutions.

Women in academia often fall behind men in important professional achievements such as earnings, publications, and securing funding. It is often assumed they also receive fewer citations for their published work. But is this the case?

Women are cited less, but their articles are not

There is a booming literature on gender citation patterns. In my own study, I undertook a [comprehensive literature review](#), published in *Sociology Compass*, of existing studies on the topic that covered almost all fields. The results showed little consensus on the nature of the gender citation gap. However, I did identify three main approaches:

- per-article approach

- per-author approach
- reference-ratio approach

The per-article approach focuses on individual articles and examines whether there are differences in citation rates between articles authored by men and women. The per-author approach is where researchers compare the aggregate citation records of men and women scholars over a specified period or at the career level. The reference-ratio approach analyses the reference lists of published articles and tests whether there are gender imbalances among the cited authors.

When examining the empirical findings within these different approaches separately, a much clearer understanding emerges. The weight of evidence from studies that followed the per-article approach or the reference-ratio approach suggests that articles written by women actually receive comparable or even higher rates of citations than articles written by men. Sociologist Freda Lynn and colleagues label this gender finding as "a rare case of gender parity in academia."

In contrast, most studies that take the per-author approach show that women accumulate significantly fewer citations over time or at the career level. This gender citation gap has been consistently observed across various fields, national contexts, and over time.

Citation disadvantage and gendered career trajectories

There are various interpretations and explanations for either the presence or absence of a gender gap in citations. Most focus on the roles gender may play in research evaluation or citing behaviors. These include women's research being undervalued, women's underrepresentation (and therefore there are fewer women-authored articles to be cited), and a

gender homophily effect that scholars are more likely to cite the work of someone of their gender.

Since women are not, on average, being cited less per each paper they produce, gender-based bias and discrimination in citing behaviors or the undervaluation of women's research may not be the causes of women's fewer citations. This also means that simply advocating for citing more women may not be the best approach to address the gender gap in citations.

Additionally, my review also reveals two empirical patterns that refute the underrepresentation of women as an explanation. One is that, surprisingly, the gap is much larger in fields where there are more women such as psychology, sociology, and veterinary science. Second, with the increase in the share of women in science over time, the gender citation difference has also become greater, not smaller.

Women are not less cited per each article, but do they have fewer articles? [Mounting evidence](#) suggests this is the case. Women publish less than men over the career course. Having fewer articles translates to fewer opportunities for receiving citations. Research productivity is the main cause of the career-level differences in citations between men and women.

The lower productivity of women, and consequently their fewer citations, stems from different challenges men and women face over the course of their careers. Women often experience shorter publishing career lengths and higher dropout rates. Family responsibilities, lack of research collaborations, and lower levels of specialization are also among the contributing factors.

My analysis of [a unique database](#) of more than 130,000 top scientists and their papers and citation information provided by John Ioannidis and

colleagues from Stanford University lends further support for this argument.

First, articles written by women on average receive more citations than those written by men. Second, women accumulate fewer total citations, and this gender gap grows larger with time as men and women progress in their careers. Third, research productivity can explain a large share of the gender citation gap.

Negative impacts of the gender citation gap

Getting cited a lot can lead to higher salaries because universities are incentivized to reward researchers who have a big (measurable) impact. So, do women researchers' lower citation rates harm their earnings?

Alongside the gender citation gap, the gender wage gap (women researchers earn significantly less than their male counterparts) has been a long-standing issue. In Canada, women academics earn about 10% (or \$10,500 per year) less than men for the same work.

My analysis of a [bibliometric profile that includes citation and salary information](#) for nearly 2,000 scholars from two Canadian universities shows a strong citation and salary correlation.

For every additional citation a researcher gets, their annual salary increases by \$15. The difference in citation rates between men and women also seems to explain a significant part of why women earn less, especially for full professors. This shows that the gap in how often men and women's work gets cited can be a big factor in why women earn less in science.

The lower [citation rates](#) among women can also perpetuate the notion that women scholars are less influential, ultimately leading to their work

being undervalued and their contributions to the field marginalized. Consequently, their ideas and perspectives may find less traction in the broader academic discourse.

What can we do about it?

Given that the gender citation gap primarily stems from women publishing fewer articles over their careers, what can be done to help women publish more?

- Men and women should co-write more with women. Research collaboration is a strong predictor of publishing productivity.
- Journal editors may consider extending more invitations to women for article submissions. This may help minimize gender-related bias in the formal review and editorial decisions.
- Universities may allocate additional research time to women faculty members. Granting women additional time dedicated to research may be instrumental in boosting their overall research productivity.
- Government and funding organizations may consider funding more women's research. Promoting gender equity in funding decisions may serve as a potent strategy to bolster the research productivity of women.

Citations do not always reflect research productivity and impact. They can also be predicted based on social identities such as [gender](#). Over-reliance on citations for evaluation can further exacerbate existing disparities in science.

Still, despite their flaws, the real impact of citations cannot be overlooked. They serve as a critical mechanism for recognizing and validating the research claims and assertions of other scholars. They contribute to the dissemination of knowledge by guiding readers to

relevant literature and more. Ignoring the gendered causes of their unequal distribution does a disservice to good research.

More information: Cary Wu, The gender citation gap: Approaches, explanations, and implications, *Sociology Compass* (2024). [DOI: 10.1111/soc4.13189](https://doi.org/10.1111/soc4.13189)

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