Making the Most of School Vacation: A Field Experiment of Small Group Instruction
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There is no agreement among educators and policymakers about how best to support students when they fall behind academically. High dosage tutoring represents one approach to individualizing instruction for struggling students that has demonstrated impressive results (Fryer, 2016). However, two-to-one tutoring programs tend to come with a large price tag that, despite impressive benefit-cost ratios (Harris, 2009), could create challenges for scalability.

Another alternative is to provide small groups of struggling students with intensive instruction in a single subject over weeklong vacation breaks, delivered by regular classroom teachers selected based on merit. For this approach, districts recruit teachers they consider to be high quality to help students catch up through a relatively short burst of concentrated, small group, instructional time. These “Vacation Academy” interventions rely on a ten-to-one student-to-teacher ratio and therefore are typically less costly than two-to-one tutoring.

Several low-performing districts have deployed this strategy. Quasi-experimental evidence from Massachusetts’ Lawrence Public Schools suggests that Vacation Academy participation produces sizable improvements on student test performance in both math and reading and that about 60 percent of this improvement persists a year later (Schueler, Goodman, Deming, 2017). However, previous research has been unable to completely rule out the possibility that selection bias explains part or all of the results. For instance, it is possible that students attending these programs were also being targeted for other academic interventions during the school year, making it difficult to isolate the effect of the Academies themselves. To overcome the limitations of previous research, this study provides the first experimental evidence on the effect of math-focused Vacation Academies in the context of nine middle schools within a low-performing Massachusetts school district.

To analyze the impact of Vacation Academies on student outcomes, I rely on district-wide student-level administrative data for the 2014-15 and 2015-16 school years merged with data on student nomination, randomization, and Academy attendance. A total of 1,187 6th and 7th grade students were nominated for Academy participation. Most nominated students not missing on baseline math scores (91 percent) fell into the middle of the state-defined performance levels in the year prior to the Academies. Specifically, 41 percent were classified as “needs improvement” and 24 percent “proficient.” The tail ends of the distribution were slightly underrepresented relative to the 6th and 7th grade district-wide distribution. The racial/ethnic makeup of the group of nominated students was generally representative of 6th and 7th graders in the district as a whole. In contrast, nominees were less likely to be classified as special education (12 percent) than 6th and 7th grade students in the district as a whole (22 percent).

Nominated students were randomized into treatment (n=761) and control (n=426) groups within 18 school-grade combinations. This sample size and distribution across school-grade combinations provided 0.85 power to detect a minimum program effect of 0.11 standard deviations on math test scores, which was similar to the math Academy effect found in Lawrence. This power calculation accounted for the inclusion of covariates explaining 60 percent of variation in the outcome and the imbalanced treatment-to-control group ratio. Compliance was a significant challenge. Only 44 percent of the students assigned to the treatment group attended an Academy and 18 percent of the control group students ended up attending. Overall, students in the treatment group attended an average of about two days of their
Academy while those in the control group attended about one day on average. Attendees (those who came at least one day) came to an average of four of the five days of Vacation Academy.

Vacation Academies ran over a single weeklong vacation break in April 2016. The goal was to provide as close to five hours of math instructional time per day as possible, for a total of 25 hours over the course of the week. In addition to academic instruction, each day included community meetings, lunch, and an extracurricular “Encore” class such as physical education, art, and music. Students were grouped into small classes that ranged from five to 12 students, but averaged about nine.

Roughly 88 percent of Academy teacher applicants were selected to teach. Nearly all instructors were math teachers during the regular school year. Seventy seven percent came from within the district. Overall, teachers were given substantial flexibility to use the Academy time as they saw fit. The main guidance teachers received was encouragement to focus on the 15 most frequently tested standards for 6th and 7th grade students (e.g., number sense, expressions and equations, ratios and proportions), but to adjust their focus based on student skills and needs. Teachers were encouraged to go back to content from previous grade levels if it became apparent students had not yet mastered these standards.

I assess the causal effect of an invitation to attend a Vacation Academy on student test performance, attendance, and discipline by estimating intent-to-treat estimates. Given assignment did not guarantee program take up, I also assess the local average treatment effect of Academy attendance for those students who were influence to attend by the random offer of a Vacation Academy seat by generating treatment-on-the-treated estimates in two stages. Preliminary results suggest that Vacation Academies increased the probability that students scored proficient or higher on Common Core-aligned mathematics exams. Academy attendance also affected non-test score outcomes, most notably by reducing out-of-school suspensions. The Academies had no effect on school attendance.

Although these findings might initially seem surprising since the program occurred over a single week, it is important to keep in mind that the program focused on a single subject, providing roughly the same number of hours of math instruction that a student would typically receive in over a month during the regular school year. These results are encouraging particularly when considering the program’s costs ($600 per attendee) and the fact that the teacher selection process was not highly competitive, suggesting potential for program scalability. Therefore, this study provides rare evidence of an effective, relatively affordable, and minimally disruptive intervention to help struggling students make notable academic progress through small group instruction.
References

