

Early Achievement Impacts of The Harlem Success Academy Charter School in New York City

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Executive Summary

Researchers at the University of Pennsylvania conducted two external analyses of the performance of Harlem Success Academy Charter School (HSA) 2008-9 3rd graders on the New York State Test in English language arts (ELA) and mathematics. The first analysis was based on a comparison of the performance of 2006-7 first graders (who became the 2008-9 3rd graders) who were chosen through a random selection lottery process to attend HSA, and remained in HSA through the 3rd grade, relative to those who were not admitted by lottery to attend HSA and remained in New York City public schools. The second analysis compared the same HSA 3rd graders to 3rd graders in geographically proximate and demographically comparable New York City public schools. Student results were compared separately for ELA and mathematics using ordinary least squares regression and controlling for student gender, age, and special education status. The results indicated that HSA 3rd graders performed statistically significantly better than did either the randomized comparison group or the students in the demographically similar schools. More specifically, attendance at HSA was associated with 34-59 additional scale score points (depending on test subject) for non-special education students, after adjusting for differences in student demographic characteristics. Described another way, these results represent between 13-19 percent higher test performance associated with attending Harlem Success Academy.

Overview

The Harlem Success Academy Charter School (HSA) opened its doors in August 2006. The school, located in Harlem Community School District 3 of New York City at 118th street and Lenox Avenue, is currently a K-4 school that intends to add a grade each year as students matriculate until it is a full K-8 school. HSA is one of four existing Harlem Success Academies founded by the Success Charter Network. Over the next ten years, the Success Charter Network plans to expand the network to 40 schools.

Students are admitted into HSA through an annual lottery which randomly selects students to attend the school from the pool of applicants. Any student who lives in New York City can apply to HSA and the school uses the lottery process to determine who will attend the school. Since the

school has documented both the students who applied to HSA and were accepted through the lottery, as well as those who applied and were not selected, these conditions make for an experimental study of the impact of HSA on student learning outcomes.

In the Spring of 2009, as the first group of HSA students were completing the 3rd grade, the Success Charter Network (SCN) asked the study authors to conduct an impact analysis of the performance of the first cohort of HSA students. This report describes the results of those analyses.

About the HSA Education Model and Curriculum

The SCN's model focuses on a culture of achievement, parental involvement, continuing improvement, and accountability. At Success Academies, the end goal is that all students, who are called 'scholars', will graduate from college. The SCN model includes more instructional time for students than they would receive at a traditional public school, with a longer school day and longer school year.

SCN uses Success For All as its literacy program for grades K and 1. In 2nd grade and above, SCN uses components of a balanced literacy curriculum, including additional independent reading, guided reading, and writer's workshop. Students practice writing every day because SCN believes that they must be excellent writers in order to graduate from college. SCN schools use a customized mathematics curriculum, based on the Investigations mathematics curriculum and supplemented by Singapore Math in kindergarten and first grades and by Pearson Envision Math in the upper grades.

In addition to the strong focus on math and literacy, the SCN curriculum contains a strong daily emphasis on discovery-based, experimental science. Arts are also an integral part of the core curriculum at SCN. Every student takes chess in order to practice and strengthen critical thinking. Students also participate in visual arts, music, dance and team sports. SCN encourages students to act in accordance with the schools' core "A.C.T.I.O.N." values: Agency, Curiosity, Try and try, Integrity, Others, and No shortcuts. SCN views character education as essential for students' academic success.

Research Design

Evaluation theorists consider randomized research designs to be the strongest way to attribute outcomes to a particular intervention. In such designs, a pool of potential participants is randomly assigned to receive a treatment or not. At junctures during and after the treatment, the treated group can be compared against those not selected to participate to investigate differences in valued outcomes. In such cases of true experiments, causal claims of the attribution of an effect to a treatment can be made (Cambell & Stanley, 1963; Shadish, Cook & Campbell, 2002). Assuming the ongoing integrity of the groups, randomization removes internal threats to validity (i.e. mis-attributing impacts to the treatment) such as the differences between groups on important but unobserved characteristics.

The research design for this study consisted of two separate sets of comparisons. The first analysis capitalized on HSA's assignment of students to the school via lottery by comparing the performance of the students who were chosen by lottery to attend HSA, and remained in the school thru the 3rd grade, against those who were not chosen by lottery to attend HSA and remained in the New York City schools thru the 3rd grade.

The second analysis consisted of a quasi-experiment, in which the performance of HSA students was compared to that of a matched comparison set of geographically and demographically similar New York public elementary schools. Eight schools were chosen to represent a reasonable comparison group of public elementary schools that were located in Harlem and served similar socio-economic populations of students.

Both studies employed a similar analytic design. Ordinary least squares (OLS) regression was employed that used either mathematics or English Language Arts (ELA) student scale score on the New York state test as the outcome (dependent) variable. Independent variables included in the analyses were student school condition (HSA or not), student gender, student age, and student special education status. Since 3rd grade is the first grade that students are tested, we could not include any measure of prior achievement as a covariate. Due to the small numbers of White and Latino students at both HSA and in the lottery non-attenders, we decided not to include ethnicity in our models. Thus, the analyses consisted of four final models:

- Model 1: HSA vs. those not selected by lottery in mathematics, controlling for student demographic characteristics.
- Model 2: HSA vs. those not selected by lottery in ELA, controlling for student demographic characteristics.
- Model 3: HSA vs. other similar school 3rd graders in mathematics, controlling for student demographic characteristics.
- Model 4: HSA vs. other similar school 3rd graders in ELA, controlling for student demographic characteristics.

Data

HSA provided the research team with a list of students who applied for enrollment at HSA and were entered into the lottery as rising first graders in 2006. This list included both those who were selected via the lottery to attend HSA (n=79) as well as those who were not (n=97). HSA leaders also conferred with the research team to identify a list of potential similar comparison schools. From those, a group of eight demographically similar and geographically proximate schools were chosen to be used in the quasi-experimental analysis comparing HSA to other similar public elementary schools.

A data request was made to the New York City Department of Education, who provided New York state test and student demographic data for the HSA students, the comparison students, and the 3rd graders in the eight geographically and demographically similar New York City schools. Overall, the dataset consisted of 79 HSA students, 97 students not selected by HSA and 545 third graders from other schools. Table 1 shows the demographic information of the three groups.

All three groups of students were approximately half male, half female. The 3rd grade students in the other schools were slightly older, although they contained more variability, than both the students who attended HSA and those who did not. HSA students had higher school attendance rates than both of the comparison groups. There were also more Black students and fewer Latino students in the pool that applied to HSA (in both the attendees and those who were not selected) than in the other comparison schools. HSA applicants were also less likely to be English language learners. Also, fewer students were identified as Special Education students at HSA (15%) than either those who were not admitted in the lottery to attend HSA (24%) or in the other schools (21%). This difference may be a function of HSA's lower tendency to label students as special education.

Table 1. Demographics of 2009 HSA 3rd graders, those not selected by HSA, and 3rd graders in other similar Elementary Schools.

	HSA 3 rd Graders	HSA Not Selected	Other 3 rd Graders
Sample Size	79	97	545
Number Male (with percent)	40 (51%)	46 (47%)	286 (52%)
Age (as of 12/31/09) (with standard deviation)	9.45 (.32)	9.49 (.36)	9.73 (.53)
Attendance Rate (with standard deviation)	99.34 (2.10)	90.25 (10.70)	90.09 (9.97)
Black (with percent)	63 (80%)	72 (74%)	303 (56%)
Latino (with percent)	13 (16%)	22 (23%)	217 (40%)
White (with percent)	3 (4%)	1 (1%)	14 (3%)
Other (with percent)	0	2 (1%)	11 (2%)
English language learners (with percent)	0	4 (4%)	112 (21%)
Special Education (with percent)	12 (15%)	23 (24%)	117 (21%)

From HSA, we learned that 19 of the original 79 (24%) students chosen by lottery to attend HSA were no longer in the school. Additionally, 21 of the 97 (22%) in the original comparison group (i.e. those not chosen in the lottery) were reported by the NYC DOE to be not attending New York City public schools in 2009. Because of this attrition in both the original HSA population and the comparison group, the analyses below include only those students who persisted in HSA as compared to those who remained in New York City public schools. We compared the demographics of the stayers and leavers separately for both the HSA population and the group not selected by lottery and found no statistically significant differences.

Table 2. Performance as measured by scale scores and performance categories of 2009 HSA 3rd graders, those not selected by HSA, and 3rd graders in other similar public elementary schools.

	HSA 3 rd Graders	HSA Not Selected	Other 3 rd Graders
Sample Sizes			
Mathematics	60	76	526
ELA	60	74	511
Range of Scale Score Points			
Range of Mathematics Scale Scores	677-770	470-770	470-770
Range of ELA Scale Score	644-780	578-720	475-720
Scale Score Mean & Standard Deviation			
Mathematics Scale Score (with standard deviation)	732 (36)	682 (44)	673 (31)
ELA Scale Score (with standard deviation)	693 (30)	658 (28)	651 (30)
Mathematics Performance Distribution			
Mathematics Level 1: Not Meeting Standard (n and percent)	0 (0%)	3 (4%)	11 (2%)
Mathematics Level 2: Partially Meeting Standard (n and percent)	0 (0%)	8 (11%)	77 (15%)
Mathematics Level 3: Meeting Standard (n and percent)	18 (30%)	52 (68%)	382 (73%)
Mathematics Level 4: Meeting Standard w/ Distinction (n and percent)	42 (70%)	13 (17%)	56 (11%)
ELA Performance Distribution			
ELA Level 1: Not Meeting Standard (n and percent)	0 (0%)	5 (7%)	44 (9%)
ELA Level 2: Partially Meeting Standard (n and percent)	3 (5%)	16 (22%)	190 (37%)
ELA Level 3: Meeting Standard (n and percent)	43 (72%)	50 (68%)	267 (52%)
ELA Level 4: Meeting Standard w/ Distinction (n and percent)	14 (23%)	3 (4%)	10 (2%)

Table 2 shows descriptive statistics of the student performance of the three groups of 3rd grade students that were examined in this study. The student performance data are shown on two metrics, scale scores and performance levels. The scale scores represent continuous scores on a range of performance, while the performance levels show the number of students falling within

State defined categories. Both representations show that students remaining in HSA through 3rd grade outperform both those 3rd graders remaining in NYC schools that were not selected by the lottery to attend HSA and the 3rd graders in the other geographically proximate and demographically similar schools.

Results

The descriptive statistics of 3rd grade student performance appear to favor HSA, but do not test for statistical differences between the groups. Therefore, regression analyses were employed to test for statistical differences in performance. The results of the analyses show consistently strong and statistically significant effects of HSA across the different subjects and comparison groups. Details of the statistical results are shown in Table 3. Model 1 shows the comparison of the HSA 3rd grader performance in mathematics in comparison to those 3rd graders in NYC that were not chosen in the lottery to attend HSA. The HSA 3rd graders performed a statistically significant 48 points higher in mathematics than did the 3rd graders not chosen by lottery to attend HSA, and remained in New York City schools. In ELA, the HSA 3rd graders performed a statistically significant 35 points higher than did the 3rd graders that were not chosen by the lottery to attend HSA and remained in other New York City schools.

Table 3: Performance of HSA students as compared to those not selected to attend HSA and 3rd graders in other similar Elementary Schools.

Variable	Model 1	Model 2	Model 3	Model 4
	HSA vs. those not chosen by Lottery in Mathematics	HSA vs. those not chosen by Lottery in English Language Arts	HSA vs. other 3 rd graders in Mathematics	HSA vs. other 3 rd graders in English Language Arts
Intercept	836.19	660.83	656.43	665.94
HSA	47.65 ***	34.97 ***	57.95 ***	39.58 ***
Male	-2.68	-8.72	-.62	-5.47 *
Age	-15.25	.55	2.21	-.66
SPED	-46.40 ***	-30.21 ***	-22.24 ***	-28.48 ***
R-Squared	.42	.38	.30	.29

* p < .05; ** p<.01; *** p<.001

Models 3 and 4 show the comparisons of the performance of HSA 3rd graders relative to the performance of 3rd graders in demographically and geographically similar schools. These results show differences of even larger magnitude than the comparisons to the lottery non-selected group. In mathematics, HSA 3rd graders performed 58 scale score points higher than did the 3rd graders in the comparison schools. In English Language Arts, HSA 3rd graders performed 40 scale score points higher than did the 3rd graders in the comparison schools.

The other covariates included in the models indicated no gender differences in performance, except for Model 4, in which boys performed about 5.5 scale score points lower than girls.

Within the limited age range of students in the study, there were no differences in performance associated with age. Not surprisingly, Special Education (SPED) students performed significantly worse than did regular education students. As explained previously, there were not enough students of different ethnicities to include ethnicity in the models. An examination of interactions between HSA and the other covariates showed no significant interactions. That is, HSA 3rd grade student performance relative to the comparison group 3rd grade students did not significantly vary by gender, age, or SPED status. Overall, the models explain between approximately 30 to 40 percent of the variation in observed student performance.

Conclusion

Overall, these results show statistically significant and educationally substantial effects associated with the Harlem Success Academy Charter School's educational program. Of the two analyses, the most meaningful results were the large and significant differences between the students who were chosen by lottery to attend HSA and stayed through 3rd grade in comparison to those who applied to HSA but were not chosen by lottery to attend, and stayed in NYC through the 3rd grade. In mathematics, HSA 3rd graders performed, on average, 48 scale score points higher on the New York state test, after adjusting for group differences in age, gender, and special education status. This translates to a 16 percent higher level of performance associated with attending HSA. In English Language Arts, the effect was similar. HSA 3rd graders performed, on average, 35 scale score points higher on the New York state ELA test, after adjusting for group differences in age, gender, and special education status. This translates to a 17 percent higher level of performance associated with attending HSA. Although there was substantial attrition in both groups after the lottery was held, likely due to student mobility, these differences in performance are a compelling initial indication of the educational effects of the Harlem Success Academy.

The comparisons of the HSA attenders to 3rd graders in geographically proximate and demographically similar schools showed even larger differences in mathematics performance in favor of the HSA students. In mathematics, HSA 3rd graders performed, on average, 58 scale score points higher on the New York state test, after adjusting for group differences. This represented a 19 percent higher level of performance associated with attending HSA. In ELA, the differences were just under 40 scale score points, which translates to just over a 13 percent difference associated with attending HSA.

As additional years of data become available, future analyses of complete data on the performance of Harlem Success Academy students will be needed to substantiate the enduring effects of the school and others in the Success Charter Network. These results provide strong initial support for concluding that the school provides a powerful educational experience for its students.

References

Campbell, D.T. & Stanley, J.C. (1963). *Experimental and Quasi-Experimental Designs for Research*. Chicago: Rand McNally.

Shadish, W.R., Cook, T.D., & Campbell, D.T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston : Houghton Mifflin