

## Pushing Women out of Mathematics and Science

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Harvard's president, Lawrence Summers, caused a furor by suggesting, at a private meeting, that innate differences might contribute to the paucity of women in top positions in math, science, and engineering at elite universities. My own experience at Harvard suggests a different explanation.

I entered Radcliffe with sophomore standing in 1969, declared mathematics as my major, and immediately encountered pervasive sexism in the Mathematics Department. First, the men (there were no women) at the department's peer advisement session told me (incorrectly, as it turned out) that no "girl" had ever taken Math 55 (an accelerated course usually taken by majors). They advised me to take the ordinary class in second year calculus and linear algebra instead. Then my advisor, a full professor in the department, urged me to switch out of mathematics because in his opinion, the only reason a woman had for majoring in math was in order to marry a mathematician. (He did not know my name, and did not ask how I was doing, so had no basis other than my gender for his recommendation.) Feminism was in the air in 1969, but it had not wafted down to me, and without a framework for interpreting these events, I was devastated. I took a leave of absence, nearly dropped out, and switched to an interdisciplinary social science major called Social Relations, where I recovered enough to graduate summa cum laude. I told various Harvard and Radcliffe administrators about my experience, but no one took any action. A female classmate has told me that she too switched majors and suffered bouts of suicidal depression after hostile treatment in a different science department.

I can't know whether, with different treatment, I might now be a middle aged professor of mathematics rather than psychology, and if so, how many younger women I might have encouraged into careers in math or science. But certainly some of the women made unwelcome in Harvard's and other universities' math and science departments in that era would have continued into the professoriate. Thus the effects of blatant sexism 36 years ago reverberate today.

I understand that President Summers based his argument, in part, on the distribution of test scores in mathematics among high school students. But even these scores are influenced by stereotypical expectations of different social groups. For example, a random assignment study by Margaret Shih and colleagues in Harvard's Psychology Department, showed that Asian women performed more poorly on a math test than a control group when their female identity was made salient, but performed better when their Asian identity was made salient. This line of research began when Claude Steele of Stanford showed that African American students performed more

poorly on standardized tests when they first had to state their race than when they did not. The research findings are well-established, although the psychological processes in play remain somewhat contested.

As research on genetics advances, we may one day find a set of genes associated with mathematical talent, and it is not impossible that one or more of these may be sex-linked. But it is clear now that stereotypes contribute to poor performance by women and African Americans in mathematics. Past sexual discrimination, practiced by Harvard and other universities, is one cause, I would say a major cause, of the paucity of women in math, science, and engineering today. Until stereotypes and discrimination are eliminated, it is simply unknowable whether women, properly supported, can climb into the highest ranks of the professoriate in math and science in proportions equal to men.

Instead of speculating that women may not have the talent to succeed, Dr. Summers, in his role as leader of the nation's premier educational institution, should be doing everything in his power to give them the chance.

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