

Do You Have Math Anxiety?

Mathematics anxiety, maybe just reading the word *mathematics* is giving you anxiety. Flashbacks of not knowing the answer, of seeing unsolvable symbols that seem alien, of cringing at lots of red ink on a test – mathematics is a subject that tends to elicit feelings of unease. Due to this issue's theme on learning, it seems only appropriate to highlight a captivating research study from 2015 conducted by students in the College of Arts and Sciences. M. Futalan, J. Silorio, and M. Lumagas sought to discover the ramifications of anxiety on learners discovering the field of mathematics. There tends to be a stark contrast between people these days when it comes to numbers: either you can do math or you can't (or you think you can't). But where does this self-prejudice develop and why does it occur? It can range from elementary school to high school but somewhere along the road, students often lose faith in their ability to calculate on their journey into math.

Futalan, Silorio, and Lumagas assessed 53 students in a required Algebra course for many different departments. They were determined to see if there was a correlation between gender and private versus public high school graduate status in regard to mathematical performance as well. Additionally, different levels of anxiety were addressed, from slight to moderate, to slightly high, to high. In order to gauge how pupils felt about their courseware material, they answered a notorious questionnaire by Ellen Freedman, *Do You Have Math Anxiety? A Self-Test*. It's a free online test made available for everyone, so if you're curious about your own math anxiety, give it a go! FU's three researchers had the questionnaire evaluated by Filipino instructors for validity and relevancy since it was a foreign survey before proceeding to a group control study; exactly 30 students were selected to verify the internal consistency of the questionnaire. For the actual experiment, the majority of the participants were female public high school graduates. They assigned degrees of mathematical anxiety to statements such as, "I cringe when I have to go to Mathematics Class" or "I am afraid to ask questions in Mathematics Class". The results indicated that almost half (47%) of students manifest mathematical anxiety and less than 10% show an interest in the subject at all, let alone potentially a career. This poses a huge challenge for math teachers because when students carry notions that math is difficult to learn, they tend to build a mental block against absorbing the material. While several students exhibit anxiety, it is to a moderate level. It increases to a "slightly high" status when they perceive that the course will become more complex in the future. Students only tend to "slightly agree" when it comes to understanding a discussion in class.

Futalan, Silorio, and Lumagas discovered that there isn't a relationship on gender and mathematical performance; the popular notion that men are smarter than women in math is untrue; other studies have steadily shown this as the gender gap closes in education. In 1990, studies showed men performed better but now, results from 2013 show a sense of equality. Approximately 88% of the Algebra students at FU had what was described as "good" academic performance with only 8% failing the course altogether. Interestingly enough, there was a noticeable variation between public and private high school graduates. Public high school graduates have more mathematical anxiety but private high school graduates fear asking for help when a concept is unclear. This may be due to public high schools setting aside extra money for teacher development and periodic curriculum improvements. What tended to cause the most

mathematical anxiety was the fear of going to the board and of asking questions. Females tend to be more self-motivated than males but this does not guarantee better performance.

The truth is that mathematical anxiety, like any kind of anxiety, can hinder both applied and basic performance. The higher anxiety, the lower the student's understanding of mathematics is. Other studies have shown that students may not even attend college if they are embarrassed of their math scores or must take required math classes. It is a matter of reconfiguring academic institutions to provide more support to eradicate mathematical self-doubt in students. Teachers should relate the subject matter back to their pupils, keep discussion to minimal levels that don't overload students, and attend seminar workshops to expand their awareness on mathematical anxiety. There are techniques teachers can incorporate to prevent and reduce negative feelings within students, and it's imperative for students to attend seminars that show them how to cope and reduce mathematical anxiety as well. Even guidance counselors can be brought in. Mathematics shouldn't be an unnerving subject, let alone a scary one. It's simply a different way of thinking, which can be frightening at first, but nothing a person can't handle in time. It's a problem we *can* solve and it's one we *must* so the future of our generations can feel comfortable with mathematics. When people are comfortable with math, they can go much farther than Mars.

If you're currently a student taking a math class or will be soon and you notice you're suffering from mathematical anxiety, then start by taking ten deep breaths. Then reach out to who you need to, whether it's your FU instructor (they're all supportive and have your back) or a guidance counselor, everyone is here to serve *you*. And remember, asking for help is more *courageous* than not.