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NEWSLETTER

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## **Mathematics Anxiety and its Impact on Academic Achievement: Research on the Impact Mechanism Based on a Large-scale Assessment in Province Z**

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THE study (published in *Educational Research and Experiment*) surveyed 42644 eighth-grade students from 11 prefecture-level cities in Province Z. It evaluates the eighth graders' academic performance in mathematics by measuring their cognitive abilities in learning, understanding, and application in the study of Algebra, Graphics and Geometry, and Statistics and Probability. Manifestations of mathematics anxiety and its impact on student academic achievements are examined. The Mathematics Anxiety Questionnaire includes four dimensions, namely, class anxiety, homework anxiety, problem-solving anxiety, and test anxiety.

### **Research Results:**

- Analysis of students' propensities in the four dimensions of mathematics anxiety indicates that students have the highest propensity for test anxiety, lower one for class anxiety, and the lowest for homework and problem-solving anxiety.
- In terms of gender differences in student mathematics anxiety, girls have higher levels of class anxiety and test anxiety than boys, and boys have higher levels of homework anxiety than girls. In terms of regional differences in student mathematics anxiety, the more backward the economy and education of the region, the higher the level of student mathematics anxiety. From the perspective of different school types, students in public schools experience higher levels of mathematics anxiety than those in private schools. Academic levels are closely related to mathematics anxiety levels in that students with lower academic levels tend to report higher levels of homework anxiety and problem-solving anxiety, and those with narrow passes in exams undergo the highest levels of class anxiety and test anxiety.
- In this study, class anxiety and problem-solving anxiety are independent variables, homework anxiety and test anxiety inter-

mediary variables, and student academic performance in mathematics the dependent variable for path analysis. The results show that both class anxiety and problem-solving anxiety intensify homework anxiety and test anxiety, resulting in negative impacts on student academic performance in mathematics. Nevertheless, test anxiety has a weak positive effect on student academic performance in mathematics.

Given the negative influence of mathematics anxiety on student academic performance in mathematics, appropriate teaching methods should be adopted to help students alleviate and eliminate this negative academic mood. In addition, parents' and teachers' anxiety about mathematics will also aggravate students' mathematics anxiety. Therefore, teachers and parents should avoid influencing students negatively with their own mathematics anxiety. Students with low academic levels should be given more help and encouragement. Student homework burden should be kept at a proper level so that students can learn in a pleasant atmosphere.

*Source: Educational Research and Experiment, 2020(2):82-89.*