

MATHEMATICAL ANXIETY: CAUSES, EFFECTS, AND CLASSROOM INTERVENTIONS

by:

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Mathematical anxiety is a psychological phenomenon characterized by feelings of tension, apprehension, or fear that interfere with math performance. It affects learners across age groups and ability levels and has been linked to lower academic achievement and diminished confidence in mathematics. Addressing mathematical anxiety is critical for promoting positive math attitudes and success in school and beyond.

The emergence of math anxiety is caused by a number of variables. One major cause is negative early experiences, such as repeated failures in math, high-pressure testing environments, or unsupportive teaching practices. According to Ashcraft and Krause (2007), math anxiety often stems from the internalization of negative beliefs about one's math abilities, which are reinforced by poor performance and critical feedback. The attitudes of educators and parents also matter. If authority figures express fear or dislike of math, children may adopt similar attitudes (Maloney et al., 2015).

Gender stereotypes and societal expectations can further exacerbate math anxiety, particularly among girls. Research has shown that when students internalize the belief that math is more suited for males, it can undermine their confidence and performance (Spencer, Steele, & Quinn, 1999). In addition, the abstract nature of mathematics, which often lacks immediate relevance, can heighten feelings of confusion and stress among learners.

The effects of anxiety in Mathematics are both cognitive and emotional. On an emotional level, it can lead to avoidance behaviors, reduced motivation, and low self-esteem. Cognitively, it interferes with working memory, which is crucial for solving math problems (Ashcraft & Ridley, 2005). Students with high math anxiety may perform well in practice but struggle

during tests or timed activities due to increased pressure. Over time, this can create a vicious cycle of poor performance and increased anxiety.

Math anxiety can be lessened and a more encouraging learning atmosphere can be created in the classroom with effective treatments. One key strategy is to create a growth mindset culture, where mistakes are seen as learning opportunities rather than failures. Teachers can model positive attitudes toward math and encourage persistence and effort over perfection (Dweck, 2006).

Another important approach is to use varied instructional strategies, including visual aids, manipulatives, and real-life contexts to make math more relatable and less intimidating. Collaborative learning and peer tutoring can also reduce anxiety by providing social support and opportunities to learn from others in a low-stress setting (Ramirez et al., 2013).

Students can reduce their anxiety by incorporating tactics such as mindfulness and test-taking strategies. Activities such as breathing exercises, journaling about math experiences, and discussing feelings openly can help students build emotional resilience. Furthermore, ongoing formative assessment without the pressure of grades allows students to track their progress without fear of judgment.

In conclusion, math anxiety is a significant barrier to student success, but it is not insurmountable. By understanding its causes and implementing targeted classroom interventions, educators can create a math environment that nurtures confidence, curiosity, and competence.

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