

Study: Math-Anxious Teachers Affect Girls' Math Learning

By [Debra Viadero](#) on January 25, 2010 12:40 PM – Education Week Update 1/26/2010

Research has long shown that, as a group, preservice elementary teachers are more likely than other college majors to break out in a cold sweat over the thought of quadratic equations, the Pythagorean theorem, or long division. And the few math courses that preservice teachers are required to take in education school do little to soothe their anxieties about the subject.

A new study suggests, however, that teachers' unspoken fears have a serious downside in the classroom. Female teachers with math anxiety can infect female students with the idea that boys, but not girls, are good in math.

For the study, which was published today in *Proceedings of the National Academy of Sciences*, Sian L. Beilock and her colleagues from the University of Chicago studied 17 1st- and 2nd-grade teachers and their students over the course of a school year.

Three months into the school year, the researchers found, there were no differences between the boys and the girls in the classes in terms of math achievement and no relationship between teachers' level of math anxiety and that of their students.

Over the course of the school year, though, something odd happened: The more anxious teachers were about math, the more likely their female students were to endorse the stereotype that "boys are good at math and girls are good at reading" by the end of the school year. And the more likely girls were to believe that stereotype, the worse they did in that subject. (Compared, that is, to boys and to girls who did not harbor those sorts of beliefs.)

The researchers measured the children's beliefs by asking them to draw pictures of students who were good at reading and math and scoring them based on whether the pictures represented girls and boys.

For boys, however, there was no relationship between their beliefs about gender abilities and their subsequent math achievement, which seems to put a dent in the argument that the more-anxious teachers were just worse teachers. "Instead," the study says, "teachers with high math anxiety seem to be specifically affecting girls' math achievement—and doing so by influencing girls' gender-related beliefs about who is good at math."

These effects are small, the study notes. (National data suggests, in fact, that girls for the most part now perform on par with boys in mathematics.) But, given the fact that 90 percent of elementary teachers are female, the potential for instilling harmful stereotypes in little girls' heads is pretty broad. For that reason, the researchers suggest that education schools ought to rethink their math requirements for preservice teachers. They write:

"If the next generation of teachers—especially elementary school teachers—is going to teach their students effectively, more care needs to be taken to develop both strong math skills and positive math attitudes in these educators."