

test. When researchers looked at students' final scores, they found that students who hadn't written had higher test anxiety and a worse final exam score even when accounting for the student's grades throughout the school year.

However, for students given the opportunity to write before the exam, those highest in test anxiety performed just as well as their less anxious classmates. "Writing about your worries for 10 minutes before an upcoming exam leveled the playing field such that those students who usually get most anxious during exams were able to overcome their fears and perform up to their potential," Beilock said.

Indeed, students highly anxious about taking tests who wrote down their thoughts before the test received an average grade of B+, compared with the highly anxious students who didn't write, who received an average grade of B-.

Even if a teacher does not provide a chance to write before an exam, students can take time to write about their worries and should accordingly improve their performance, Beilock said. "In fact, we think this type of writing will help people perform their best in variety of pressure-filled situations whether it is a big presentation to a client, a speech to an audience or even a job interview," she explained.

"Choking is a serious problem, given that poor exam performance affects students' subsequent academic opportunities," she said. "It also limits potentially qualified students from participating in the talent pool tapped to fill advance jobs where the work force is dwindling, such as those in science, technology and engineering."

#### Works Cited

Harms, William. "Writing About Worries Eases Anxiety and Improves Test Performance." *U Chicago News*, 13 Jan. 2011, [news.uchicago.edu/article/2011/01/13/writing-about-worries-eases-anxiety-and-improves-test-performance](http://news.uchicago.edu/article/2011/01/13/writing-about-worries-eases-anxiety-and-improves-test-performance).

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## Writing About Anxiety Improves Test Scores

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Students can combat test anxiety and improve performance by **writing about their worries immediately before the exam begins**, according to a University of Chicago study published in the journal *Science*.

Researchers found that students who were prone to test anxiety **improved their high-stakes test scores by nearly one grade point after they were given 10 minutes to write about what was causing them fear**, according to the article, "Writing about Testing Boosts Exam Performance in the Classroom." The article appears in the Jan. 14 issue of *Science* and is based on research supported by the National Science Foundation.

The writing exercise allowed students to unload their anxieties before taking the test and accordingly **freed up brainpower needed to complete the test successfully** brainpower that is normally occupied by testing worries, explained the study's senior author, Sian Beilock, an associate professor in psychology at the University.

In other research, Beilock has shown that pressure-filled situations can deplete a part of the brain's processing power known as working memory, which is critical to many everyday activities.

Working memory is lodged in the prefrontal cortex and is a sort of mental scratch pad that allows people to "work" with information relevant to the task at hand. When worries creep up, the working memory people normally use to succeed becomes overburdened. People lose the brain power necessary to excel.

Beilock is one of the nation's leading experts on "choking under pressure" a phenomenon in which talented people perform below their skill level when presented with a particularly challenging experience. Her recently

published book, *Choke: What the Secrets of the Brain Reveal About Getting It Right When You Have To*, gives advice on how to avoid choking in situations ranging from high-stakes exams to important business presentations and athletic competitions.

"Despite the fact that people are often motivated to perform their best, the pressure-filled situations in which important tests, presentations and matches occur can cause people to perform below their ability level instead," Beilock said.

Joining Beilock on the study was her graduate student Gerardo Ramirez, an Institute of Education Sciences predoctoral fellow at UChicago.

**Other research has shown that expressive writing, in which people repeatedly write about a traumatic or emotional experience over several weeks or months, is an effective technique for decreasing worries in depressed individuals.**

In the current research, the scholars wanted to determine if students could benefit from writing in the classroom, so they first tested college students to determine if writing about their anxieties improved their performance on a mathematics test.

"We reasoned that if worries lead to poor test performance, and writing helps regulate these worries, then giving students the opportunity to express their thoughts and feelings about an impending examination would enhance test performance," Beilock said.

The researchers also predicted that just one round of writing immediately before a big event would be sufficient to curb choking and boost students' test scores.

To test those ideas, researchers recruited 20 college students and gave them two

short math tests. On the first test, students were told simply to do their best. Before the second test, researchers created a situation designed to produce stress, by saying students who performed well would receive money and that other students were depending on their performance as part of a team effort. Students also were told that their work would be videotaped, and that math teachers would review it.

Half of the students then received 10 minutes to write expressively about their feelings about the upcoming test (expressive writing group), and the other half was told to sit quietly (control group).

**"The expressive writing group performed significantly better than the control group,"** the authors write. "Control participants 'choked under pressure,' showing a 12 percent accuracy drop from pre-test to post-test, whereas **students who expressed their thoughts before the high-pressure test showed a significant 5 percent math accuracy improvement.**"

In another experiment researchers showed that it wasn't just the act of writing that inoculated students against choking; rather, **specifically writing about test-related thoughts and feelings had helped.**

The researchers also conducted two experiments involving ninth-grade biology students taking the first final exam of their high school career. They tested the students for test anxiety six weeks before the final exam by asking students to rate items such as "During tests, I find myself thinking about the consequences of failing."

Before the biology finals, the students were given envelopes with directions to either write about their feelings on the test, or to think about topics that wouldn't be on the