

Immediate rewards for good scores can boost student performance

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UChicago researchers studied the impact of incentives on students taking standardized tests in Chicago Public Schools and south-suburban Chicago Heights.

By William Harms

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Study on behavioral economics and educational incentives advances debate on how to motivate

Test performance can improve dramatically if students are offered rewards just before they are given standardized tests and if they receive the incentive afterward, new research at the University of Chicago shows.

Educators have long debated the value of financial and other rewards as incentives, but a series of experiments in Chicago-area schools showed that with the right kind of rewards, students achievement improved by as much as six months beyond what would be expected.

The rewards apparently provide students with an incentive to take tests more seriously. One implication is that policymakers may underestimate students' ability in otherwise low-performing schools, according to the research team that conducted the experiments.

Researchers used financial rewards to boost performance for older students and non-financial rewards, such as trophies, to improve performance among younger students.

The prospect of losing a reward created a stronger desire to perform than the possibility of receiving a reward after a test, the research showed. Students who were given money or a trophy to look at while they tested performed better.

"Most importantly, all motivating power of the incentives vanishes when rewards are handed out with a delay," said lead author Sally Sadoff, a 2010 PhD graduate in economics, who did the research as a Griffin Postdoctoral Scholar at UChicago from 2010-11.

Sadoff, now an assistant professor at the Rady School of Management at the University of California, San Diego, was part a team that conducted a series of experiments involving 7,000 students in the Chicago Public Schools as well as in elementary and high school districts in south-suburban Chicago Heights.

The team studied the impact of incentives on students taking relatively short, standardized diagnostic tests given three times a year to determine their grasp of mathematics and English

skills. Unlike other tests on incentives, the students were not told ahead of time of the rewards so they could not study but rather demonstrated the impact of the rewards themselves on performance.

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The research was reported in the paper, “The Behaviorist Goes to School: Leveraging Behavioral Economics to Improve Educational Performance,” published by the National Bureau of Economic Research.

Sadoff was joined in her work by John List, the Homer J. Livingston Professor in Economics and one of the nation’s leading scholars of experimental economics; Steven Levitt, the William B. Ogden Distinguished Service Professor in Economics at UChicago; and Susanne Neckermann, a scholar at the Center for European Economic Research in Germany.

The team found that elementary school students, who were given nonfinancial rewards, responded more to incentives than high schoolers. Those students were given trophies, as they have been found to be more responsive to non-monetary rewards than older students.

Among high school students, the amount of money involved in the incentive mattered. Students performed better if offered \$20 rather than \$10.

“At Bloom Township High School, when we offered students \$20 incentives, we found that their scores were 0.12 to .20 standard deviation points (five to sixth months in improved performance) above what we would otherwise have predicted given their previous test scores,” Sadoff said.

List pointed out that the results of the experiments challenged a conventional theory that giving students tangible rewards “crowds out intrinsic motivation, rendering such approaches ineffective in the short run and potentially detrimental in the long run.”

The students tested had low initial motivation to do well, and thus benefited from the rewards, List said. He added that follow-up tests showed no negative impact on removing the rewards in successive tests.

The research helps teachers and school leaders better understand the role of rewards in school performance. Most rewards are delayed and involve a very distant horizon, such as the prospect of making a better salary as an adult as the result of better school performance, the team pointed out.

“The effect of timing of payoffs provides insights into the crux of the education problem that we face with our urban youth,” the authors write. “Effort is far removed from the payout of rewards, making it difficult for students to connect them in a useful way. The failure to

recognize this connection potentially leads to dramatic under-investment,” as students fail to apply themselves and policymakers don’t realize the students’ full potential.

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