

Reply to Plante et al.: Girls' math achievement is related to their female teachers' math anxiety

Plante et al. (1) in “Girls' internalization of their female teacher's anxiety: A ‘real-world’ stereotype threat effect?” raise an excellent point that, overall, girls' and boys' math achievement did not differ at either the beginning or end of the school year in our study. This finding is consistent with recent work revealing a lack of gender differences in math skills in grades 2–11 (2). Nonetheless, our study (3) sheds light on one avenue through which some girls perform at a lower level in math than other girls and boys overall. Specifically, the higher a female teacher's anxiety about her own math ability, the more likely the girls in her class (but not the boys) are to be lower in math achievement at the end of the school year. We show that this relation between teacher and student can be accounted for by whether girls endorse traditional gender stereotypes (i.e., boys are good at math and girls are good at reading) at school year's end.

Endorsement of stereotypes about gender and ability in science, technology, engineering and math (STEM) disciplines more generally has been linked to females' lowered interest and performance in these domains (4). Even if such stereotypes are diminishing, understanding why some students come to endorse them is important—especially given that, as we find, there is a link between girls' stereotype endorsement and math performance. Moreover, despite the lack of gender differences in math achievement in elementary and high school, when it comes time to choose college majors and career paths, lopsided patterns of gender participation emerge in many STEM fields. Understanding how some girls come to hold traditional gender stereotypes in academics and how this relates to their achievement and motivation may be one key to ensuring that all students have the opportunity to succeed.

Stereotypes about gender and academic ability likely come from many sources (e.g., teachers, parents, peers, siblings) (5). Our work highlights one source through which first- and second-grade girls might come to endorse traditional gender stereotypes—their female teachers. Of course, as Plante et al. point out, many girls (and boys) in our sample did not endorse the stereotypes. We are also interested in why this is the case. One way to address this issue is to investigate other sources of modeling, in addition to students' teachers, and as Plante et al. (1) suggest, to look at the role of male teachers in boys' and girls' stereotypes and achievement in a variety of academic domains. Only then will we have a full understanding of why and how some students come to endorse academic gender stereotypes and the implications of such endorsement for performance. Regardless of what this future research holds, however, we show that when a teacher is anxious about her own math ability, the math achievement of some girls in her class can suffer. Given that math anxiety can be reduced through math training, education, and interventions that target the anxiety itself, our work highlights the importance of providing teachers with the math preparation and tools they need to optimally support the mathematics learning of all of the children in their classrooms.

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