

Dealing with Math Anxiety

Math anxiety is...	Math anxiety sounds like...	Math anxiety looks like...	Math anxiety feels like...
<ul style="list-style-type: none"> • Feelings of tension that affect the ability to do math • Negative attitude towards math or a lack of confidence in math • Fear that one won't be able to do math • Fear that math is "too hard" 	<ul style="list-style-type: none"> • "I have never been good at math." • "I hate math." • "It's too hard. I'll never be able to get it." • "Math scares me." • "I am math learning disabled." • "I'm an English person. I am not good at math." • "After I'm done with this course, I'll never take math again." 	<ul style="list-style-type: none"> • Lack of concentration and/or day dreaming during math class or when doing math • Giving up half way working through a problem or before you even start doing math • Skipping math class • Avoidance of math altogether 	<ul style="list-style-type: none"> • Increased heart rate • Sweating • Mind going blank • Rapid breathing • Nausea • Upset stomach • Tenseness • Nervousness (the butterflies in your stomach feeling)

- Math anxiety has a significant negative impact on learning through math avoidance, poor preparation and study habits, poor math performance, all of which contribute to more math anxiety.

Causes of math anxiety:

Typically, math anxiety is linked to a previous negative experience(s) with math. It is often linked to gaps in foundational math skills. Other factors also come into play as described below.

Family influences: encouragement (or lack of encouragement) at home to learn math; availability of extra support.

Societal influences: in our society, innumeracy is much more accepted than illiteracy; math is viewed as a difficult subject reserved for the very few "smart people"; gender stereotypes also exist (boys are good at math; girls are not).

School influences: poor pedagogy; frequent use of timed assessments; misrepresentation of mathematics discipline in school curriculum.

Internal influences: fixed vs. growth mindset Individuals with a fixed mindset see failure as an endpoint. Individuals with a growth mindset see failure as opportunity to improve.

Neurological considerations: the anxiety triggers parts of the brain associated with pain (Lyons & Beilock, 2012). Interestingly, it is the *anticipation* of doing math that triggers the pain response, not doing math itself.

Myths and Misconceptions about Math:

- My parents are both not good at math. That's why I am not good at math either.
- Men are more likely to be good at math than women, because their brains are wired to understand math easier.
- Math is too difficult for an average person to learn.
- There is no creativity in math. It's all formulas and memorization.
- Certain ethnic groups are better at math than others.
- There's only one right way to do math.

Strategies and Tips for Overcoming Math Anxiety:

- Know what math anxiety is and how to recognize it.
- Stop all negative self-talk.
- Focus on *understanding* math, not memorizing.
- Start with easier problems/math concepts first and gradually increase the difficulty level.
- Combat the math avoidance. Attend all math classes and plan to do a little bit of math every day.
- Consider your learning habits and study skills. Always study math when you are most productive during the day and in an environment that is helpful to learning.
- If necessary, go back and review foundational math skills.
- Ask lots of questions in class. No question is a stupid question.
- Understand that there often are multiple ways to solve a math problem.
- Build a positive relationship with your math professor.

- Learn from your previous mistakes. Consider them as opportunities to improve, not failures.
- Reflect on your previous math learning experiences. Recognize bad and good experiences and why you felt that way about them.
- Visualize yourself being successful in math.
- Learn and use relaxation techniques to help alleviate symptoms of anxiety.
- Celebrate your effort and hard work.
- Form a math study group with peers and commit to learning math together.
- Seek help from supports available on campus. GBC's Tutoring and Learning Centre offers free peer tutoring services in math and English.
- Attend a workshop on test taking strategies (See "Learning and Living Smart" Workshop series at GBC) or other general study skills.

References: Lyons IM, Beilock SL (2012) When Math Hurts: Math Anxiety Predicts Pain Network Activation in Anticipation of Doing Math. *PLoS ONE* 7(10): e48076. doi:10.1371/journal.pone.0048076