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How Cultural Stereotypes Lure Women Away From Careers in Science

Women may be underrepresented in science and technology not because they are less skilled in those areas or because they face specific gender barriers to entering these fields, but because they may find better opportunities elsewhere.

That's the conclusion from a new study by Ming-Te Wang and colleagues at the University of Pittsburgh. According to the researchers, women have broader intellectual talents, which provide them with more occupational options.

The group analyzed data involving 1,500 college-bound students of above average intelligence, who were part of a long-term study. They were first surveyed in 1992 when they were high school seniors and then reinterviewed by phone at age 33 in 2007.

The results, published in the journal *Psychological Science*, found dramatic differences by gender in the areas in which men and women excelled. Among who had highest scores on both the verbal and the math sections of the SAT, for example, nearly two-thirds were female, while only 37% were male.

Among those who excelled in one area but not the other, 70% of those with high math and lower verbal scores were male, while 30% were female. For high verbal skills but lower math scores, the numbers were exactly reversed: 70% of high verbal scorers who didn't do as well in math were female, compared with 30% for the males.

Of those who scored best across the board, 34% choose a career in science, technology, engineering or medicine (STEM) — but 49% of those who did better in math than in language skills chose a STEM career. Given the gender difference among those scoring higher in math than in language, that meant fewer capable women wound up in science and mathematical fields.

The researchers also examined and controlled for other factors that might affect career choices such as the socioeconomic status of the participants' parents, their own values when it came to balancing work and family, and their personal perceptions about their skills and interests; still, the breakdown between verbal and math skills remained a strong predictor of career choice.

But what interested the researchers most was the fact that more women than men tended to show aptitude in both math and language skills, and yet the rate of women choosing STEM careers remains low. Are women discouraged from these fields, or are they simply not interested in them for other reasons? To find out, the scientists also questioned participants about their math and English "self concepts," or how good they thought they were at those subjects and how much they enjoyed them. People tend to play to their strengths: for those who think they are best at English, it may not matter that they may also be math geniuses compared with their peers. They'll pick what comes easiest and gets the most support.

That may be why fewer women, despite the fact that they have the aptitude for it, enter STEM fields. It's cultural stereotypes that may be indirectly pushing women away from scientific fields. If you are highly skilled in two areas but one is more in line with social stereotypes and has richer social support that affirms that skill, it's not surprising that would be the talent you choose to develop.

And social forces in this area are powerful. In fact, data from nearly 300,000 students in 40 countries who took an international test showed that in countries where women are treated more equally, no gender gap exists in math and science scores, and in a few countries, women even do better. In more equal countries, not only are women seen as

equally capable of math performance, but both genders have government-required paid family leave available to them, as well as free or cheap access to high-quality day care, making the pursuit of demanding careers in science and technology easier and female role models who do it more visible.

In countries where such equal opportunities in STEM careers aren't available, where using words to win is seen as a more appropriate career for a woman and where women's confidence in their math skills is consistently undermined, then women may find the support and options in nonscience fields more appealing. "Our study provides evidence that it is not lack of ability that causes females to pursue non-STEM careers, but rather the greater likelihood that females with high math ability also have high verbal ability and thus can consider a wider range of occupations than their male peers," the authors write.

If that's the case, then addressing the gender gap in STEM careers isn't so much about boosting women's aptitude in math and science — their results show that's not the issue — but in making careers in these areas more welcoming, accessible and financially attractive.