

Statement on the Causes of Gender Differences in Science and Math Career Achievement

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Harvard University President Lawrence Summers' recent statement that innate differences between the sexes might explain women's poor representation in science and engineering has generated strong public debate. Summers' "call for more research" (especially as President of one of America's most prestigious academic institutions) suggests that there is no overwhelming body of serious scholarship that informs this topic. Yet there is substantial research that provides clear and compelling evidence that women, like men, flourish in science, just as in other occupational pursuits, when they are given the opportunity and a supportive environment.*

Measures of gender differences in such areas as verbal, mathematical, and spatial abilities have changed over time showing virtually no differences at the present time. While contestations remain in the research over explanations for the source of any differences in performance, the far greater explanatory power lies in differential access and support. Studies show that social and cultural assumptions and stereotypes about differences in women's and men's abilities are the cause of noticeable differences in their interests and performance. Not surprisingly, therefore, such assumptions also have a larger impact on judgments about people's potential job performance and success.

The most compelling patterns shown by research are that people's abilities, as measured by job outcomes, are shaped by and interact with social influences. For example, objectively assessed math and scientific ability differences between males and females have changed substantially over the past three decades. In the United States they have become non-significant and in some other countries, the United Kingdom, for example, girls' performance exceeds that of boys at all levels of schooling. That gender differences in these abilities have shifted so substantially over such a short period of time makes it impossible for biological changes to have been influential. This period, however, was one in which girls' access to school courses, counselor encouragement, career opportunities, and role models changed (and improved) significantly — but not their biology.

Another documented pattern is that when ability differences have favored women, their superior ability has not typically been translated into occupational achievement. Girls' measured advantages in verbal skills, reasoning problems, verbally presented math, school grades and other achievement areas did not, in the recent and distant past, result in women's dominance in related areas of academic or occupational achievement such as English literature, law, or philosophy in our major universities. Relatively fast social change and a consistent pattern of female disadvantage in converting individual ability into occupational success imply the presence of important institutional factors at work and, indeed, these factors have been and currently are being subjected to scientific study. What is important about this research is that the social processes of inequality it empirically documents are amenable to intentional change in policy and practice that can and will produce greater gender equality if implemented, monitored, and studied.

Sociological research provides ample empirical evidence of the importance of social phenomena in creating the gender gap in science and math achievement at the highest levels and, therefore, why it is a social problem. Fortunately, sociological research also provides evidence about areas in which policy

changes can foster behavioral changes that would remedy this problem. As real structural opportunities have opened to women, as a result of legal challenges and other social pressures for change, they have demonstrated increased interest in, and rapidly joined, fields from which they had been excluded. As late as 1964, women were only four percent of all law students in the United States because they faced overt discrimination in professional schools' admissions policies. Legal challenges outlawed overt discrimination, and women are now 50 percent of law and medical students, and they are closing the gender gap within professional practice areas as well. A recent report of the American Institute of Physics notes that women with bachelor's degrees in physics are as likely as men to make their way up the academic ladder.

Nevertheless, scientific research continues to demonstrate that a significant proportion of senior males (and even some females) believe women are different, do not welcome them on professional teams, and therefore do not offer the informal training needed for the highest positions in established professions. A vivid example of this is, of course, Summers' own remarks and the ensuing debate in which one side assumes the preeminence of biological causes without reference to the scientific knowledge base, and views "political correctness" as the foundation of any attempt to temper such statements with a realistic view of the interaction of social process and biological potential.

"Scientific correctness" can help us here. Decades of social-scientific research provide a solid base of empirical knowledge about the power of unequal opportunities, limitations in access to formal and informal training, a lack of social and domestic supports, and lowered expectations about women's capacity to achieve that sap their educational and professional confidence. Studies also show that peer pressures to conform to stereotypical behavior and exposure to popular media affect women's and men's choices and opportunities in the occupational world. These changeable social factors, not innate biological differences, provide the most powerful explanation for the continuing gap between women's abilities and their occupational attainments.

The Council of the American Sociological Association goes on record as recognizing the scientific basis of overriding social determinants that structure the skewed distribution of women's participation in many domains of professional life, urging public and private policies and practices that further the goal of gender equity.

Suggested Reading

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