Women opt out of math/science careers because of family demands

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Women tend to choose non-math-intensive fields for their careers -- not because they lack mathematical ability, but because they want flexibility to raise children or prefer less math-intensive fields of science, reports a new Cornell study.

"A major reason explaining why women are underrepresented not only in math-intensive fields but also in senior leadership positions in most fields is that many women choose to have children, and the timing of child rearing coincides with the most demanding periods of their career, such as trying to get tenure or working exorbitant hours to get promoted," said lead author Stephen J. Ceci, professor of human development at Cornell.

Women with advanced math abilities choose non-math fields more often than men with similar abilities, he added.

Women also tend to drop out of scientific fields -- especially math and physical sciences -- at higher rates than do men, particularly as they advance, because of their need for greater flexibility and the demands of parenting and caregiving, said co-author Wendy M. Williams, Cornell professor of human development.

"These are choices that all women, but almost no men, are forced to make," she said.

The study, published in the March issue of the American Psychological

Association's *Psychological Bulletin* (135:2), is an integrative analysis of 35 years of research on sex differences in math. Ceci and his Cornell co-authors reviewed more than 400 articles and book chapters to better understand why women are underrepresented in such math-intensive science careers as computer science, physics, technology, engineering, chemistry and higher mathematics.

Women today comprise about 50 percent of medical school classes; yet women who enter academic medicine are less likely than men to be promoted or serve in leadership posts, the authors report. As of 2005, only 15 percent of full professors and 11 percent of department chairs were women. Non-math fields are also affected: For example, only 19 percent of the tenure-track faculty members in the top 20 philosophy departments are women.

The authors concluded that hormonal, brain and other biological sex differences were not primary factors in explaining why women were underrepresented in science careers, and that studies on social and cultural effects were inconsistent and inconclusive. They also reported that although "institutional barriers and discrimination exist, these influences still cannot explain why women are not entering or staying in STEM careers," said Ceci. "The evidence did not show that removal of these barriers would equalize the sexes in these fields, especially given that women's career preferences and lifestyle choices tilt them toward other careers such as medicine and biology over mathematics, computer science, physics and engineering."

The analysis, which also was conducted with Susan Barnett, Ph.D. '04, a visiting scholar at Cornell, also found that "Women would comprise 33 percent of the professorships in math-intensive fields if it was based solely on being in the top 1 percent of math ability, but they currently comprise less than 10 percent," Ceci said.

Science, technology, engineering and math are not the only professions affected by women's career choices, said the authors. Women are still underrepresented in the top positions of such fields as medicine, law, biology, psychology, dentistry and veterinary science.

The authors recommended that universities and companies create options for women with math talents who want to pursue math-intensive careers. These could include deferred start-up of tenure-track positions and part-time work that segues to full-time tenure-track work for women who are raising children, and courtesy appointments for women unable to work full time but who would benefit from use of university resources (e-mail, library resources, grant support) to continue their research from home.

Source: Cornell University (news : web)