

# Women in Science — Why So Few?

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In all areas of science, the issue of women's under-representation at the top persists. Even in biology, where the majority of undergraduates have been female for the last three decades, a larger proportion of women than men leave academia at each critical transition in the career 'pipeline' towards top positions in science. In the UK, women make up only 7% of Full Professors (1), and this figure is changing only very slowly. It is not simply that these women leave the workplace, as many reappear in science-related positions in the media, law and management (2). Why, then, is the career pipeline for women so leaky? Sex discrimination may be part of the explanation, but blanket policies, such as the target of 40% participation of women at all levels of science, proposed by the European Commission (3), underestimate the importance of factors such as gender differences, personal choices and the structure of science.

Concern about sex discrimination has been bolstered by evidence that the numbers of women in science may be limited by unconscious biases in those reviewing applications for advancement. A Swedish study documented a clear gender bias in the peer-review of research grant applications (4); women had to significantly outperform men on number and quality of publications to be rated as equally competent. A similar gender bias was found in the evaluation of applicants for prestigious faculty positions (5). By promoting good female candidates, quotas could help such biases to be overcome. However, as well as problems associated with positive discrimination, such as a resulting negative perception of female scientists, these quotas are flawed because they do not address all the factors involved.

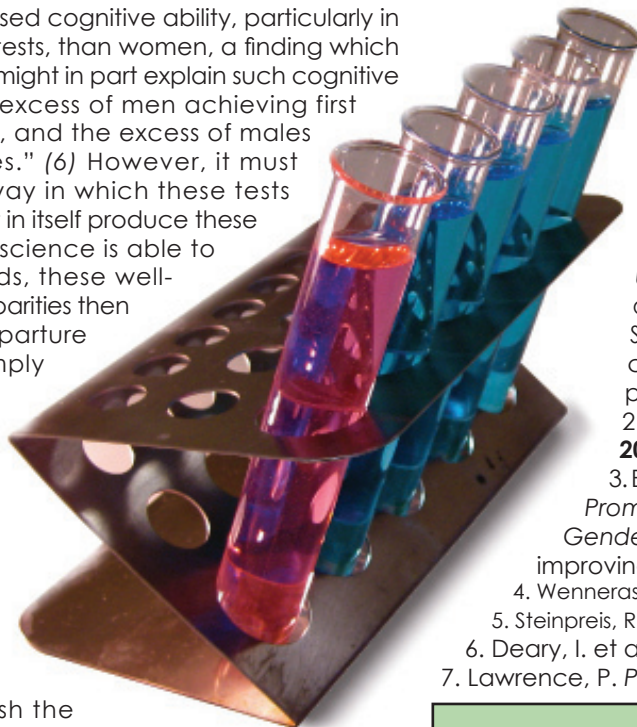
Recently much debate has centred on biological differences between men and women that might explain the paucity of women at the top levels of science. A particularly relevant and well-researched claim is that males exhibit greater variation in assessed cognitive ability, particularly in mathematical aptitude tests, than women, a finding which some studies conclude "might in part explain such cognitive outcomes as the slight excess of men achieving first class university degrees, and the excess of males with learning difficulties." (6) However, it must be assumed that the way in which these tests model aptitude does not in itself produce these differences. Presuming science is able to distinguish the top minds, these well-documented gender disparities then may indicate that a departure from parity does not imply discrimination.

Frequently, the controversy surrounding this type of research has focused more on whether the results are morally acceptable than on how the scientific findings are applicable to the debate. However, it is essential to distinguish the moral proposition that women should

not be discriminated against on account of their sex, from the scientific claim that there are gender differences in cognitive ability. Well-documented gender disparities in aptitude indicate that a departure from parity does not imply discrimination, as science should be concerned with recruiting the best minds regardless of gender.

Another barrier to the advancement of women may be that the structure of science, in its emphasis on quantity of papers, favours male characteristics such as competitiveness, assertiveness and aggressiveness (7). The value of having scientists with more feminine qualities could be acknowledged by allowing skills such as mentoring and the support of colleagues to count more in the competition for academic posts. When genetics emerged as a new discipline at the periphery of science, women were well represented (2). As the status of the field rose, the element of competitiveness increased and the proportion of women at the top levels declined. While quotas address discrimination, they do not establish a paradigm more balanced between the sexes, in which collaboration and objectiveness in assessment procedures rise above aggressive competition. Addressing this issue may lead not only to more women at the top levels, but also to better science.

The paucity of women at science's top levels is therefore attributable to a range of factors which cannot all be tackled by imposing quotas. This brief account also only scratches the surface of the available data. While it is crucial that discrimination in selection procedures is dealt with, this should not prevent open discussion of biological gender differences. Statistical differences in what men and women state are their priorities in life, and possible gender differences in cognitive ability indicate that we should be striving for equality, rather than parity, at the top levels of science.



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