**Worry makes me do poorly, which worries me... which makes me do poorly...**

Many students get tense, anxious, or nervous when they face math problems (or play sports, or take a test, or go on a date or a job interview). This anxiety may be due to past negative experiences; maybe you didn't feel you did well, or you felt judged by your teacher, classmates, or parents for not getting the right answer or for being slow to arrive at an answer. Besides being unpleasant, anxiety creates a negative feedback loop - when anxiety uses some attention or memory, there is less left over to handle the math you are asked to do. Performance suffers; the act of worrying about not performing well makes it even harder to perform well.

****However, there is good news! By acknowledging anxiety or worry you have about performing math (or taking a test, or interviewing for a job), beforehand, you can *clear your mind* of those worries and leave more working attention and memory allocated to the math tasks themselves. Researchers discovered that simply writing about your feelings for as little as seven minutes before you start a math task can really boost performance (Park et al. 2014) - after reflecting on their worries, people with high levels of anxiety perform more like those with no math anxiety!

**How much can it help?**

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To the right are data from a study by Ramirez and Beilock (2011), where students were first asked to answer some math problems in a "low-stakes" setting (called the "pretest") - there was nothing to be lost or gained from doing well. Then, students were told there was a second test (called the "posttest") that mattered a lot - students could get financial rewards for doing well, and other students were depending on them. Next, the researchers assigned students to either a control group that sat quietly for 10 minutes, or to a group that was asked to write about their test anxiety. Finally, students took the posttest.

Notice in the figure that the added anxiety of potential financial incentives and peer pressure reduced the control group’s performance *dramatically*. In the words of Ramirez and Beilock, they "choked". Second, notice the "expressive writing" group - they performed about 20% higher than the control group in the percent of questions answered correct. That is a **two letter grade** difference in most classes. Are you willing to invest 10 minutes to increase your performance on a high-stakes test by two letter grades?

**Putting it in practice**

How can you use these research results in your own life? Easy! Whenever you have a challenging homework assignment or a test, budget a few minutes before it starts to write down your thoughts. Use the following prompt, slightly modified from Park et al. 2014:

*Please take the next seven minutes to write as openly as possible about your thoughts and feelings regarding the math problems (or test, or job interview, or date) you are about to perform. In your writing, I want you to really let yourself go and explore your emotions and thoughts as you are getting ready to start your math problems. You might relate your current thoughts to the way you have felt during other similar situations at school or in other situations in your life. Please try to be as open as possible as you write about your thoughts at this time. Remember, no one will see or read what you write, it is just for you.*

Don't worry too much about grammar, spelling, or perfect sentence structure. What matters is that you capture your feelings. Addressing your fears and anxieties head on might be difficult or uncomfortable, particularly the first time you try it. It is worth it though! Ramirez and Beilock (2011) determined that it wasn't just the act of writing that distracted people from their worries, it was actually addressing the worries in their writing. If you don't feel particularly anxious about math, or about taking tests, this task may not be for you - but it may be useful in other situations, and the research data suggests it does no harm.

If you have a test (or heavily mathematical assignment) coming up, get to class early and spend five or ten minutes before the exam begins to acknowledge, record, and set aside your anxiety. Then, take a couple of deep breaths, and rock that test!

After you use the above writing technique, later that day complete the follow-up questions below. Consciously reflecting on what you did and how it worked can help reinforce the progress you've made.

**References**

Ramirez G, Beilock [SL. 2011.](http://science.sciencemag.org/content/331/6014/211" \l "corresp-1) Writing about testing worries boosts exam performance in the classroom. Science 331:211-213.

Park D, Ramirez G, Beilock SL. 2014. The role of expressive writing in math anxiety. Journal of Experimental Psychology 20:103–111.