Why does the SAT mess up smart kids? Here’s a clue

BY E. J. MUNDELL
NEW YORK TIMES

A researcher at Michigan State University may have discovered why an IQ of 160 doesn’t guarantee a great score on the SAT.

Experiments using an increasingly high-pressure math quiz suggest that testing anxiety reduces smart people’s ability to tap into what experts call their working memory capacity.

The result? These highly intelligent test-takers choked under pressure and lost their advantage over normally less-adept participants. On the other hand, stress didn’t seem to affect the scores of less intelligent participants.

Thomas Carr, a professor of psychology at Michigan State University, compared 93 MSU undergrads’ performance on a math test.

"It seems to be leveling the playing field," says researcher Sian Beilock, a Miami University assistant professor of psychology who assisted Carr. "What seems to be happening is that pressure is using up the capacity that these higher working memory people normally have to achieve their outstanding performance."

Another expert stressed there’s a simple way brainy types can regain that natural advantage.

"By rehearsing the test beforehand in an equally pressured environment, you can really do a lot through practice and training to improve," says Jeremy Gray, an assistant professor of psychology at Yale University.

Both Gray and Carr agreed the findings have real implications for the interpretation of tests such as the SAT. "We need to caution people not to confuse intelligence with performance," Gray says.

In the study, published in the current issue of Psychological Science, Carr and Beilock first tested the MSU students for their individual levels of working memory and then divided them into two groups based on those results, for low working memory and high working memory.

Working memory is "our short-term memory, used to hold information about what we're doing in an immediate and active form," Beilock says. "People who have more working memory have more attention to devote to short-term tasks under normal conditions. They can hold and manipulate more information than someone who has less."

Many researchers associate intelligence with working memory, she says.

But does this natural advantage hold true when stress enters the picture?

To find out, Carr had the low and high working memory students solve complex math problems. In one experiment, the students were simply told to work through them at their own pace.

But in subsequent experiments, the investigators ratcheted up anxiety levels with time constraints and other manipulations, such as telling the students they were part of a team or were being videotaped for review later on.

Intelligent individuals with high working memory tended to crumble under those pressures and bring their test scores down, Carr says. On the other hand, test scores for students with relatively low levels of working memory remained more or less the same, regardless of the pressures put on them.

Situational stress appears to draw cognitive attention away from the task at hand, undermining the performances of highly intelligent people who tend to rely more on this attention for successful performance, Carr says.

On the other hand, "the reason we don't think it's dragging the low working memory people down is that we don't think they're relying as much on short-term memory."

So if you don't have the tools to lose, you're not going to be as affected," Beilock says.

Instead, she notes, individuals who don’t have a large store of working memory may tend to rely on other problem-solving methods, such as informed guessing, to help them arrive at an answer—although those strategies will not always lead to the correct answer.

Gray says that truly smart students can — and do — perform well, even under high pressure.

"With proper practice and preparation, even if you're flustered — which virtually everyone is — you'll fall back on a higher level of what you bring to the situation," he says.

He points to the example of U.S. Army Special Forces troops, who train in simulated, high-pressure environments.

"So then it's not the attentional control that you fall back on when the real moment comes; it's your prior knowledge and experience," he says.

The same may hold true for testing. According to Gray, many commercial test-prep courses rely on simulation and practice to help students achieve on the SAT, LSAT or MCAT.

"I'd suggest trying to practice in a way that is somewhat anxiety-provoking, so that you have practice with the anxiety, as well as the actual test material," he says.

"The bottom line," Gray says, "is that there's a lot more to what it means to be a person than raw computational power. If you think about that as being intelligence, that's a limited view."