Boosting Academic Performance through Individualized Tutoring in Chicago Public High Schools

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Sector(s): Crime, Violence, and Conflict, Education

J-PAL office: J-PAL North America

Location: Illinois, United States of America

Sample: 2,147 male youths

Target group: Students Urban population

Outcome of interest: Arrests and convictions Student learning

Intervention type: Coaching and mentoring Tailored instruction

AEA RCT registration number: AEARCTR-0000041

Data: openicpsri

Research Papers: The (Surprising) Efficacy of Academic and Behavioral Intervention with Disadvan..., Improving Academic Outcomes for Disadvantaged Students: Scaling up Individualiz..., The Economics of Scale-Up, Not Too Late: Improving Academic Outcomes among Adolescents

Boosting academic achievement and graduation rates for students facing barriers to learning is a top policy priority in the United States. In Chicago, researchers evaluated an intensive two-on-one math tutoring program for 9th and 10th grade male students in public schools to assess the effectiveness of individualized instruction as a means of better supporting students facing barriers to learning. Students who were randomly assigned to tutoring scored higher on math exams, earned better grades in math, and were more likely to pass high school classes. Results suggest that it is possible to substantially and cost-effectively boost academic achievement for students facing barriers to learning even after they reach adolescence.

Policy issue

Boosting academic achievement and graduation rates for young people facing barriers to learning is a top policy priority in the United States. Nonetheless, many public high schools are not well equipped to effectively support students who have fallen behind.

Some people have concluded that by the time low-performing students reach adolescence, it is too late and too costly to change their academic trajectory. However, it may be that previous efforts to support these students did not work simply because they failed to identify and address key barriers to learning. In particular, there may be a mismatch between what students need and what current education policies try to provide. In particular, when students fall behind, they may become unable to keep up with the content and pace of grade-level classroom instruction, which can further widen that gap. This problem is especially pronounced in urban school districts where the economic inequities faced by students affect the rate at which they learn.

Context of the evaluation

The evaluation took place in partnership with Chicago Public Schools and focused on 9th and 10th grade male students in twelve public schools. These schools primarily serve youth from low-income backgrounds living in historically-disinvested communities with high rates of violence in Chicago. In the school year before the intervention, the average study participant had a GPA of 2.1 out of 4 and had missed approximately one month's worth of school. One in five study participants had been arrested before the study began.

Researchers partnered with Match Education of Boston to implement the intervention. The Match Education model uses well-educated applicants who generally do not have formal teacher training to provide low-cost, intensive tutoring.



Student and teacher discuss schoolwork in the United States.

Photo credit: Shutterstock.com

Details of the intervention

Researchers conducted a randomized evaluation to assess the impact of individualized math tutoring on test scores for 9th and 10th grade male students in twelve Chicago Public Schools in the 2013-14 school year.

Researchers evaluated the Match Education tutoring model, in which students are assigned to a one-hour tutoring session every day as part of their regular class schedule. Tutors met with two students at a time and divided instructional time evenly between reviewing foundational skills and working on current topics from students' regular math classes. Tutors targeted instruction based on the needs of individual students.

Researchers selected 2,718 9th and 10th grade male students as study participants using Chicago Public Schools' administrative records. They identified students who were engaged in school but likely to be at risk of reduced engagement, as determined by prior-year course failures, unexcused absences, and likelihood of having been held back a grade.

These students were randomly assigned to receive offers to participate in the Match tutoring program and/or an after-school program, called Becoming a Man, which helps students develop social-cognitive skills, or both. Students were independently randomized to one of four groups:

	Match Tutoring	**Becoming A Man**
Group 1	☑	☑
Group 2	☑	
Group 3		☑
Group 4		

This study focuses on the impact of the tutoring program. Thus, the authors compare outcomes for all students who were assigned to the tutoring program (groups 1 and 2) to outcomes for students who were not (groups 3 and 4).

Researchers obtained information on test scores, grades, and course failures using administrative records from Chicago Public Schools. They also used data from the Chicago Police Department to track arrests through July 1, 2014. In addition, the team used in-person surveys of 658 youth to implement an additional math assessment and explore the mechanisms driving results.

Results and policy lessons

Main Takeaways: Students who were randomly assigned to tutoring scored higher on math exams, earned better grades in math, and were more likely to pass high school classes. Results suggest that students who participate in Match tutoring learned an extra one to two years' worth of math beyond what their peers in the control group learned in an academic year. The test score gain per dollar spent on tutoring is large relative to previous interventions designed to support students facing barriers to learning. This demonstrates that it is possible to substantially and cost-effectively boost academic achievement for students facing barriers to learning, even once they reach adolescence.

Only 54 percent of students assigned to the program ultimately participated, mostly because of students switching schools or dropping out after school rosters were set over the summer. The impacts reported below are estimates of participating in tutoring and have been scaled to account for the fact that not everyone who was assigned to the treatment actually received tutoring.

Test Scores: Tutoring raised average math national percentile rank on 9th grade and 10th grade exams by 7.843 percentage points from a baseline of 37.974 percent (an increase of 20.654 percent). This corresponds to a 0.188 to 0.230 standard deviation increase in test scores, depending on how researchers standardize scores.

Grades: Tutoring boosted math grades by 0.581 points on a 1-4 grade point scale, from a baseline math grade point average of 1.771 (a 32.806 percent increase).

Course failures: Tutoring reduced the number of math course failures per youth by about 0.192, compared to a baseline average of 0.371 math course failures per student (a 51.752 percent reduction). Tutoring also reduced the number of non-math course failures per youth by 0.687, compared to a baseline average of 2.108 non-math course failures (a 32.590 percent reduction).

Crime: Tutoring reduced violent crime arrests per youth by 0.038, compared to a baseline average of 0.039 violent crime arrests from August 2013 to July 2014. This result is imprecisely estimated, and the program had no statistically significant impact on other forms of crime.

In addition, evidence of the program's impact has helped catalyze its expansion to other major urban areas, including New York City. For more details, see the evidence to policy case study.

Cook, Philip J., Kenneth Dodge, George Farkas, Roland G. Fryer, Jr., Jonathan Guryan, Jens Ludwig, and Susan Mayer. "Not Too Late: Improving Academic Outcomes for Disadvantaged Youth." Northwestern University Institute for Policy Research Working Paper, February 2015. Heller, Sara B., Anuj K. Shah, Jonathan Guryan, Jens Ludwig, Sendhil Mullainathan, and Harold A. Pollack. "Thinking, Fast and Slow? Some Field Experiments to Reduce Crime and Dropout in Chicago." NBER Working Paper #21178, May 2015.