

Abstract

Title – Mindfulness to Reduce Math Anxiety and Improve Math Performance

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Math anxiety, the negative emotional response to math, is a common educational issue and negatively impacts math performance. Anxious ruminations strain mental resources and encourage avoidance behaviors such as procrastination. It is imperative for educators to mitigate math anxiety's negative impact in the classroom. Previous research suggests interventions emphasizing mindfulness (the intentional awareness of the present moment) can combat the ruminations of math anxiety, while interventions on growth mindset (the belief that intelligence can grow and change) can enhance motivation and reduce avoidance behaviors. Mindfulness interventions have contributed to reducing math anxiety and improving math performance on isolated tests of math ability. However, research is lacking that investigates the influence of a combined mindfulness and growth mindset intervention embedded in the classroom on math anxiety, mindfulness, and course performance. This mixed methods, quasi-experimental study with a control group investigated four primary questions: 1) What is the relationship between math anxiety, mindfulness, and math performance? 2) What is the impact of the intervention on math anxiety and mindfulness? 3) What is the impact of the intervention on math performance? 4) What is the impact of the intervention on student experiences in the classroom? Results suggest that the semester-long intervention facilitated greater reductions in math anxiety and

better maintenance of mindfulness levels compared to the control group. Additionally, the intervention benefited performance on moderate-stress assignments, such as quizzes, which subsequently benefited final grades. Thematic analysis of semi-structured interviews conducted with a subset of participants further supported the intervention's positive impact. This research demonstrates that a brief classroom-based mindfulness intervention can reduce math anxiety, sustain mindfulness, and enhance math performance. This contributes to educational resources that educators can implement into their classrooms to address the socioemotional and academic needs of their students. Future research can investigate generalizing the intervention to other anxiogenic situations.