

# Early Math Classes Biased Against Girls, Affecting Career Choices, Study Finds



By Erik Lief — October 27, 2016



Trouble with math [1]

As a nation, we have made progress in the medical and legal professions over the years in closing the occupational gender gap. Today, close to half of all med school graduates are women. Meanwhile, in the aggregate, law offices have a similar ratio, according to the American Bar Association, and it's been that way for more than a generation. (All this pertains to employment, just to be clear. The *salary* gender gap is a whole other matter, for another time.)

However, gender equality does not exist in professions requiring foundations in science and math, as women make up less than one-fifth of college graduates holding a degree in engineering and computer science. And why is that?

Here's why, at least partly. Once again, we're learning that a major factor for this large disparity can be traced back to elementary school, specifically, the ways in which the genders are exposed to math. And new research has revealed something even more striking: Not much has changed in 12 years to correct an apparent, built-in institutional bias -- against girls.

Analyzing data from two national studies focusing on math education and elementary school children, [a new study](#) [2] says that boys outperforming girls "who entered kindergarten in 2010 [is] strikingly similar to what we saw in children who entered kindergarten in 1998." This is according to Joseph Robinson Cimpian, the lead author of "Have Gender Gaps in Math Closed? Achievement, Teacher Perceptions, and Learning Behaviors Across Two ECLS-K Cohorts," which was just published *AERA Open*, in the peer-reviewed journal of the American Educational Research Association.

Using two impressive sets of data from the federal government's Early Childhood Longitudinal

Study (ECLS) -- the first for the 1998-99 academic year; the second for 2010-11 -- researchers concluded that while boys and girls start with a similar math proficiency in kindergarten, the disparity widens by Grade 3 and becomes more pronounced over time.

And then there's this eye-opener: The research also showed "disparities in teacher perceptions of students, with teachers rating the math skills of girls lower than those of similarly behaving and performing boys," states [a release from NYU's Steinhardt](#) <sup>[3]</sup> School of Culture, Education, and Human Development, where Cimpian works as an associate professor of economics and education policy. And this can have a significant future impact because, "Public perceptions – particularly those of teachers – are important for students, as they can act as self-fulfilling prophecies."



Approximately 5,000 students comprised the first cohort (grades K to 3), and more than 7,500 in the second (K to 2). Each study tested children's math skills as they aged, and importantly, teachers were also asked to rate each student's knowledge in 10 different areas. But when "boys and girls behaved and academically performed similarly, teachers in both cohorts underrated the math skills of girls as early as grade 1," the NYU release read. "This suggests that teachers must perceive girls as working harder than similarly achieving boys in order to rate them as equally proficient in math."

And with the performance gap widening as children age, boys acquire a sizeable advantage in obtaining math-based college degrees and jobs after graduation.

"The gender gap at the top of the math achievement distribution deserves special attention, as this is where future mathematicians, computer scientists, and other science, technology, engineering, and mathematics (STEM) professionals tend to reside," states a report from the [National Science Foundation](#) [4]. "Women remain severely underrepresented in high-paying, math-intensive fields. For example, in the United States, women earn only 19% of bachelor's degrees in engineering and 18% in computer science."

Of course, this is not to imply that teachers are intentionally biased, and that they seek to favor boys in math instruction. But what this credible, new study does highlight is how deep-seated, perceived gender roles are, and how much more dedicated educators must become in order to eliminate any accidental, preferential treatment in the future.

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