

# Choices -- not discrimination -- determine success for women scientists, experts argue

ScienceDaily (<https://www.sciencedaily.com/releases/2011/02/110207151214.htm>) · February 10, 2011

It's an incendiary topic in academia -- the pervasive belief that women are underrepresented in science, math and engineering fields because they face sex discrimination in the interviewing, hiring, and grant and manuscript review processes.

In their study, published Feb. 7 in the journal *Proceedings of the National Academy of Sciences*, Cornell University social scientists say it's just not true.

It's not discrimination in these areas, but rather differences in resources attributable to career and family-related choices that set women back in science, technology, engineering and math (STEM) fields, say Stephen J. Ceci, professor of developmental psychology, and Wendy M. Williams, professor of human development and director of the Cornell Institute for Women in Science, both in Cornell's College of Human Ecology.

The "substantial resources" universities expend to sponsor gender-sensitivity training and interviewing workshops would be better spent on addressing the real causes of women's underrepresentation, Ceci and Williams say, through creative problem-solving and policy changes that respond to differing "biological and social realities" of the sexes.

The researchers analyzed the scientific literature in which women and men competed for publications, grants or jobs in these fields. They found no systematic evidence of sex discrimination in interviewing, hiring, reviewing or funding when men and women with similar resources -- such as teaching loads and research support -- were compared.

"We hear often that men have a better chance of getting their work accepted or funded, or of getting jobs, because they're men," Williams said. "Universities expend money and time trying to combat this rampant alleged discrimination against women in the hope that by doing so universities will see the numbers of women STEM scientists increase dramatically over coming years."

The data show that women scientists are confronted with choices, beginning at or before adolescence, that influence their career trajectories and success. Women who prioritize families and have children sometimes make "lifestyle choices" that lead to them to take positions, such as adjunct or part-time appointments or jobs at two-year colleges, offering fewer resources and chances to move up in the

ranks. These women, however, are not held back by sex discrimination in hiring or in how their scholarly work is evaluated. Men with comparably low levels of research resources fare equivalently to their female peers. Although women disproportionately hold such low-resource positions, this is not because they had their grants and manuscripts rejected or were denied positions at research-intensive universities due to their gender.

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Also, females beginning before adolescence often prefer careers focusing on people, rather than things, aspiring to be physicians, biologists and veterinarians rather than physicists, engineers and computer scientists. Efforts to interest young girls in these math-heavy fields are intended to ensure girls do not opt out of inorganic fields because of misinformation or stereotypes.

Also, fertility decisions are key because the tenure system has strong disincentives for women to have children -- a factor in why more women in academia are childless than men. Implementation of "flexible options" to enhance work-family balance may help to increase the numbers of women in STEM fields, the researchers say.

As long as women make the choice and "are satisfied with the outcomes, then we have no problem," they write in the paper. "However, to the extent that these choices are constrained by biology and/or society, and women are dissatisfied with the outcomes, or women's talent is not actualized, then we most emphatically have a problem."

The solution will only be possible if society focuses on changing the women's non-optimal choices and addressing unique challenges faced by female STEM scientists with children, the researchers say.

Ceci and Williams, a married couple with three daughters, co-authored "The Mathematics of Sex: How Biology and Society Conspire to Limit Talented Women and Girls" in 2010.

The research was funded by the National Institutes of Health.

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