

Bridging the math gender gap

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The gender gap in math perceived to exist between girls and boys has long been contested. New research published in the journal *Science* sheds clarity on the debate and demonstrates that girls perform better in mathematics in more gender equal societies, in some cases besting male peers.

The research, led in part by Kellogg School of Management Professor Paola Sapienza, sought to address the issue of whether social and cultural factors influence women's success in math and science. Sapienza and her colleagues Luigi Guiso (Istituto Universitario Europeo) and Ferdinando Monte and Luigi Zingales (University of Chicago), empirically investigated whether a global gender gap exists in math to understand the relative importance of biology and culture on the development of basic mental attributes that are valuable for conducting math and science.

“The so-called gender gap in math skills seems to be at least partially correlated to environmental factors” says Sapienza. “The gap doesn't exist in countries in which men and women have access to similar resources and opportunities.”

In search of bridges across the math gender gap, Sapienza and her colleagues analyzed data from more than 276,000 children in 40 countries. The large number of subjects and broad range of social systems represented were key to the validity of the study. Each child took the 2003 Organisation for Economic Co-operation and Development Programme for International Student Assessment (PISA), an internationally standardized assessment of math, reading, science and

problem-solving ability.

Based on the PISA analysis, Sapienza and her colleagues determined that while the global pattern shows that boys tended to outperform girls in math (on average girls score 10.5 points lower than boys), this advantage was not always the case. In a few countries, including Iceland, Sweden and Norway, girls scored as well as boys or better.

Sapienza and colleagues examined social features that might explain the variance from country to country. The team used four tools to measure how well women were integrated into each society compared with men. These tools were the 2006 Gender Gap Index (GGI) developed by the World Economic Forum (WEF); the World Values Survey; the percentage of women aged 15 or older who are eligible to work in each country's labor force; and the WEF political empowerment index, which measures the representation of women in government.

Sapienza's team found that, in more gender equal societies, the gender gap in math disappears. For example, the math gender gap almost disappeared in Sweden (GGI = 0.81), while girls scored 23 points below boys in math in Turkey (GGI = 0.59). Not only did average girls' scores improve as equality improved, but the number of girls reaching the highest levels of performance also increased.

Math and science rates for girls in the U.S., which ranks 23rd on the GGI scale with a score of 0.7, fell in the middle of the pack. On average, U.S. girls score almost 10 points lower than U.S. boys in mathematics, which is around the average for all countries analyzed in the study.

The research also found a striking gender gap in reading skills. In every country girls perform better than boys in reading. In more gender equal societies, the girls' advantage in reading over boys increases further. On

average, girls have reading scores that are 32.7 points higher than those of boys (6.6 percent higher than the mean average score for boys). In Turkey, this amounts to 25.1 points higher and in Iceland, girls score 61.0 points higher.

Said Sapienza, “Our research indicates that in more gender equal societies, girls will gain an absolute advantage relative to boys.”

Source: Manning Selvage & Lee

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