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## Whom do you cite?

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**Science is losing out due to the lack of diversity in academia.**



Photo: Einar Nilsen

The list of references in an academic article is there to substantiate arguments and guide the readers to other interesting articles on the same topic. Citations are also important for those who are cited: in applications for appointments, promotions and research funding, the number of citations can have significance.

Women are cited more rarely than men, and this is certainly not because their research output is of poorer quality [\(1\)](#). A review of more than 5 000 articles published in the six most prestigious medical and health journals showed that articles with female authors were cited only half as often as those written by men – and the more women who were listed in the most important author positions (first and last), the less often they were cited [\(1\)](#). The first author of the review article, Paula Chatterjee, believes that this finding reflects how men have more extensive networks [\(2\)](#). This can be seen in, for example, the observation that men are more often invited to lecture at medical conferences [\(3\)](#). However, female researchers also tend to fall victim to the 'tall poppy syndrome' more often than men. They cite their own research less frequently, and they describe their research findings in less spectacular terms in social media [\(4, 5\)](#).

There can obviously be other reasons why women are cited less often. Perhaps men publish articles on methodology (which are frequently cited) more often than women, and perhaps the female authors of a study were younger than the men and therefore had not yet established large networks?

However, the results in the review article corroborate findings from previous studies, for example in neuroscience. In this field it has been documented that citations largely seem to be driven by the reference lists from articles with men as first and last authors [\(6\)](#). These differences persist when adjusted for the authors' job title and discipline, and the imbalance appears to increase over time [\(6\)](#). In neuroscience, a proposal has therefore been made to prepare guidelines on how authors can review the list of references before the manuscript is submitted to a journal: does the list reflect the gender balance in the discipline? Are there any female researchers who deserve a mention [\(7\)](#)?

*«Ideas from marginalised groups are not captured and brought forward to the same extent as ideas from more privileged groups»*

This form of discrimination is not only thought to affect women, but also other marginalised groups. At the Rockefeller University in the United States, a committee that works with diversity has prepared a manual for how the citation of underrepresented groups can be increased [\(8\)](#). Those who want, can buy a t-shirt that says #citeblackwomen [\(8\)](#).

Of course, it is not only individuals who suffer. Diversity drives innovation [\(9\)](#). Science (and the world) stands to lose out if women and minority groups and their world views do not come to the fore. Ideas from marginalised groups are not captured and brought forward to the same extent as ideas from more privileged groups – and the more potentially innovative these ideas are, the less they come to light [\(9\)](#). Those who belong to a marginalised group must be smarter and shout louder than others in order to be heard.

But how can we keep track of who is being published, cited and rewarded, as long as they are only names in a list of authors? In recent years, databases and methods have been developed that use artificial intelligence to classify names according to gender (3, 10). In order to identify other potentially marginalising factors, we may simply need to *ask* – no matter how uncomfortable it may seem. When signing up for an online seminar on health recently, I was asked: 'Do you have a functional impairment? Please answer according to your own perception'. After I had entered my name and email address, I was also asked to report my gender, ethnicity and sexual orientation in optional tick boxes.

I was a bit taken aback at first. And then I was glad they asked. We need knowledge about who we *are* in order to ascertain out what voices are to be heard.

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