

Math anxiety detected before fourth grade says researcher: Early nervousness over number impacts future performance

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124 + 329 = tummy ache. According to a recent study by Rose Vukovic, NYU Steinhardt professor of teaching and learning, math gives some New York City students stomachaches, headaches, and a quickened heartbeat. In short, math makes these children anxious.

"Math anxiety hasn't really been looked at in children in early [elementary grades](#)," said Vukovic, a [school psychologist](#) and researcher of learning disabilities in mathematics. "The general consensus is that math anxiety doesn't affect children much before fourth grade. My research indicates that math anxiety does in fact affect children as early as first grade."

Vukovic's first study, "Mathematics Anxiety in Young Children," will be published in the *Journal of Experimental Education*. It explored mathematics anxiety in a sample of ethnically and linguistically diverse first graders in New York City Title I schools. Vukovic and her colleagues found that many first grade students do experience [negative feelings](#) and worry related to math. This math anxiety negatively affects their math performance when it comes to [solving math problems](#) in standard arithmetic notation.

Vukovic's second study, "Mathematics Anxiety in Young Children: Concurrent and Longitudinal Associations with Mathematical Performance," was recently published in the *Journal of Contemporary Educational Psychology* and builds on her previous research. Looking

closely at second graders in Title 1 New York City schools, Vukovic sought to determine if and how math anxiety impacts [math performance](#) in second grade and into third grade.

"This time around, we wanted to look at what types of [math skills](#) are most impacted by math anxiety and if it affects student performance in future grades as well," Vukovic explained. "We examined performance in math applications, geometric reasoning, and numerical computation."

According to Vukovic, math applications include word problems or interpretations of graphs and charts. Geometric reasoning includes analyzing, describing, and classifying two-and-three dimensional objects. Grade-level addition and subtraction are considered computation.

Vukovic and her research team found that second grade math anxiety affected second grade computations and math applications. Additionally, children with higher levels of math anxiety in second grade learned less math in third grade.

Vukovic explores the relation among parental involvement, children's math anxiety, and children's performance in her next study slated to be published in Early Education and Development.

"Students are walking into classrooms at five and six-years-old saying that they aren't good at math before they've even stepped into a math classroom. Kids are picking up from the environment that math is something to be afraid of," Vukovic explained.

Vukovic found that parents can help ease the effects of their children's math anxiety by holding high expectations for learning. Vukovic found that having high expectations for learning was more important for reducing children's math anxiety than was helping children with their homework or other forms of parental involvement.

"Parents, teachers, and schools play an incredibly important role in combating the factors that put children at risk for poor performance, especially in under-resourced communities and communities of color. Given the push for increased standards – Common Core – we must identify and implement appropriate support for these younger [children](#) so they aren't coming in anxious, behind the curve, and staying behind."

Provided by New York University

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