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EFP Takeaways

Testing, Stress, and Performance: How Students Respond Physiologically to High-Stakes Testing

Background

Prior studies have shown that students of color and students of low socioeconomic status (SES) have lower average standardized test scores and are more likely to be exposed to stressful life events. Students who experience chronic stress may respond differently to new stressors, and therefore a student's physiological stress response may be a key factor in the academic performance gap between high and low socioeconomic students. However, no prior empirical research has measured test-induced physiological stress of K-12 students in a real-world setting. In vol. 16 issue 2 of *EFP*, Jennifer Heissel, Emma Adam, Jennifer Doleac, David Figlio, and Jonathan Meer examine the cortisol response patterns of low SES students during high-stakes testing weeks.

The Study

The authors examined the cortisol reactivity of 93 students in grades 3 through 8 using a saliva-based measure of cortisol. Saliva samples were collected 6 times during three different weeks: a baseline week, a low-stakes testing week, and a high-stakes testing week. During testing weeks, saliva samples were collected in the homeroom class prior to testing and just before the lunch period following testing. As cortisol levels show strong circadian rhythm across the day and fluctuate accordingly, information on student's sleep and wake time was collected and included in the analysis.

For more details:

- View the [full issue](#).
- See the [full article in Education Finance and Policy](#).
- [Sign up here to receive future EFP Takeaways](#).
- Summary of:
Heissel, Jennifer A., Adam, Emma K., Doleac, Jennifer L., Figlio, David N., & Meer, Jonathan. (2021). Testing, Stress, and Performance: How Students Respond Physiologically to High-Stakes Testing. *Education Finance and Policy*, 16(2).

Findings

Relative to a week without testing, students were found to have an 18 percent higher cortisol level in the homeroom period prior to taking a high-stakes test. These differences were primarily driven by male students, whose homeroom cortisol was 35% higher during testing weeks than regular weeks.

An increase in cortisol of more than 10% or a decrease of more than 10% was associated with a 0.4 standard deviation decrease in test scores, relative to those with little change. This is equivalent to approximately 8 points on the 1600-point SAT scale.

After accounting for in-school grades and other observable attributes, those with larger changes (either positive or negative) in cortisol from a baseline week to the high-stakes testing week performed worse on the high-stakes standardized test. These individuals were named “stressed testers.” These findings suggest some component of low test scores is caused by “stressed testers,” rather than by true gaps in knowledge – this has implications for the validity of high stakes tests.

