Socratic_Math_People_Morgan_Reid

# There's no such thing as a 'math person'

We've all heard it—or even said it ourselves: "I'm just not a math person."

But experts suggest that there's actually no such thing as a "math person." In fact, they argue that the myth of "math people" makes students more anxious about math.

In the United States, as math anxiety grows, students' proficiency in the subject remains well below the average for all OECD countries, writes Kevin Dickinson for *Big Think*. For instance, in 2015, just 25% of 12th grade students performed at or above proficiency in math, according to the **National Assessment of Educational Progress**.

But it's not inherent ability that's causing the gap. Developmental psychologist Stephen Pinker argues that—evolutionarily speaking—math is too new for our ability in the subject to be genetically influenced.

"On evolutionary grounds it would be surprising if children were mentally equipped for school mathematics," Pinker writes in *How the Mind Works*. "These tools were invented recently in history and only in a few cultures, too late and too local to stamp the human genome."

Nevertheless, students continue to believe that some people are naturally good at math and others are naturally bad at it. This belief is not only a self-fulfilling prophecy, argue professors Miles Kimball and Noah Smith, it's also "the most self-destructive idea in America today." Before entering elementary school, a handful of students are exposed to math at home. These students tend to do well in early math classes, take pride in their ability, and push themselves to work harder.

But students who haven't encountered math before they enter school often struggle at first. When they see their peers picking up math more quickly, they assume those peers were born with an innate mathematical ability, rather simply having more exposure and practice. The students with less math experience then become defeated and frustrated, believing that success in math will always be out of reach. And many educators and parents unknowingly perpetuate the "math person" myth, Dickinson writes. For instance, some well-meaning educators will argue that math should be treated as another language, "just like English, Spanish or Chinese." Others will argue that math is a human sense, "one akin to sight and touch."

But "metaphors such as these, even if presented with encouragement, are wrong and [have] reinforced the belief that being a math person requires being born with an innate gift for the subject," writes Dickinson.

Instead, the only way to improve mathematical ability is through practice, the experts say. "Mastery of mathematics is deeply satisfying," Pinker writes, "but it is a reward for hard work that is not itself always pleasurable. Without the esteem for hard-won mathematical skills that is common in other cultures, the mastery is unlikely to blossom." Kimball and Smith argue that, in addition to practice, a growth mindset helps. A growth mindset allows students to perceive failure as a learning experience and believe that math skills can be developed. Kimball and Smith add that in many East Asian countries—those with the highest numbers of math-proficient students—a growth mindset is embedded in the culture.

"We see our country moving away from a culture of hard work toward a culture of belief in genetic determinism," Kimball and Smith conclude. "In the debate between 'nature vs. nurture,' a critical third element—personal perseverance and effort—seems to have been sidelined. We want to bring it back, and we think that math is the best place to start" (Dickinson, *Big Think*, 10/17).

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