

Psychologist shows why we 'choke' under pressure -- and how to avoid it



In her research Sian Beilock, an associate professor in psychology, has shown the brain can work to sabotage performance, often in pressure-filled situations that deplete brain power critical to many everyday activities. (Jason Smith)

(PhysOrg.com) -- A star golfer misses a critical putt; a brilliant student fails to ace a test; a savvy salesperson blows a key presentation. Each of these people has suffered the same bump in mental processing: They have just choked under pressure.

It's tempting to dismiss such failures as "just nerves." But to University of Chicago psychologist Sian Beilock, they are preventable results of information logjams in the brain. By studying how the brain works when we are doing our best — and when we choke — Beilock has formulated practical ideas about how to overcome performance lapses at critical moments.

Beilock's research is the basis of her new book, [*Choke: What the Secrets of the Brain Reveal About Getting it Right When You Have To*](#), published Sept. 21 by Simon and Schuster, Free Press.

"Choking is suboptimal performance, not just poor performance. It's a performance that is inferior to what you can do and have done in the past and occurs when you feel pressure to get everything right," said Beilock, an associate professor in psychology.

Preventing choking in sports

Some of the most spectacular and memorable moments of choking occur in sports when the whole world is watching. Many remember golfer Greg Norman's choke at the 1996 U.S. Masters. Norman had played brilliantly for the first three days of the tournament, taking a huge lead. But on the final day, his performance took a dive, and he ended the Masters five shots out of first place.

Choking in such cases happens when the polished programs executed by the brains of extremely accomplished athletes go awry. In *Choke*, Beilock recounts famous examples of these malfunctions in the context of brain science to tell the story of why people choke and what can be done to alleviate it.

Thinking too much about what you are doing, because you are worried about losing the lead (as in Norman's case) or worrying about failing in general, can lead to "paralysis by analysis." In a nutshell, paralysis by analysis occurs when people try to control every aspect of what they are doing in an attempt to ensure success. Unfortunately, this increased control can backfire, disrupting what was once a fluid, flawless performance.

"My research team and I have found that highly skilled golfers are more likely to hole a simple 3-foot putt when we give them the tools to stop analyzing their shot, to stop thinking," Beilock said. "Highly practiced putts run better when you don't try to control every aspect of performance." Even a simple trick of singing

helps prevent portions of the brain that might interfere with performance from taking over, Beilock's research shows.

Preventing choking on tests and in business

The brain also can work to sabotage performance in ways other than paralysis by analysis. For instance, pressure-filled situations can deplete a part of the brain's processing power known as working memory, which is critical to many everyday activities.

Beilock's work has shown the importance of working memory in helping people perform their best, in academics and in business. Working memory is lodged in the prefrontal cortex and is a sort of mental scratch pad that is temporary storage for information relevant to the task at hand, whether that task is doing a math problem at the board or responding to tough, on-the-spot questions from a client. Talented people often have the most working memory, but when worries creep up, the working memory they normally use to succeed becomes overburdened. People lose the brain power necessary to excel.

One example is the phenomenon of "stereotype threat." This is when otherwise talented people don't perform up to their abilities because they are worried about confirming popular cultural myths that contend, for instance, that boys and girls naturally perform differently in math or that a person's race determines his or her test performance.

In *Choke*, Beilock describes research demonstrating that high-achieving people underperform when they are worried about confirming a stereotype about the racial group or gender to which they belong. These worries deplete the working memory necessary for success. The perceptions take hold early in schooling and can be either reinforced or abolished by powerful role models.

In one study, researchers gave standardized tests to black and white students, both before and after President Obama was elected. Black test takers performed worse than white test takers before the election. Immediately after Obama's election, however, blacks' performance improved so much that their scores were nearly equal with whites. When black students can overcome the worries brought on by stereotypes, because they see someone like President Obama who directly counters myths about racial variation in intelligence, their performance improves.

Beilock and her colleagues also have shown that when first-grade girls believe that boys are better than girls at math, they perform more poorly on math tests. One big source of this belief? The girls' female teachers. It turns out that elementary school teachers are often highly anxious about their own math abilities, and this anxiety is modeled from teacher to student. When the teachers serve as positive role models in math, their male and female students perform equally well.

Meditation and practice can help

Even when a student is not a member of a stereotyped group, tests can be challenging for the brightest people, who can clutch if anxiety taps out their mental resources. In that instance, relaxation techniques can help.

In tests in her lab, Beilock and her research team gave people with no meditation experience 10 minutes of meditation training before they took a high-stakes test. Students with meditation preparation scored 87, or B+, versus the 82 or B- score of those without meditation training. This difference in performance occurred despite the fact that all students were of equal ability.

Stress can undermine performance in the world of business, where competition for sales, giving high-stakes presentations or even meeting your boss in the elevator are occasions when choking can squander

opportunities.

Practice helps people navigate through these tosses on life's ocean. But, more importantly, practicing under stress — even a moderate amount — helps a person feel comfortable when they find themselves standing in the line of fire, Beilock said. The experience of having dealt with stress makes those situations seem like old hat. The goal is to close the gap between practice and performance.

A person also can overcome anxiety by thinking about what to say, not what not to say, said Beilock, who added that staying positive is always a good idea.

“Think about the journey, not the outcome,” Beilock advised. “Remind yourself that you have the background to succeed and that you are in control of the situation. This can be the confidence boost you need to ace your pitch or to succeed in other ways when facing life's challenges.”

Provided by University of Chicago

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