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For math-phobic, numbers pose threat of pain, study says

You're at a big group dinner and it's time to pay up, to divide the total and multiply a certain percentage for the tip. How many people tense up and say something like, "Oh, I'm so bad at math"?

Fear of math is everywhere - in the adult world where there aren't official pop quizzes, and in schools where the next generation of scientific problem-solvers are struggling with homework.

Researchers report in a new [study](#) in the journal PLoS One that this anxiety about mathematics triggers the same brain activity that's linked with the physical sensation of pain.

"I'm really interested in understanding the source of the anxiety so that we can help all students perform up to their best in this important area," says Sian Beilock, a University of Chicago researcher and one of the study's authors, who is also the author of the book "[Choke](#)."

How they did it

Beilock and colleagues found 28 people - 14 with high math anxiety and 14 with low math anxiety - to explore what happens in the brain when confronted with potentially fearful math problems. Although this is a small sample size, it is not unusual for psychology experiments that involve functional magnetic resonance imaging (fMRI), which is a costly procedure.

The participants were asked to complete word problems and math problems while in the fMRI scanner. Before each task, a cue would appear indicating what type of problem (word or math) was going to come up next.

It was this anticipatory phase that interested the researchers.

What they found

When the participants with high anxiety about math saw that they would be presented with a math problem, researchers saw that these people had activation in the same neural areas associated with physical threats and bodily harm.

"It grounds the phenomenon in the evolutionarily ancient pain system that we often rely on when we are physically harmed," Beilock said.

This study did not find a gender difference, although other studies show that when it comes to anxiety about math ability, women show higher levels of worry than men, she said.

Implications

Obviously this is a small study, so further research is necessary to confirm the conclusions. Also the study showed an association between anticipating an event and a brain region, but this does not prove that one causes the other.

It does seem to be the case, though, that in American culture, math anxiety or lack of math skill is socially acceptable and commonplace, unlike other areas of study, Beilock said.

"You don't walk around bragging oftentimes that you can't read, but people often talk about how they're not number people or they hate math."

But people perform better when they don't view math as a scary subject. As to how to deal with anxiety, Beilock has also done research on that.

She [led a 2011 study](#) showing that writing about your anxieties before a test may actually improve your performance. She and colleagues tried the idea on kids in a ninth-grade biology class, and showed that the anxious kids who did the writing exercise tended to score better on a test.

Post by: [Elizabeth Landau - CNN.com Health Writer/Producer](#)
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