

## EXPLORING THE RELATIONSHIP BETWEEN MATH ANXIETY, WORKING MEMORY, AND TEACHER PRACTICES

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Betz (1978) proposed that 68% of students in mathematics classes experience high levels of math anxiety. This is most unfortunate as it is a well-established fact that math anxiety is negatively correlated with mathematics performance (Ashcraft & Kirk, 2001; Ashcraft & Moore, 2009; Foley et al., 2017). This does not necessarily imply that math anxiety is an indicator of lower potential to succeed in mathematics. Arnsten (2009) and Diamond et al. (2007) have shown that moderate levels of anxiety can help focus attention and enhance working memory which is known to be a major factor in math competence. It has also been shown that the negative correlation between math anxiety and math performance is stronger for those with high working memory capacity (Foley et al., 2017). Though there has been much research on working memory and situational factors associated with math anxiety, there is not much research which synthesizes the data on working memory with classroom experiences relating to math anxiety. Furthermore, few studies on math anxiety include participants with a broad range of math anxiety levels.

In this study, we sample students in a year-long calculus course. We dig deeper into how students experience math anxiety and how they interpret past classroom experiences. The study utilizes tests for both math anxiety and general anxiety. Interviews are conducted in order to examine past classroom experiences and how these experiences helped to shape the students' belief of math anxiety. We use the interpretation framework developed by Ramirez et al. (2018) to explore the impact of classroom experiences on the development of math anxiety. Under this framework, we hope to discover ways in which the instructor can construct rigorous and engaging classroom activities which would ultimately fashion a favorable impression upon the student.

We also use the disruption account framework proposed by Ashcraft & Kirk (2001) to interpret the role in which working memory affects math anxiety and math performance. The interviews include various working memory tests along with written mathematical procedures. We hope to synthesize the information we gain from these activities with the data we collected for math anxiety and experiences in order to gain deeper insight into how we understand math anxiety.

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