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## Breaking the Link Between Parents' Math Anxiety and Students' Progress

By Sarah D. Sparks on December 4, 2018 12:01 PM

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Out-of-school family time around math **may help children succeed even when their parents dread the subject**, according to a new study in the *Journal of Experimental Psychology: General*.

As part of an evaluation of Bedtime Math, a free math app, the researchers tracked the math achievement of 587 elementary students in 40 Chicago-area classrooms. As 1st graders, two-thirds of the children and their families had been randomly assigned tablets installed with a version of the app, which provided a daily short story accompanied by five related math puzzles and problems ranging from 1st to 5th grade difficulty, for parents to read with their children. A randomly chosen control group received tablets loaded with a similar reading app that included comprehension questions rather than math-related questions. At the beginning and end of grades 1 through 3, the children were tested in reading and math, and their parents completed surveys around their own feelings about math.

Co-authors Sian Beilock, a cognitive scientist and the president of Barnard College, and Susan Levine, a developmental psychologist at the University of Chicago and a study co-author, together study the effects of anxiety on learning. They found the children of parents who showed high stress and fear around math learn less math from 1st to 3rd grades than children of parents who have no math anxiety.

In the first year of the study, parents used the apps on average once or twice a week, and students using the math app showed about three months more math learning gains that year, with the biggest benefits shown for children of parents who were highly stressed about math.

"The idea is that perhaps those math interactions are seeping into other components of life in such a way that it translates into boosted scores for the kids," said Beilock. "So if I'm with my 7-year-old and she asks for seven gummy bears, maybe I give her three and ask her how many more, to make her come back to me to get to seven."

That's important, since parents who dread math often balk at helping their children with math homework—and a 2015 study found that **when math-stressed parents did try to help, their children actually learned less math** over the course of the year.

But families' use of the apps slowed precipitously after that first year, to perhaps once or twice a month by 3rd grade.

"There's a lot of activities for kids and families to participate in, including lots of different apps ... and so it isn't surprising to me that the usage of [Bedtime Math] dropped off over time—but what was surprising was that the effects on the kids continued," Levine said.

Even after families mostly stopped using the apps, children of math-anxious parents who had used the math app continued to learn math at the same rate as their peers whose parents were comfortable with math. By contrast, children with math-anxious parents who used the reading app learned significantly less from year to year than their peers whose parents were confident in math.

That's not to say playing math games with their children made *parents* more confident about math—the moms and dads who dreaded math at the beginning of the study still dreaded it three years later. So what changed? The parents were more confident in *their children's math prowess*. They developed higher expectations for their kids in math, and rated math as being **more valuable for their children** than they had before. (Prior studies have found parents sometimes **underplay the importance of math compared to other subjects** for their children's success.)

"It changed parents' expectation that their kids can do well in math because they got the opportunity to see their kids engaging in math and [http://blogs.edweek.org/edweek/inside-school-research/2018/12/Parents\\_math\\_anxiety\\_students\\_progress.html](http://blogs.edweek.org/edweek/inside-school-research/2018/12/Parents_math_anxiety_students_progress.html)

enjoying it," Levine said.

While the study did not track students' math anxiety, prior studies have found that, and a separate study found **working on math one on one** helped reduce the anxiety of students who were highly stressed about the subject.

The results are among several recent studies pointing to the **benefits of engaging children and families in math outside of school**, to counter **pressure often felt in the subject** during the school day.

"I think families often think that that reading is in the purview of something you can do at home, while math is something you do at school," Beilock said, "and what we're showing is that there are really powerful benefits of having kids and parents interact around math. It does suggest that we need to be providing parents with resources and opportunities to interact with their kids around math, especially parents who are anxious about it themselves."

*Photo Source: Getty*

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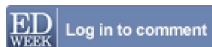
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