

Evaluation of the DC Opportunity Scholarship Program

Impacts After Three Years

Executive Summary

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March 2009

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Disclosure of Potential Conflicts of Interests¹

The research team for this evaluation consists of a prime contractor, Westat, and two subcontractors, Patrick Wolf (formerly at Georgetown University) and his team at the University of Arkansas Department of Education Reform and Michael Puma of Chesapeake Research Associates (CRA). None of these organizations or their key staff has financial interests that could be affected by findings from the evaluation of the DC Opportunity Scholarship Program (OSP). No one on the seven-member Technical Working Group convened by the research team once a year to provide advice and guidance has financial interests that could be affected by findings from the evaluation.

¹ Contractors carrying out research and evaluation projects for IES frequently need to obtain expert advice and technical assistance from individuals and entities whose other professional work may not be entirely independent of or separable from the particular tasks they are carrying out for the IES contractor. Contractors endeavor not to put such individuals or entities in positions in which they could bias the analysis and reporting of results, and their potential conflicts of interest are disclosed.

Executive Summary

The *District of Columbia School Choice Incentive Act of 2003*, passed by Congress in January 2004, established the first federally funded, private school voucher program in the United States. As part of this legislation, Congress mandated a rigorous evaluation of the impacts of the Program, now called the DC Opportunity Scholarship Program (OSP). This report presents findings from the evaluation of the impacts 3 years after families who applied were given the option to move from a public school to a participating private school of their choice.

The evaluation is based on a randomized controlled trial design that compares the outcomes of eligible applicants randomly assigned to receive (treatment group) or not receive (control group) a scholarship through a series of lotteries. The main findings of the evaluation so far include:

- **After 3 years, there was a statistically significant positive impact on reading test scores, but not math test scores.** Overall, those offered a scholarship were performing at statistically higher levels in reading—equivalent to 3.1 months of additional learning—but at similar levels in math compared to students not offered a scholarship (table 3). Analysis in prior years indicated no significant impacts overall on either reading or math achievement.
- **The OSP had a positive impact overall on parents’ reports of school satisfaction and safety** (figures 3 and 4), **but not on students’ reports** (figures 3 and 4). Parents were more satisfied with their child’s school (as measured by the percentage giving the school a grade of A or B) and viewed their child’s school as safer and more orderly if the child was offered a scholarship. Students had a different view of their schools than did their parents. Reports of safety and school climate were comparable for students in the treatment and control groups. Overall, student satisfaction was unaffected by the Program.
- **This same pattern of findings holds when the analysis is conducted to determine the impact of *using* a scholarship rather than being *offered* a scholarship.** Fourteen percent of students in our impact sample who were randomly assigned by lottery to receive a scholarship and who responded to year 3 data collection chose not to use their scholarship at any point over the 3-year period after applying to the Program.¹ We use a common statistical technique to take those “never users” into account; it assumes that the students had zero impact from the OSP, but it does not change the statistical significance of the original impact estimates. Therefore, the positive impacts on reading achievement, parent views of school safety and climate, and parent views of

¹ This 14 percent “never user” rate among year 3 respondents in the impact sample differs from the 25 percent “never user” rate for the impact sample as a whole (Figure 1) because scholarship “never users” in the impact sample responded to year 3 data collection events at lower rates than did scholarship “ever users.”

satisfaction all increase in size, and there remains no impact on math achievement and no overall impact on students' perceptions of school safety and climate or satisfaction from using an OSP scholarship.

- **The OSP improved reading achievement for 5 of the 10 subgroups examined.**² Being offered or using a scholarship led to higher reading test scores for participants who applied from schools that were not classified as “schools in need of improvement” (non-SINI). There were also positive impacts for students who applied to the Program with relatively higher levels of academic performance, female students, students entering grades K-8 at the time of application, and students from the first cohort of applicants. These impacts translate into 1/3 to 2 years of additional learning growth. However, the positive subgroup reading impacts for female students and the first cohort of applicants should be interpreted with caution, as reliability tests suggest that they could be false discoveries.
- **No achievement impacts were observed for five other subgroups of students, including those who entered the Program with relative academic disadvantage.** Subgroups of students who applied from SINI schools (designated by Congress as the highest priority group for the Program) or were in the lower third of the test score distribution among applicants did not demonstrate significant impacts on reading test scores if they were offered or used a scholarship. In addition, male students, those entering high school grades upon application, and those in application cohort 2 showed no significant impacts in either reading or math after 3 years.

DC Opportunity Scholarship Program

The purpose of the new scholarship program was to provide low-income residents, particularly those whose children attend schools in need of improvement or corrective action under the *Elementary and Secondary Education Act*, with “expanded opportunities to attend higher performing schools in the District of Columbia” (Sec. 303). The scholarship, worth up to \$7,500, could be used to cover the costs of tuition, school fees, and transportation to a participating private school. The statute also prescribed how scholarships would be awarded: (1) in a given year, if there are more eligible applicants than available scholarships or open slots in private schools, scholarships are to be awarded by random selection (e.g., by lottery), and (2) priority for scholarships is given first to students attending SINI public schools and then to families that lack the resources to take advantage of school choice options.

² The subgroups that are analyzed in this study were designated prior to the collection and analysis of data and are of particular policy interest based on the Program statute and education policy literature. The subgroups are: (1) whether students attended a school designated as in need of improvement (SINI) under the *No Child Left Behind Act* prior to application to the Program—students were either attending a SINI-ever or SINI-never school; (2) whether students were relatively lower performing or relatively higher performing at baseline—students were either in the bottom one-third or the top two-thirds of the test score distribution; (3) student gender; (4) whether students were entering grades K-8 or 9-12 at the time of application; and (5) whether students were in application cohort 1 (applied in 2004) or application cohort 2 (applied in 2005).

The Program is operated by the Washington Scholarship Fund (WSF). To date, there have been five rounds of applications to the OSP (table 1). Applicants in spring 2004 (cohort 1) and spring 2005 (cohort 2) represent the majority of Program applicants; the evaluation sample was drawn from these two groups.³ A smaller number of applicants in spring 2006 (cohort 3), spring 2007 (cohort 4), and spring 2008 (cohort 5) were recruited and enrolled by WSF in order to keep the Program operating at capacity each year.

Table 1. OSP Applicants by Program Status, Cohorts 1 Through 5, Years 2004-2008

	Cohort 1 (Spring 2004)	Cohort 2 (Spring 2005)	Total Cohort 1 and Cohort 2	Cohort 3 (Spring 2006), Cohort 4 (Spring 2007), and Cohort 5 (Spring 2008)	Total, All Cohorts
Applicants	2,692	3,126	5,818	2,034	7,852
Eligible applicants	1,848	2,199	4,047	1,284	5,331
Scholarship awardees	1,366	1,088	2,454	1,284	3,738
Scholarship users in initial year of receipt	1,027	797	1,824	1,057	2,881
Scholarship users fall 2005	919	797	1,716	NA	1,716
Scholarship users fall 2006	788	684	1,472	333	1,805
Scholarship users fall 2007	678	581	1,259	671	1,930
Scholarship users fall 2008	496	411	909	807	1,714

NOTES: Because most participating private schools closed their enrollments by mid-spring, applicants generally had their eligibility determined based on income and residency, and the lotteries were held prior to the administration of baseline tests. Therefore, baseline testing was not a condition of eligibility for most applicants. The exception was applicants entering the highly oversubscribed grades 6-12 in cohort 2. Those who did not participate in baseline testing were deemed ineligible for the lottery and were not included in the eligible applicant figure presented above, though they were counted in the applicant total. In other words, the cohort 2 applicants in grades 6-12 had to satisfy income, residency, and baseline testing requirements before they were designated eligible applicants and entered in the lottery.

The initial year of scholarship receipt was fall 2004 for cohort 1, fall 2005 for cohort 2, fall 2006 for cohort 3, fall 2007 for cohort 4, and fall 2008 for cohort 5.

SOURCES: OSP applications and WSF's enrollment and payment files.

Mandated Evaluation of the OSP

In addition to establishing the OSP, Congress mandated an independent evaluation of it be conducted, with annual reports on the progress of the study. The legislation indicated the evaluation should analyze the effects of the Program on various academic and nonacademic outcomes of concern to policymakers and use “. . . the strongest possible research design for determining the effectiveness” of the

³ Descriptive reports on each of the first 2 years of implementation and cohorts of students have been previously prepared and released (Wolf, Gutmann, Eissa, Puma, and Silverberg 2005; Wolf, Gutmann, Puma, and Silverberg 2006) and are available on the Institute of Education Sciences' website at <http://ies.ed.gov/ncee>.

Program. The current evaluation was developed to be responsive to these requirements. In particular, the foundation of the evaluation is a randomized controlled trial (RCT) that compares outcomes of eligible applicants (students and their parents) randomly assigned to receive or not receive a scholarship. This decision was based on the mandate to use rigorous evaluation methods, the expectation that there would be more applicants than funds and private school spaces available, and the statute's requirement that random selection be the vehicle for determining who receives a scholarship. An RCT design is widely viewed as the best method for identifying the independent effect of programs on subsequent outcomes (e.g., Boruch, de Moya, and Snyder 2002, p. 74). Random assignment has been used by researchers conducting impact evaluations of other scholarship programs in Charlotte, NC; New York City; Dayton, OH; and Washington, DC (Greene 2001; Howell et al. 2002; Mayer et al. 2002).

The recruitment, application, and lottery process conducted by WSF with guidance from the evaluation team created the foundation for the evaluation's randomized trial and determined the group of students for whom impacts of the Program are analyzed in this report. Because the goal of the evaluation was to assess both the short-term and longer term impacts of the Program, it was necessary to focus the study on early applicants to the Program (cohorts 1 and 2) whose outcomes could be tracked over at least 3 years during the evaluation period. During the first 2 years of recruitment, WSF received applications from 5,818 students. Of these, approximately 70 percent (4,047 of 5,818) were eligible to enter the Program (table 1). Of the total pool of eligible applicants, 2,308 students who were attending public schools or were rising kindergarteners entered lotteries (492 in cohort 1; 1,816 in cohort 2), resulting in 1,387 students assigned to the treatment condition and 921 assigned to the control condition. These students constitute the evaluation's impact analysis sample and represent three-quarters of all students in cohorts 1 and 2 who were not already attending a private school when they applied to the OSP.

Data are collected from the impact sample each year, starting with the spring in which students applied to the OSP (baseline) and each spring thereafter. These data include assessments of student achievement in reading and mathematics using the Stanford Achievement Test version 9 (SAT-9),⁴ surveys of parents, and surveys of students in grade 4 and above—administered by the evaluation team in central District of Columbia (DC) locations on Saturdays or weekday evenings because neither the public nor private schools would allow data collection on their campuses during the school day. In addition, the evaluation surveys all DC public and private schools each spring in order to address the statute's interest in understanding how the schools are responding to the OSP.

⁴ *Stanford Abbreviated Achievement Test (Form S)*, Ninth Edition. San Antonio, TX: Harcourt Educational Measurement, Harcourt Assessment, Inc., 1997.

Participation in the OSP

In interpreting the impacts of the OSP, it is useful to examine the characteristics of the private schools that participate in the Program and the extent to which students offered scholarships (the treatment group) moved into and out of them during the first 3 years.

School Participation

The private schools participating in the OSP represent the choice set available to parents whose children received scholarships. That group of schools had mostly stabilized by the 2005-06 school year. The schools that offered the most slots to OSP students, and in which OSP students and the impact sample's treatment group were clustered, have characteristics that differed somewhat from the average participating OSP school. Although 56 percent of all participating schools were faith-based (39 percent were part of the Catholic Archdiocese of Washington), 82 percent of the treatment group attended a faith-based school, with 59 percent of them attending the 22 participating Catholic parochial schools (table 2). Twenty-two percent of treatment group students were attending a school that charged tuition above the statutory cap of \$7,500 during their third year in the Program (table 2) even though 38 percent and 46 percent of participating schools charged tuitions above that cap in 2006-07 and 2007-08, respectively.

Table 2. Features of Participating OSP Private Schools Attended by the Treatment Group in Year 3

Characteristic	Weighted Mean	Highest	Lowest	Valid <i>N</i>
Archdiocesan Catholic schools (percent of treatment students attending)	59.2	NA	NA	66
Other faith-based schools (percent of treatment students attending)	22.5	NA	NA	66
Charging over \$7,500 tuition (percent of treatment students attending)	22.3	NA	NA	48
Tuition	\$6,620	\$29,902	\$3,600	48
Enrollment	260.5	1,072	10	43
Student <i>N</i>	701			

NOTES: "Valid *N*" refers to the number of schools for which information on a particular characteristic was available. When a tuition range was provided, the mid-point of the range was used. The weighted mean was generated by associating each student with the characteristics of the school he/she was attending, and then computing the average of these student-level characteristics.

SOURCE: OSP School Directory information, 2004-05, 2005-06, 2006-07, and 2007-08, Washington Scholarship Fund.

While the characteristics of the participating private schools are important considerations for parents, in many respects it is how the schools differ from the public school options available to them that matters most. In the third year after applying to the OSP, students in the treatment and control groups did

not differ significantly regarding the proportion attending schools that offered a separate library (88 vs. 91 percent), gyms (71 and 72 percent), and art programs (89 and 87 percent). There were the following statistically significant differences (at the .01 level):

- Students in the treatment group were more likely than those in the control group to attend schools with a computer lab (96 vs. 87 percent), with special programs for advanced learners (48 vs. 32 percent), and that offered a music program (89 vs. 82 percent).
- Students in the treatment group were less likely than the control group to attend a school with a cafeteria facility (79 vs. 88 percent) or a nurse's office (30 vs. 81 percent).
- Students in the treatment group were also less likely than those in the control group to attend a school that offered special programs for non-English speakers (26 vs. 57 percent), special programs for students with learning problems (71 vs. 88 percent), counselors (69 vs. 82 percent), tutors (50 vs. 67 percent), and after-school programs (86 vs. 92 percent).

Student Participation

As has been true in similar programs, not all students offered an OSP scholarship actually used it to enroll in a private school. For students assigned to the treatment group, during the first 3 years of the Program (figure 1):

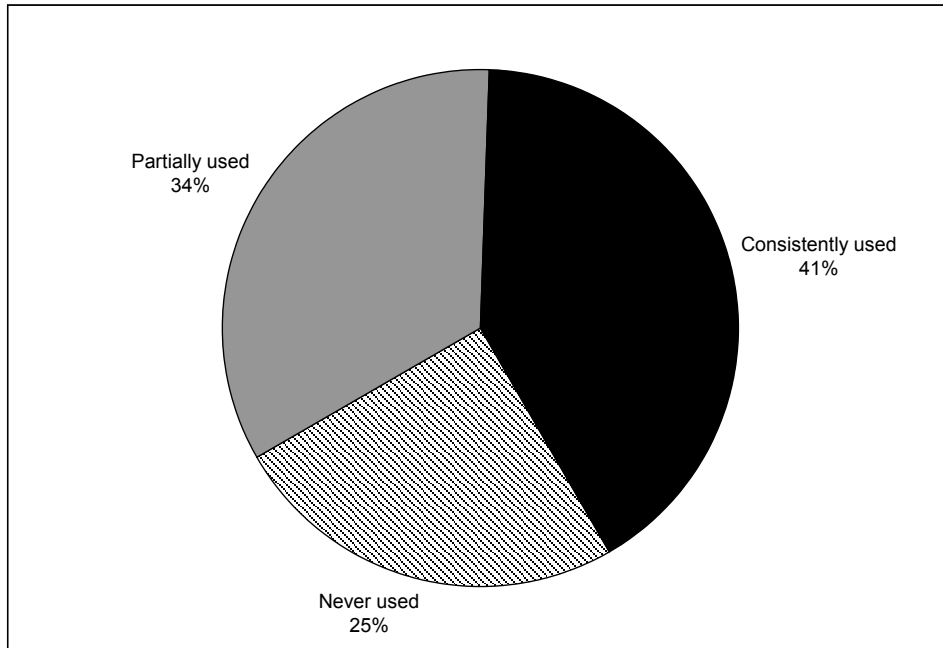
- 25 percent (346 out of 1,387 students) of those offered an OSP scholarship never used it;
- 34 percent (473 students) used their scholarship during some but not all of the first 3 years after the award; and
- The remaining 41 percent (568 students) used their scholarship consistently for the entire 3 years after the lottery.

The reasons for not using the scholarship—either initially or consistently—varied. The most common reasons cited by parents whose child never used their scholarship at anytime in year 3 and who completed surveys were (figure 2):

- Lack of available space in the private school they wanted their child to attend (22 percent of these parents);
- Child moved out of DC (21 percent of these parents);
- Child was accepted into a public charter school (19 percent of these parents); and

- Participating schools did not offer services for their child’s learning or physical disability or other special needs (16 percent of these parents).

Figure 1. Proportions of Treatment Group Students Who Experienced Various Categories of Usage in First 3 Years



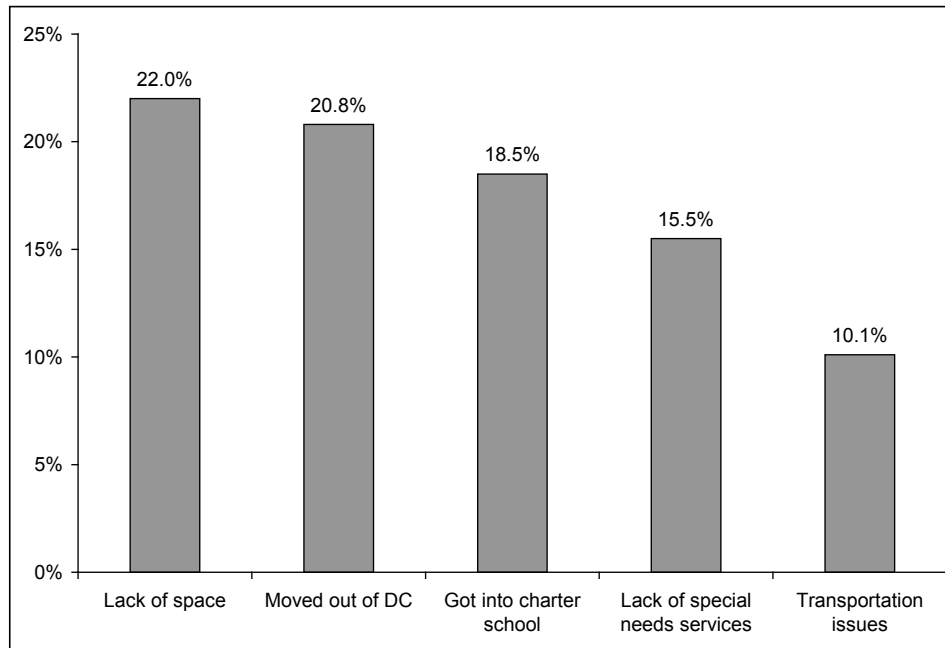
NOTES: Data are not weighted. Valid $N = 1,387$. Students were identified as scholarship users based upon information from WSF’s payment files. Because some schools use a range of tuitions and some students had alternative sources of funding, students were classified as full users if WSF made payments on their behalf that equaled at least 80 percent of the school’s annual tuition. Otherwise, students were identified as partial users (1 percent to 79 percent of tuition paid) or nonusers (no payments).

SOURCES: OSP applications and WSF’s payment files.

The most common responses given by parents whose child initially used a scholarship in year 3 but dropped out of the OSP include:

- Lack of academic support that the child needed (39 percent of these parents);
- "Child did not like the private school" (25 percent);
- There was another private school the child liked better (13 percent);
- Work at the private school was too hard (11 percent);
- It was too difficult to get the child to the private school each day (11 percent); and
- The discipline or rules at the private school were too strict (7 percent).

Figure 2. Most Common Reasons Given by Parents for Declining to Use the OSP Scholarship in Year 3



NOTES: Responses are unweighted. Respondents were able to select multiple responses, which generated a total of 180 responses provided by 153 parents. This equates to an average of 1.2 responses per parent.

SOURCE: Impact Evaluation Parent Surveys.

Students who were partial users were more likely to have special needs and those entering the higher grades averaged lower baseline test scores than students who participated consistently across the 3 years.⁵

Students who never used the OSP scholarship offered to them, or who did not use the scholarship consistently, could have found their way into other (non-OSP-participating) private schools, public charter schools, or traditional DC public schools. The same alternatives were available to students who applied to the OSP but were never offered a scholarship (the impact sample’s control group). Both the treatment and control groups moved between public (both traditional and charter) and private schools or between SINI and non-SINI schools. As a result, over the 3 years after they applied to the OSP:

- Among the treatment group, 3 percent remained in the same school they were in when they applied to the Program; 46 percent switched schools once; 40 percent switched schools twice; and 11 percent switched three times.

⁵ At baseline, partial users in grades 9-12 were lower performing in reading (27 National Percentile Ranks (NPRs) vs. 40 NPRs for full users, statistically significant at the .05 level) and in math (29 NPRs vs. 49 NPRs for full users, statistically significant at the .01 level); partial users in grades 6-8 were lower performing in math (34 NPRs vs. 41 NPRs for full users, statistically significant at the .01 level); and partial users were more likely to have special needs (5 percent vs. 10 percent for full users, statistically significant at the .05 level).

- Among the control group, 15 percent remained in the same school they were in when they applied to the Program; 40 percent switched schools once; 37 percent switched schools twice; and 8 percent switched three times.

These patterns of student mobility are important because previous studies suggest that switching schools has an initial short-term negative effect on student achievement (Hanushek, Kain, and Rivkin 2004).

Impact of the Program After 3 Years: Key Outcomes

The statute that authorized the OSP mandated that the Program be evaluated with regard to its impact on student test scores and school safety, as well as the “success” of the Program, which, in the design of this study, includes satisfaction with school choices. The impacts of the Program on these outcomes are presented in two ways: (1) the impact of the *offer* of an OSP scholarship, derived straight from comparing outcomes of the treatment and control groups, and (2) the impact of *using* an OSP scholarship, calculated from the unbiased treatment-control group comparison, but statistically adjusting for students who declined to use their scholarships.⁶ The main focus of this study was on the overall group of students, with a secondary interest in students who applied from SINI schools, followed by other subgroups of students (e.g., defined by their academic performance at application, their gender, or their grade level).

Previous reports released in spring 2007 and spring 2008 indicated that 1 and 2 years after application, there were no statistically significant impacts on overall academic achievement or on student perceptions of school safety or satisfaction (Wolf et al. 2007; Wolf et al. 2008). Parents were more satisfied if their child was in the Program and viewed their child’s school as safer and more orderly. Among the secondary analyses of subgroups, there were impacts on math test scores in year 1 for students who applied from non-SINI schools and those with relatively higher pre-Program test scores, and impacts in reading test scores (but not math) in year 2 for those same two subgroups plus students who applied in the first year of Program implementation. However, these findings were no longer statistically significant when subjected to a reliability test to adjust for the multiple comparisons of treatment and control group students across 10 subgroups; the results may be “false discoveries” and should therefore be interpreted and used with caution. Throughout this report, the phrases “appears to have an impact” and “may have

⁶ This analysis uses straightforward statistical adjustments to account not only for the approximately 14 percent of impact sample year 3 respondents who received the offer of a scholarship but declined to use it over the 3-year period after application (the “never users”), but also the estimated 1.6 percent of the control group who never received a scholarship offer but who, by virtue of having a sibling with an OSP scholarship, ended up in a participating private school (we call this “program-enabled crossover”). These adjustments increase the size of the scholarship offer effect estimates, but do not alter the statistical significance of the impact estimate.

had an impact” are used to caution readers regarding statistically significant impacts that may have been false discoveries.

The analyses in this report were conducted using data collected on students 3 years after they applied to the OSP.⁷

Impacts on Students and Parents Overall

- Across the full sample, there was a statistically significant impact on reading achievement of 4.5 scale score points (effect size (ES) = .13)⁸ from the offer of a scholarship and 5.3 scale score points (ES = .15) from the use of a scholarship (table 3). These impacts are equivalent to 3.1 and 3.7 months of additional learning, respectively.⁹
- There was no statistically significant impact on math achievement, overall (ES = .03) from the offer of a scholarship nor from the use of a scholarship (table 3).¹⁰
- Parents of students offered a scholarship were more likely to report their child’s school to be safer and have a more orderly school climate (ES = .29) compared to parents of students not offered a scholarship (figure 3); the same was true for parents of students who chose to use their scholarships (ES = .34).
- On the other hand, students who were offered a scholarship reported similar levels of school safety and an orderly climate compared to those in the control group (ES = .06; figure 3); there was also no significant impact on student reports of school safety and an orderly climate from using a scholarship (ES = .07).
- The Program produced a positive impact on parent satisfaction with their child’s school as measured by the likelihood of grading the school an “A” or “B,” both for the impact of a scholarship offer (ES = .22; figure 4) and the impact of scholarship use (ES = .26).

⁷ Specifically, year 3 test scores were obtained from 69 percent of study participants, whereas parent survey data were gathered from 68 percent of participants and student survey data from 67 percent of participants. Response rates to the principal survey varied between 51.8 percent and 57.3 percent, depending on academic year and school sector. Missing outcome data create the potential for nonresponse bias in a longitudinal evaluation such as this one, if the nonrespondent portions of the sample are different between the treatment and control groups. Response rates differed by less than 2 percent between the treatment and control groups for the tests and parent and student surveys, meaning that similar proportions of the treatment and control groups provided outcome data. In addition, nonresponse weights were used to equate the two groups on important baseline characteristics, thereby reducing the threat of nonresponse bias in this case.

⁸ An effect size (ES) is a standardized measure of the relative size of a program impact. In this report, effect sizes are expressed as a proportion of a standard deviation of the distribution of values observed for the study control group. One full standard deviation above and below the average value for a variable such as outcome test scores contains 64 percent of the observations in the distribution. Two full standard deviations above and below the average contain 95 percent of the observations.

⁹ Scale score impacts were converted to approximate months of learning first by dividing the impact ES by the ES of the weighted (by grade) average annual increase in reading scale scores for the control group. The result was the proportion of a typical year of achievement gain represented by the programmatic impact. That number was further divided by nine to convert the magnitude of the gain to months, since the official school year in the District of Columbia comprises 9 months of instruction.

¹⁰ The magnitudes of these estimated achievement effects are below the threshold of .12 standard deviations, estimated by the power analysis to be the study’s Minimum Detectable Effect (MDE) size.

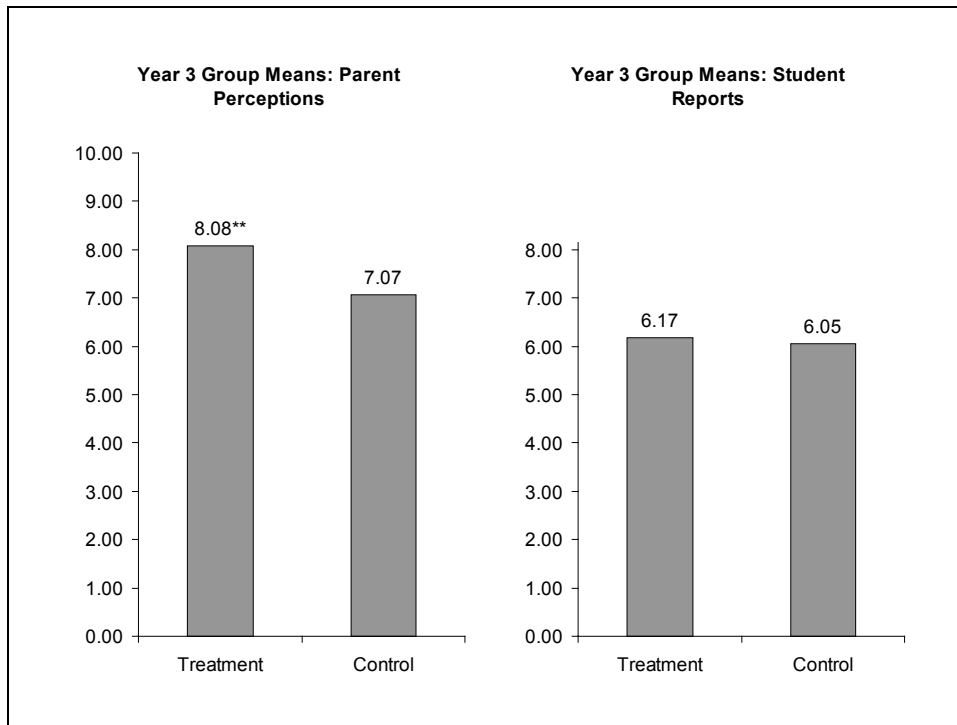
Table 3. Year 3 Impact Estimates of the Offer and Use of a Scholarship on the Full Sample: Academic Achievement

Student Achievement	Impact of the Scholarship Offer (ITT)				Impact of Scholarship Use (IOT)		<i>p</i> -value of estimates
	Treatment Group Mean	Control Group Mean	Difference (Estimated Impact)	Effect Size	Adjusted Impact Estimate	Effect Size	
Reading	635.44	630.98	4.46*	.13	5.27*	.15	.01
Math	630.15	629.35	.81	.03	.95	.03	.62

*Statistically significant at the 95 percent confidence level.

NOTES: Means are regression adjusted using a consistent set of baseline covariates. Impacts are displayed in terms of scale scores. Effect sizes are in terms of standard deviations. Valid *N* for reading = 1,460; math = 1,468. Separate reading and math sample weights used.

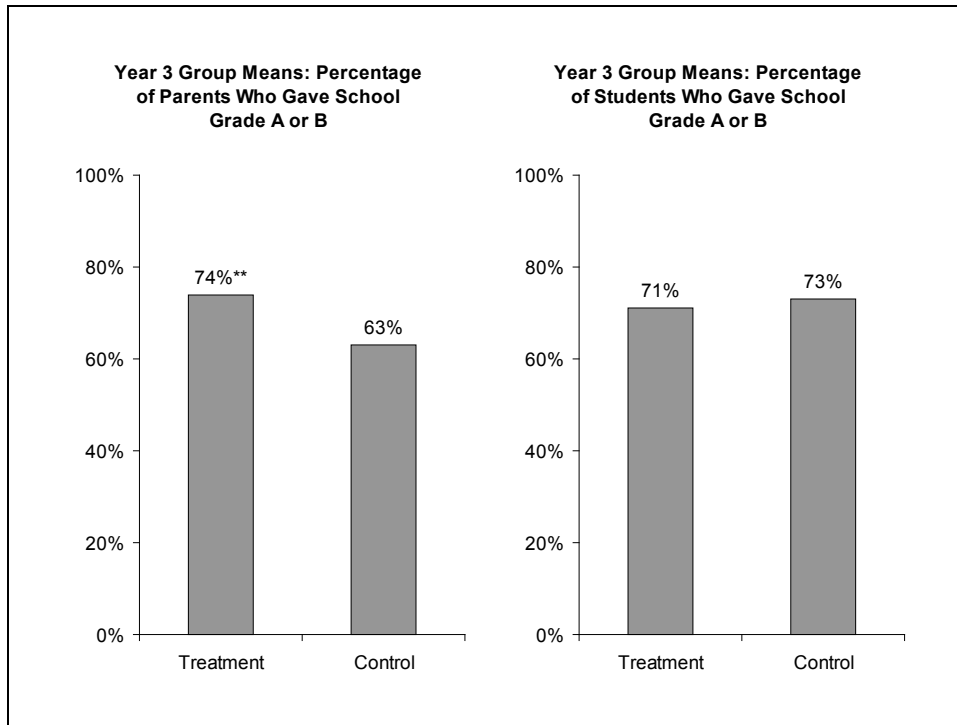
Figure 3. Parent Perceptions and Student Reports of Safety and an Orderly School Climate



**Statistically significant at the 99 percent confidence level.

NOTES: Parent perceptions are based on a ten-point scale; student reports are based on an eight-point scale. For parent perceptions, valid *N* = 1,423; parent survey weights were used; the ten-point index of indicators of school safety and an orderly environment includes the absence of property destruction, tardiness, truancy, fighting, cheating, racial conflict, weapons, drug distribution, drug/alcohol use, and teacher absenteeism. For student reports, valid *N* = 1,098; student survey weights were used; the survey was given to students in grades 4-12; the means represent the absence of incidents on an eight-item index for student reports of students being a victim of theft, drug-dealing, assaults, threats, bullying or taunting, or had observed weapons at school. Means are regression adjusted using a consistent set of baseline covariates.

Figure 4. Parent and Student Reports of School Satisfaction



**Statistically significant at the 99 percent confidence level.

NOTES: For parent reports, valid $N = 1,410$; parent survey weights were used. For student reports, valid $N = 1,014$; student survey weights were used; the survey was given to students in grades 4-12. Means are regression adjusted using a consistent set of baseline covariates.

- Overall, there were no impacts of the OSP from being offered ($ES = -.06$; figure 4) or using a scholarship ($ES = -.07$) on students' satisfaction with their schools as measured by the likelihood of assigning their school a grade of "A" or "B."

Impacts on Subgroups

In addition to determining the general impacts of the OSP on all study participants, this evaluation also reports programmatic impacts on policy-relevant subgroups of students. The subgroups were designated prior to data collection and include students who were attending SINI versus non-SINI schools at application, those relatively higher or lower performing at baseline, girls or boys, elementary versus high school students, and those from application cohort 1 or cohort 2. Since the subgroup analysis involves significance tests across multiple comparisons of treatment and control students, some of which may be statistically significant merely by chance, these subgroup-specific results should be interpreted with caution. Specifically:

Subgroup Achievement Impacts

- There were no statistically significant reading (ES = .05) or math (ES = .01) achievement impacts for the high-priority subgroup of students who had attended a SINI public school under *No Child Left Behind (NCLB)* before applying to the Program.
- There were statistically significant impacts on reading test scores in year 3 for five subgroups of students, although the statistical significance of two of the subgroup findings was not robust to adjustments for multiple comparisons:
 - Students who attended non-SINI public schools prior to application to the Program (56 percent of the impact sample) scored an average of 6.6 scale score points higher in reading (ES = .19) if they were offered the scholarship compared to not being offered a scholarship and 7.7 scale score points higher (ES = .22) if they used their scholarship compared to not being offered a scholarship. These scale score differences between the treatment and control groups translate into 4.1 and 4.9 additional months of learning, or half a year of schooling based on a typical 9-month school year.
 - Students who entered the Program in the higher two-thirds of the test-score performance distribution at baseline (66 percent of the impact sample) scored an average of 5.5 scale score points higher in reading (ES = .17) if they were offered a scholarship and 6.2 scale score points higher (ES = .19) if they used their scholarship, impacts equivalent to 4.0 and 4.6 months of learning gains.
 - Female students scored an average of 5.1 scale score points higher in reading (ES = .15) if they were offered a scholarship and 5.8 scale score points higher (ES = .17) if they used their scholarship. These impacts represent 3.1 and 3.6 months of additional learning, respectively. The statistical significance of this finding was not robust to adjustments for multiple comparisons.
 - Students who entered the Program in grades K-8 (81 percent of the impact sample) scored an average of 5.2 scale score points higher in reading (ES = .15) or 2.9 months of additional learning if they were offered a scholarship compared to not being offered a scholarship and 6.0 scale score points higher (ES = .17) or 3.3 months of additional learning if they used their scholarship compared to not being offered a scholarship.
 - Students from the first cohort of applicants (21 percent of the impact sample) scored an average of 8.7 scale score points higher in reading (ES = .31) if they were offered a scholarship compared to not being offered a scholarship and 11.7 scale score points higher (ES = .42) if they used their scholarship compared to not being offered a scholarship. These impacts translate into 14.1 and 18.9 months of additional learning (1.5 to 2 years of typical schooling). The statistical significance of this finding was not robust to adjustments for multiple comparisons.

- The OSP had no statistically significant reading impacts for other subgroups of participating students, including those in the lower third of the test-score performance distribution at baseline, boys, secondary students, and students from the second cohort of applicants (ES ranging from $-.00$ to $.11$).
- The OSP had no statistically significant math impacts for any of the 10 subgroups (ES ranging from $-.16$ to $.23$).

Subgroup Safety and Satisfaction Impacts

- All of the 10 subgroups analyzed, including parents of the high-priority subgroup of students who had attended SINI schools at baseline, reported viewing their child's school as safer and more orderly if the child was offered or using an OSP scholarship compared to not being offered a scholarship. Effect sizes for the impact of an offer of a scholarship on parent perceptions of safety and an orderly school climate for the 10 subgroups ranged from $.27$ to $.40$. Adjustments for multiple comparisons indicate that these 10 subgroup impacts on parental perceptions of safety and school climate are not likely to be false discoveries.
- Consistent with the finding for students overall, none of the subgroups of students reported experiencing differences in safety and an orderly school climate if they were offered (ES range from $-.03$ to $.08$) or using an OSP scholarship.
- In addition to an overall impact on parental satisfaction with their child's school, the Program produced satisfaction impacts on 7 of the 10 subgroups analyzed. Effect sizes for the impact of an offer of a scholarship on the likelihood of a parent grading his/her child's school "A" or "B" for these seven subgroups ranged from $.16$ to $.41$. Adjustments for multiple comparisons indicated that none of these parent satisfaction subgroup impacts may have been a false discovery. The parents of students who had attended SINI schools, parents of students in the lower one-third of the test score distribution, and parents of high school students generally did not report higher levels of school satisfaction that were statistically significant as a result of the treatment (ES ranged from $-.03$ to $.13$).
- There were no statistically significant differences between the treatment group and the control group for all 10 subgroups in the likelihood that students gave their school a grade of A or B (ES ranged from $-.18$ to $.05$).

The Impact of the Program on Intermediate Outcomes

Understanding the mechanisms through which the OSP does or does not affect student outcomes requires examining the expectations, experiences, and educational environments made possible by Program participation. The analysis here estimates the impact of the Program on a set of "intermediate outcomes" that may be influenced by parents' choice of whether to use an OSP scholarship and where to use it, but are not end outcomes themselves. The method used to estimate the impacts on intermediate

outcomes is identical to that used to estimate impacts on the key Program outcomes, such as academic achievement.

Prior to data analysis, possible intermediate outcomes of the OSP were selected based on existing research and theory regarding scholarship programs and educational achievement. Because 24 intermediate outcome candidates were identified through this process, the variables were organized into four conceptual groups or clusters, as described below, to aid in the analysis.

There is no way to rigorously evaluate the linkages between the intermediate outcomes and achievement—students are not randomly assigned to the experience of various educational conditions and programs. That is why any findings from this element of the study do not suggest that we have learned what specific factors “caused” any observed test score impacts, only that certain factors emerge from the analysis as possible candidates for mediating influence because the Program affected students’ experience of these factors. The analyses are exploratory, and, given the number of factors analyzed, some of the statistically significant findings may be “false discoveries” (due to chance).

Overall, 3 years after applying to the Program, the offer of an Opportunity Scholarship appears to have had an impact on 8 of the 24 intermediate outcomes examined, 7 of which remained statistically significant after adjustments for multiple comparisons:

- ***Home Educational Supports.*** Of the four intermediate outcomes in this category, the offer of a scholarship had an impact on one of them. There was a significant negative impact on tutor usage outside of school (ES = -.14), and this impact remained statistically significant after adjustments for multiple comparisons. There were no statistically significant differences between the treatment and control groups on parents’ reports of their involvement in school in year 3 (ES = -.11), parents’ aspirations for how far in school their children would go (ES = .02), or time required for the student to get to school (odds ratio = 1.13).¹¹
- ***Student Motivation and Engagement.*** Of the six intermediate outcomes in this category, the offer of a scholarship may have had an impact on one of them. Based on student surveys, the offer of a scholarship seems to have had a significant negative impact on whether students read for fun (ES = -.16). Adjustments for multiple comparisons, however, indicate that this result could be a false discovery, so it should be interpreted with caution. There were no statistically significant differences between the treatment and control groups in their reported aspirations for future schooling (ES = -.14), engagement in extracurricular activities (ES = .04), and frequency of doing homework (ES = .08), or in their parents’ reports of student attendance (odds ratio = 1.11) or tardiness rates (odds ratio = 1.19).

¹¹ The effect size for this categorical variable is expressed as an odds ratio, which describes the extent to which being in the treatment group increases (if above 1.0) or decreases (if below 1.0) the likelihood of giving a higher-category response.

- ***Instructional Characteristics.*** The offer of a scholarship had a statistically significant impact on 5 of the 10 intermediate outcomes in this group of indicators. Students offered a scholarship experienced a lower likelihood that their school offered tutoring (ES = $-.38$), special programs for children who were English language learners (ES = $-.61$), or special programs for students with learning problems (ES = $-.36$) compared to control group students; these impacts remained statistically significant after adjustments for multiple comparisons. Students offered a scholarship experienced a higher likelihood that their school offered programs for advanced learners (ES = $.27$) and such enrichment programs as art, music, and foreign language (ES = $.23$); these two impact estimates also remained statistically significant after adjustments for multiple comparisons. There were no significant differences between the treatment and control groups in student/teacher ratio (ES = $.01$), how students rated their teacher's attitude (ES = $-.04$), the school's use of ability grouping (ES = $.02$), in-school tutor usage (ES = $.04$), or the availability of before- and after-school programs (ES = $-.11$).
- ***School Environment.*** The offer of a scholarship affected one of four measures of school environment. Students offered a scholarship experienced schools that were smaller by an average of 182 students (ES = $-.29$) than the schools attended by students in the control group; this impact remained statistically significant after adjustments for multiple comparisons. There were no statistically significant differences between the treatment and control groups, on average, in school reports of parent/school communication practices (ES = $-.06$), the percentage of minority students at the school (ES = $-.10$), or the classroom behavior of peers (ES = $.09$) based on student reports.

It is important to note that the findings regarding the impacts of the OSP reflect the particular Program elements that evolved from the law passed by Congress and the characteristics of students, families, and schools—public and private—that exist in the Nation's capital. The same program implemented in another city could yield different results, and a scholarship program in Washington, DC, with different design features than the OSP might also produce different outcomes.

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