

Summer Snapshot:

Exploring the Impact of Higher Achievement's Year-Round Out-of-School-Time Program on Summer Learning

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Executive Summary

Authored by Chelsea Farley

Far too many young people—including those with enormous drive and potential—fall through the cracks of the American education system every year. Children from poor neighborhoods rarely have access to the best schools, and as a group, they consistently perform worse than their more advantaged peers. A dearth of learning opportunities over the summer compounds the problem, as youth typically lose a month's worth of their school-year academic progress over the summer (Cooper et al. 1996). Research has shown that economically disadvantaged youth experience particularly big slides, and experts attribute a major portion of the achievement gap between privileged and disadvantaged children to this “summer learning loss” (Alexander et al. 2007).

Programs that augment school-day learning with long-term academic support and that carefully integrate school-year (i.e., after-school) and summer learning would seem to have great promise for stemming the summer learning loss and offsetting educational disparities. But few such programs exist. Even fewer explicitly focus on youth who are highly motivated but could fall behind without additional support—a group that is easily forgotten, since they are often performing adequately in school and don't appear to need “extra” help.

Higher Achievement is one such program. It targets rising fifth and sixth graders who have the motivation to succeed academically but lack the resources to foster that success. Higher Achievement provides youth with intensive, academically focused programming after school and during summer vacations throughout their middle school years—a time when many young people begin to falter academically (Crockett et al. 1989; Petersen, Crockett 1985). The program's goal is to help participating youth develop skills, behaviors and attitudes that will improve their academic performance and ultimately increase their acceptance into the competitive high schools that could launch them toward college and careers.

The Higher Achievement Program

Higher Achievement is a multiyear, intensive, academically focused out-of-school-time (OST) program located in Washington, DC; Alexandria and Richmond, VA; and Baltimore, MD. Through its After-School and Summer Academies, the program aims to help academically motivated but underserved middle school students improve their academic performance, with the ultimate goal of increasing their acceptance into—and scholarships to attend—competitive high schools.

Findings From the Summer Learning Study

This study is part of a larger random assignment impact study focused on five of the six Higher Achievement centers in DC and Alexandria. This “summer snapshot” assesses Higher Achievement's effect on youth's experiences and learning during the summer of 2010.

Our findings show that youth who were randomly assigned to participate in the program—i.e., the treatment group—fared better than their control group counterparts in several areas. Specifically:

- They had higher scores on standardized tests in the spring of 2010 (before the summer break).
- They were more likely to participate in academic programs and to engage in a wide range of academically focused summer activities, including those related to selecting and applying to high schools and pursuing careers.
- They had larger increases in their enjoyment of learning, and they were more likely to end the summer wanting to attend a competitive high school—which is notable, given Higher Achievement's ultimate goal of enrolling youth in such schools.

But:

- *Neither the treatment nor the control group exhibited the expected summer learning loss.* Indeed, there is no evidence that Higher Achievement affected youth's academic progress relative to similar peers over the course of this particular summer.

Youth in the Study

The youth in our study are reflective of Higher Achievement's target population:

- At the start of the study, they were performing fairly well in school, but 39 percent scored below the national average on standardized tests, suggesting they could benefit from additional support.
- They are largely African American and Latino youth, from low-income families.
- They started the study in fifth or sixth grade, and were entering seventh or eighth grade at the time of our summer snapshot.

As part of a larger, ongoing evaluation of Higher Achievement's impact, P/PV and Leigh Linden, a professor at the University of Texas at Austin, launched a smaller study to assess the program's effect on summer learning. Commissioned by The Wallace Foundation, the Summer Learning Study focuses specifically on the summer of 2010 and draws on data from a number of sources.¹ It examines whether access to Higher Achievement's school-year and summer programming increased youth's involvement in positive activities, and whether it indeed stemmed the summer learning loss that other studies have identified, focusing specifically on the summer of 2010.

The Results and Their Implications

The youth recruited for Higher Achievement—both treatments and controls—are a highly motivated group; at the start of the study, they were generally performing well in school and had families who had the motivation to complete an intensive application process.² Many youth in the control group took advantage of academically focused programs and activities during the summer of 2010, though at much lower rates than did treatment youth. It seems that even without the chance to attend Higher Achievement, these families sought out enriching summer experiences. Neither treatment nor control group youth experienced the dearth of summer opportunities faced by many other youth in economically deprived communities.

Given this reality, it is not entirely surprising that Higher Achievement had no measurable relative impact on summer learning; youth in the treatment and control groups made similar progress over the course of the summer. But the program produced other important benefits for participants—namely, increased involvement in positive summer programs and activities; increased aspiration to enroll in competitive high schools; and even before the summer, higher test scores at the end of the prior school year (see the text box on the previous page). These findings suggest a number of key lessons for school district officials and public and private funders of education initiatives:

1. **Keeping middle school youth engaged in additional instructional time during the out-of-school hours is challenging, but this study indicates that it can be done.** More than half of the youth in the treatment group were still attending Higher Achievement in Summer 2010, *two to three years* after their original enrollment. And youth who attended did so fairly intensively. In addition, there was a rather seamless “bridge” between the spring and summer programs: 73 percent of the youth who attended Higher Achievement in the spring continued to participate in the summer; and almost all youth (97 percent) who attended in the summer had also participated in the spring. As youth progress through middle school, they are at increased risk of falling behind academically, getting involved in dangerous behaviors, and ultimately failing to successfully transition to high school. Ironically, this is also a time when youth become difficult to engage in positive activities. A program that does so successfully, and that *keeps* them involved over time, is noteworthy.
2. **Indeed, a range of positive supports in communities may help keep middle school youth engaged during the summer months and help stem the summer learning loss.** The fact that there was no summer learning loss for either group of youth suggests that the myriad of supports they have been receiving—both before and during the summer—may be important for sustaining gains made in the previous school year. The youth in this study had families who were clearly resourceful at making the most of what their communities have to offer. While Higher Achievement pushed

a greater proportion of youth to get involved in summer programming and activities, control youth also engaged in these activities.

3. **For financially strapped school districts that seek to motivate their students to aim for college or competitive high schools, programs like Higher Achievement may help fill a gap in opportunities available to low-income students.** The activities Higher Achievement offers—such as high school visits and career-oriented activities—can supplement what youth have access to at school, offering enriching academic activities after school and over the summer that can help put them on a path toward higher educational attainment.
4. **Higher Achievement is a very comprehensive, long-term investment in children's lives, and any findings from this study should be considered within that context.** This program is not a drop-in OST program. It provides youth with academic instruction and enrichment activities for 650 hours a year, over three to four years of their lives. Staff and mentors are well trained and supported. The curriculum is integrated with the school-day curriculum, and it is reviewed and updated regularly. Parent involvement is also a key component of the program. A look at the benefits that accrued during one summer period, two or three years in, provides insight about the program's effects but certainly not a comprehensive assessment of its value.
5. **The benefits of this type of long-term investment may show up more strongly when measured in high school and beyond; therefore, long-term evaluations—like the one being conducted on Higher Achievement—are important.** One of Higher Achievement's potential strengths is its *long-term* combination of school-year and summer programming, but the data gathered for this study focus on one brief time period, two or three years after youth first enrolled. Additional reports will explore in more detail the annual effects of Higher Achievement, as well as its longer-term impact as youth go through the high school application process and begin their freshman year. Understanding these more enduring effects will be crucial in determining the true impact of this long-term, intensive program.

It should also be noted that, *with this study design, we could not test the effects of the Summer Academy in isolation from the rest of the year-round program.* The benefits we observed resulted from youth's access to Higher Achievement as a whole—a *combination* of summer and school-year programming—over the previous two to three years. We do not know exactly which components contributed to the positive outcomes we identified. We also don't know if the program affected learning loss during any other summer—for example, during youth's first summer of participation. More research is needed to precisely discern both the effects and role of the summer component within the broader program.

Final Thoughts

Higher Achievement's impact on summer experiences is clear: Youth in the treatment group participated in far more summer learning opportunities than members of the control group. However, we did not see a comparable impact on youth's academic progress over the summer. In fact, both treatments and controls avoided experiencing the summer learning loss that other studies have documented. As such, it might be tempting to conclude that the summer component of Higher Achievement is not needed; however, the findings from this study do not support that conclusion. To the contrary, our results indicate that Higher Achievement (with its school-year and summer programming) is boosting children's standardized test scores, increasing their involvement in positive summer activities and raising their aspiration to enroll in competitive high schools. Whether this type of investment is ultimately worthwhile will only become clear as we continue to follow these young people into high school.

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Executive Summary Endnotes

1. These included: surveys of parents and youth measuring attitudes, behavior, summer program participation, and demographic and background information; standardized tests to assess youth’s performance in reading comprehension and problem-solving; and interviews and surveys of Higher Achievement program staff and teachers to collect information about the program’s implementation.
2. To enroll in the program, youth must complete an application, attend an interview both alone and with their parents, and be deemed “academically motivated” by Higher Achievement staff. Parents must bring application materials to the interview and are required to attend a “new family induction” and orientation if their children are accepted. More than 95 percent of youth who complete the application and participate in the interviews are allowed to join the program, but about 20 percent of recruited families do not follow through on all of these steps. Higher Achievement believes that completing these steps, in itself, is a strong indication of how motivated both the student and his/her family are.

Introduction

All American children, regardless of economic background, have access to our public school system—a system that is meant to serve as a crucial bridge to post-secondary education and the future careers it can foster. But these schools vary widely in quality. Children from poor neighborhoods often do not have access to good schools, and as a group they consistently perform worse in school than their more advantaged peers. Even highly motivated youth with great potential can fall through the cracks, fall behind in school and ultimately become mired in multigenerational cycles of poverty.

The dearth of learning opportunities over the summer compounds this problem and the income disparities it creates.

Youth typically lose a month's worth of their school-year academic progress over the summer (Cooper et al. 1996). Research suggests that economically disadvantaged youth experience particularly big slides because, in the summer, learning is dependent on home and community resources, which are often lacking for poor children. Cooper et al. estimate that, on average, summer vacations create a gap of about three months' progress between middle- and lower-income students (1996). Alexander et al., in fact, attribute most of the achievement gap between privileged and disadvantaged children to the "summer learning loss" (2007).

Funders and policymakers have begun to take notice of out-of-school-time (OST) programs as a way to increase access to academic supports and opportunities that could offset these educational disparities. In fact, research has documented that involvement in enriching summer programs and activities can help stem the summer learning loss. For example, Terzian and Moore's synthesis of 11 rigorously evaluated summer learning programs

found that most of these programs had positive impacts on both math and reading achievement (2009). Findings from evaluations of summer school reach similar conclusions regarding the importance of involvement in academic activities over the summer (Cooper et al. 2000). In addition, numerous studies of school-year OST programs have established links between well-implemented programming and academic benefits for participants involved over an extended period of time (Gardner et al. 2009).

OST programs that provide youth with long-term (multiyear) academic support and that carefully integrate both school-year (i.e., after-school) and summer learning opportunities would appear to be particularly promising, as they extend the amount of time youth devote to learning and other positive activities across the entire year. Very few of these programs exist.¹ Even fewer explicitly focus on youth who

are highly motivated but could fall behind without additional support—a group that is easily forgotten, since they are often performing adequately in school and don't appear to need "extra" help.

Understanding whether—and how—such programs benefit youth is of vital importance to school districts, program staff, funders and policymakers around the country. Do these programs support youth's involvement in enriching summer activities, and do they ultimately stem the summer learning loss and other precursors of educational failure? Answers to these questions can inform larger efforts to improve educational opportunities and achievement among low-income youth.

Higher Achievement is a very specialized, long-term, academically focused program that provides an optimal setting for examining the potential of intensive year-round out-of-school-time programming.

The Higher Achievement Evaluation

Higher Achievement is a very specialized, long-term, academically focused program that provides an optimal setting for examining the potential of intensive year-round OST programming. Higher Achievement began in its current form in 1999 in

Washington, DC.² The program targets a specific group of youth: rising fifth and sixth graders who have the motivation to succeed academically but lack the resources that could support that success. It serves these youth throughout the middle school years—a time when many young people begin to falter academically (Crockett et al. 1989; Petersen, Crockett 1985). The program’s goal is to help youth develop skills, behaviors and attitudes that will improve their academic performance and ultimately increase their acceptance into competitive high schools that could launch them toward college and careers.

In 2006, in collaboration with Dr. Leigh Linden, a professor at the University of Texas at Austin,³ P/PV began a comprehensive multiyear evaluation of Higher Achievement to test its impact on participants’ academic performance, attitudes and behaviors and on their enrollment in competitive high schools. This evaluation uses random assignment—the most rigorous evaluation design available to researchers—and includes 951 students, recruited for the program in 2006, 2007 and 2008 as they were entering fifth or sixth grade.

Youth who met Higher Achievement’s admissions criteria completed a standardized test and were surveyed (as were their parents) when they joined the study. Each student was then randomly assigned to one of two groups: a control group that would not be able to participate in Higher Achievement and a treatment group that would be offered the opportunity to participate in the program.⁴ The design of the study will allow us to conclude that any differences observed between the treatment and control groups (at later testings) are a direct result of the Higher Achievement program. Results from the first two years of the study can be found in *Testing the Impact of Higher Achievement’s Year-Round Out-of-School-Time Program on Academic Outcomes*. (Please see Appendix A for a more detailed discussion of our design and methodology.)

The Higher Achievement Summer Learning Study

In 2010, recognizing that Higher Achievement offered the type of intensive school-year and summer programming that might encourage young people to stay engaged in constructive summer activities, The Wallace Foundation commissioned

a study within the larger evaluation to test Higher Achievement’s impact on summer learning. While other reports on the larger evaluation will examine Higher Achievement’s overall impact, this report focuses on one time period—the summer of 2010. The goal is to isolate the program’s effect on youth’s involvement in positive summer experiences and to assess the program’s ability to mitigate the expected summer learning loss.

Other studies of OST programs have found that benefits typically accrue only after youth have participated in programs for a year or more (Walker, Arbretton 2001). Thus, gathering data about this particular summer—two to three years after youth in our study had enrolled in Higher Achievement—allowed sufficient time for the program to have a reasonable chance of impacting participants. The study represents one of only a handful of rigorous assessments of intensive long-term OST programs and their effects on the summer learning loss.

The Summer Learning Study addresses the following broad questions:

1. **What is the Higher Achievement program and who are the youth it recruits? What practices make the program likely to achieve benefits, and what challenges are associated with its implementation?** Higher Achievement is an intensive, multicomponent program, targeting a very specific group of motivated youth. The findings from the study are best understood in this context. Information about the strengths and implementation challenges of Higher Achievement highlights the major undertaking that such a program involves and what might be necessary to achieve its goals.
2. **What impact does Higher Achievement have on youth’s involvement in positive activities during the summer?** The answer to this question lays the groundwork for understanding whether and how Higher Achievement affects changes in academic performance over the summer. It also illuminates one mechanism by which Higher Achievement might influence longer-term program outcomes.
3. **What impact does Higher Achievement have on changes in youth’s attitudes, performance and behaviors over the course of the summer? Are the effects similar across key subgroups of youth?** Addressing these questions determines the

degree to which Higher Achievement prevents or ameliorates the summer learning loss two to three years after youth enrolled in the program.

Data Collection

To address these questions, the study follows 423 students in the larger evaluation who enrolled in 2007 or 2008 (i.e., treatment youth who were still eligible for program participation in Summer 2010 and their same-age peers in the control group).⁵ It focuses on the summer when these youth were poised to enter either seventh or eighth grade and relies on data from the following sources:

- Surveys administered to parents and youth when youth were recruited for the study and again in Spring and Fall 2010. The surveys measure attitudes, behavior, summer program participation, and demographic and background information.
- Standardized tests administered to assess youth's performance in reading comprehension and problem-solving.⁶
- Observations, interviews and surveys of Higher Achievement program staff and teachers collected in the summer of 2009, which provide information on staff training, the program's curriculum, program culture, staffing and other implementation issues.

The Findings

When they were recruited for Higher Achievement, the students—those in both the treatment and control groups—were getting good grades in school and were highly motivated, all with families who were willing to enroll their children in an intensive year-round academic OST program. Although the students were motivated, their standardized test scores indicated that they had considerable room for improvement and could benefit from additional academic support. This is precisely the group that Higher Achievement targets and whom the program is designed to serve.

Higher Achievement's intensive summer and school-year program had a significant impact on youth's Spring 2010 standardized test scores. Youth who had been randomly assigned to participate in Higher Achievement started the summer having

already made significant gains in standardized test scores relative to the control group over the previous two to three years.

Higher Achievement also affected youth's involvement in positive activities during the summer of 2010:

- Treatment youth were much more likely to participate in academic programs: About three quarters of youth in the treatment group attended some type of summer academic program (compared with about a third of controls).
- Treatment youth were also more likely to engage in a wide range of academic activities, including those related to selecting and applying to high schools and pursuing a career—the types of activities that prior research has suggested contribute to more positive outcomes over time.

Higher Achievement had a significant impact on two important outcomes during the summer:

- Relative to youth in the control group, treatment youth increased their ratings of the extent to which they enjoyed learning; and
- Treatment youth were more likely to end the summer with the desire to attend a competitive high school—an important outcome, given Higher Achievement's ultimate goal of enrolling youth in such schools.

Higher Achievement did not, however, affect changes in youth's academic performance over the course of the summer. In fact, neither the treatment nor the control group exhibited the summer learning loss typically experienced by youth in resource-poor communities. This pattern was fairly consistent for all youth, regardless of gender, geographical area of enrollment, family income or academic standing when they first applied to the program, suggesting that the program is working similarly with these various groups of youth.

These findings speak to the existing strengths of youth accepted into Higher Achievement—both treatments and controls found ways to maintain or even advance their learning over the summer—as well as to benefits the program is producing for an already motivated group of young people. The impacts seen on standardized test scores at the

start of the summer and on youth's engagement in constructive summer activities both provide evidence that Higher Achievement is making a difference for participants. In addition, the fact that Higher Achievement is linked to a positive change in youth's desire to attend competitive high schools, and to their involvement in more activities related to selecting these high schools, suggests that the program has the potential to affect youth's future educational choices. The larger evaluation will demonstrate whether these early changes—captured in a very brief snapshot of a much longer-term program—actually yield important benefits over time.

The Structure of the Report

In the next chapter, we describe the Higher Achievement program and its participants. In Chapter Three, we examine Higher Achievement's impact on youth's involvement in positive summer activities. In Chapter Four, we evaluate the impacts of Higher Achievement on youth's attitudes, behavior and achievement, both for the sample as a whole and for key subgroups. Conclusions and policy implications are presented in Chapter Five.

The Higher Achievement Program and Its Participants

Chapter II



Out-of-school-time programs range broadly in the students they serve and the opportunities and experiences they provide. Some open their doors to everyone, allow youth to drop in and out of programming, and provide youth with a wide variety of activities, while others are more targeted, focusing on very specific goals and limiting their services to youth who meet particular criteria. Higher Achievement targets a specific group of youth—those highly motivated and not seriously struggling at school, but who have the potential to fall through the cracks—and provides them with a long-term (up to four years) structured academic experience to help achieve the program's focused academic goals.

Past evaluations of large-scale OST programs that provide only limited academic support (e.g., homework help) have generally not found academic benefits (for a review, see Granger, Kane 2004). Yet more recent reviews of OST programs that offer high-quality instructional time combined with other strong program features have reflected more positive results (see Gardner et al. 2009 for a review). Durlak et al.'s meta-analysis of 73 school-year⁷ OST programs found that *only* those that used sequenced, active, focused and explicit approaches to foster youth skills⁸ produced changes in the outcomes discussed in the report, including academic performance (2010).

Similarly, the summer programs that have achieved academic benefits are characterized by a common set of key features. They are typically guided by grade-level curricular standards, are led by experienced teachers, have small class sizes and complement group learning with individual support (Terzian, Moore 2009; Cooper et al. 2000). Other characteristics of effective summer programs include the incorporation of substantial academic components aimed at teaching math and reading, coordination between summer and school-year experiences, and requirements for parental involvement (Cooper et al. 2000).

In this chapter, we describe the Higher Achievement program, drawing on data from center observations, interviews with program staff and surveys administered to teachers, with an eye toward the qualities past research has established as important for achieving academic impacts. We also describe the participants in the study, using surveys of participating parents and youth completed when they were recruited to be part of the program. We address two broad sets of questions:

- What is the Higher Achievement program? What program practices and characteristics make the program likely to produce academic impacts? And what challenges does the program face in implementing these practices?
- Who are the youth who applied for the program and how are they selected to participate?

Addressing these questions provides an important context for understanding any impacts that the program may have and for whom they may be relevant.

What Is Higher Achievement?

The Higher Achievement program, based in Washington, DC, is a multiyear, intensive, academically oriented after-school and summer program that is free to participants. This study focuses on five of the six Higher Achievement centers located in DC and Alexandria.⁹ Each center serves about 85 students.

The program recruits about 80 percent of its participants via referrals and recommendations made by youth's school-day teachers; 15 percent come from youth's self-referrals; and the remaining 5 percent come from family referrals. Its stated mission at the time the study was conducted was to develop behaviors, skills and attitudes in academically motivated but underserved middle school youth to improve their grades, standardized test scores and school attendance, with the ultimate goal of increasing their acceptance into—and scholarships to attend—private, parochial and public magnet high schools. This goal permeates the program's two main components: the After-School Academy that is available to youth during the school year and the Summer Academy that runs during the summer months.

The After-School Academy

During the school year, Higher Achievement's After-School Academy is offered three days a week, from 3:30 p.m. to 8:00 p.m. The program runs for 25 weeks, and each daily session includes homework help (with part-time paid staff and volunteers assisting), dinner, an arts or recreation elective, a 25-minute "community gathering" (which includes all staff, volunteers and youth) and 75 minutes of small-group academic instruction using a structured curriculum. The small groups are led by volunteer mentors—with one day a week focused on math, one on literature and one on a seminar that may include such topics as robotics, creative writing, conflict resolution or technology. The Higher Achievement curriculum that guides these mentoring groups is designed to follow skill standards set by the DC and Virginia public school systems and to reflect common core state standards that are being developed and adopted across the country; it is framed around four social justice themes (freedom, justice, solidarity and voice). The After-School Academy also offers Higher Achievement participants—known as "scholars"—the opportunity to take part in monthly field trips, career shadowing days and community service projects.

As students approach high school, the After-School Academy increases its focus on this important transition. For example, at the end of the seventh grade, staff hold a "family night" that includes a group discussion with parents about high school applications. In the fall of the eighth grade, one mentoring session each week is devoted to high school applications. The manager of school placement from the DC Metro Office also makes biweekly visits to each center to answer individual scholars' questions and help with the application process.

Higher Achievement Practices and Implementation Challenges

Evidence from interviews and surveys supports the idea that both the school-year and summer programs exhibit many of the practices and characteristics that recent studies have shown to be the foundation of effective programs. Yet, despite the strong structure and design of the program, we observed some challenges in its on-the-ground implementation. In this section, we present both the strengths and challenges we documented.

1. The program's structure is intensive and long-term. Participants typically enter the program the summer before fifth or sixth grade—as they begin the vital transition to middle school. Youth are required—and commit—to stay in the program through the eighth grade (i.e., three to four years). Once in the program, participants must adhere to the structure of classes and activities offered. Higher Achievement staff discuss the program's long-term commitment with parents and youth at several stages during the application process. The program has a firm attendance policy, and staff use data from the management information system (MIS) to enforce the policy. Youth who are absent close to 25 percent of the program's required days are sent a written notice. When they reach the 25-percent threshold, they can no longer attend the program through the end of the semester. If they want to return the following semester, they must attend a conference with their family and the center director to show that they are committed to participating through the eighth grade.

Challenges: Like many youth programs, Higher Achievement has to work hard to retain its participants and keep them engaged—especially as they make their way through middle school. Although younger participants were generally highly engaged during our observations, it required more effort to sustain the interest and engagement of older youth and prevent misbehavior. In fact, as we discuss in Chapter Three, only a little more than half of surveyed treatment youth were still attending Higher Achievement in Summer 2010, two to three years after their enrollment. This retention rate is fairly strong for a long-term OST program. However, it reflects the fact that sustaining youth engagement over time during the middle school years is very challenging even for exemplary programs.

2. The program is guided by grade-level curricular standards noted by researchers as important for yielding academic benefits. Summer teachers and school-year mentors use a structured academic curriculum based on standards set within the DC and Virginia public school systems—one that is designed for youth's specific age group and that progresses developmentally as youth age. The content of other program components—for example, the provision of support around high

The Summer Academy

During the summer, Higher Achievement's six-week Summer Academy operates from 8:00 a.m. to 4:00 p.m. five days a week. The goal of the Summer Academy is to expose youth to the academic concepts they will cover in the coming school year. Some time is also devoted to reviewing concepts from the previous school year and, generally, continuing to practice core academic skills. Summer interns—high school students who are program alumni—serve as program assistants and potential role models for scholars (in 2010, all interns were attending competitive high schools).

Summer Academy participants attend four classes a day taught by paid teachers in math, science, social studies and literature. Teachers use a curriculum that, like the school-year curriculum, is aligned with the DC and Virginia public school standards and assessment instruments. Each lesson includes a concept check at the end to reinforce learning. Volunteers (often mentors from the After-School Academy) are available to provide one-on-one tutoring in core subjects as needed, though only two or three scholars in each center receive this additional help every summer. Students can also take two electives, such as sculpture, chess or martial arts. In addition, youth take weekly field trips, engage in academic competitions throughout the summer and participate in a three-day out-of-town university trip.

Like the After-School Academy, the Summer Academy increases its focus on the transition to high school as youth progress to the eighth grade. For example, eighth graders spend two days visiting two competitive high schools and engaging in guided discussions about these schools. Staff also meet individually with all eighth grade parents to review their child's grades, answer questions and make recommendations about which high schools they might consider applying to.

school applications—is also geared toward specific age groups. This structured progression of instruction from elementary to middle school is a key marker of quality for programs that strive to achieve academic impacts.

Challenges: Keeping the curriculum engaging and interesting was a struggle for some teachers. Almost three fifths (59 percent) of summer teachers felt the lessons were not very engaging, and the same proportion felt there were some inconsistencies in lesson level—with some lessons being too easy and some too difficult. Moreover,

about half (51 percent) reported that maintaining youth's interest was one of their greatest challenges.

Yet, Higher Achievement staff seem to be aware of these issues and regularly seek to improve the curriculum. For example, during the school year, mentors are asked to complete weekly feedback forms. This feedback is used to improve individual lessons, and also helps drive larger-scale improvements (two major revisions of the curriculum have occurred over the course of the study).

3. Higher Achievement staff are well trained and supported. Each center is supported, year-round, by a full-time center director and assistant center director, as well as the DC Metro Office and the National Office. New center staff receive extensive training and support from the DC Metro and National Offices, including a range of job-specific trainings that span 90 days. This intensive period includes a standardized two-day orientation at the National Office, three full days of center observations and trainings before working at a center, and the use of a work plan and additional training sessions throughout the introductory 90-day period, with an evaluation at the end of the period. All centers are observed at least twice a month by staff from the DC and National Offices.

Teachers delivering the curriculum in the summer program are also well trained and supported. Although only 18 percent are full-time certified teachers outside of Higher Achievement during the school year, the program provides training for all who join. Almost all 2009 teachers (95 percent of those surveyed) reported attending a seven-day orientation and training prior to teaching; 94 percent reported getting feedback on teaching techniques from center staff at least once a week; and 89 percent reported having their class observed over the summer for individualized feedback.

4. The program strives to involve parents. For example, Higher Achievement provides both students and their parents with high school placement services to help them identify and pursue top high schools. Almost half of participating parents (47 percent) reported talking with Higher Achievement staff about their child's progress at least once a week during Summer 2010, and almost a quarter (24 percent)¹⁰ reported getting help with high school applications.¹¹

5. Higher Achievement focuses on small-group instruction and provides youth with substantial individual attention and help. Class sizes in the Summer Academy are fairly small, with an average of 13 youth assigned to each class,¹² and teachers provide scholars with a significant amount of individualized attention: About two fifths (39 percent) reported spending “a lot” or “most” of their time in class providing youth with one-on-one help.

6. Youth are offered opportunities to assume leadership roles—an important ingredient in positive youth development.

For example, youth can serve as “center ambassadors” (elected by youth and staff through a campaign and debate contest). Each ambassador represents his or her center throughout the year, gathering and sharing youth concerns with staff, guiding visitors on tours and emceeding program events. Ambassadors and the ambassador finalists also serve on a scholar advisory council that meets with Higher Achievement’s executive director every quarter to discuss organizational strategy and program implementation. Every week, a “scholar of the week” is selected in recognition of exhibiting Higher Achievement culture (discussed below). Scholars also lead the community gathering at the end of the day in which all youth, volunteers and staff meet to discuss the day’s events and social justice concepts.

Other opportunities vary across centers. For example, at least one center has created a student council to improve center activities. The same center also created a student judiciary to determine how youth should be disciplined for misbehavior.

Challenges: Although the program offers many opportunities for leadership experiences, some centers appear to create more of these opportunities than others (an “unevenness” that we also noted in other program practices and that we describe more below). In addition, it was not clear that all, or even most, youth took advantage of the leadership opportunities that were available.

7. The program emphasizes building a culture that values hard work and academic success. The program staff we interviewed reported that they use intentional strategies to build a positive academic culture that is both challenging and rewarding. The culture is reinforced in a variety of ways, including morning games; center-specific cheers; posters and bulletin boards that list rules, expectations and general philosophies; and the social justice curriculum itself. The instructional environment also encourages youth to express themselves articulately and respectfully. Staff report that they hold youth to very high academic and behavioral standards.

Students receive “achievements” (rewards, such as books or games) and “shout-outs” from staff and other youth at daily community meetings for exemplifying Higher Achievement culture.

Challenges: During our program observations, it

was sometimes difficult to pinpoint times when youth exhibited Higher Achievement culture in their behavior. We saw many examples of *staff* reflecting the culture in their everyday interactions with youth and even in their own staff meetings, but fewer instances when *youth* exemplified the culture in their actions. Teachers’ responses to questions about their understanding of the culture reflect this observation: Whereas 89 percent of teachers felt that *they* understood the aims of Higher Achievement culture “a great deal,” only 54 percent felt their students understood the aims of the culture to a similar degree.

More broadly, we observed that several program practices and characteristics varied from center to center. Each Higher Achievement center is unique, with distinct youth and instructional approaches that reflect, in large part, the leadership styles of center staff. This can be both a strength and a challenge. On the one hand, each center has the freedom to tailor itself to meet the needs of its youth and utilize the strengths of its staff; on the other hand, there did not appear to be a clear and consistent mechanism for transferring successful strategies used by individual centers to other centers. In

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fact, only 19 percent of teachers reported that they had ever visited another center. To address this challenge, program staff have recently implemented more structured efforts to share best practices across centers, including expectations that all center staff must observe other center operations and be observed by other center staff regularly.

Overall, this evidence suggests that while some challenges exist, Higher Achievement's approach exhibits many practices that form the foundation of effective school-year and summer OST programs. These practices have strong potential to help improve academic performance and stem the learning loss youth typically experience over the summer. And, as noted, Higher Achievement continues to make significant strides in addressing the implementation challenges it faces, including the variation that exists across centers.

In the next section, we describe Higher Achievement's participants and how they apply for the program. As will become apparent, this carefully targeted program focuses its efforts on a very specific group of disadvantaged youth with motivation levels that "fit" with the program's goals and structure.

Whom Does Higher Achievement Serve?

Higher Achievement recruits rising fifth and sixth graders without regard to their current academic performance.¹³ While the program targets neither very high nor very low performers, it tends to attract a high proportion of youth who are doing fairly well in school.

One of the ways the program ensures that it draws in highly motivated students is by requiring interested families to undertake a rigorous enrollment process. To enroll in the program, youth must complete an application, attend an interview both alone and with their parents, and be deemed "academically motivated" by Higher Achievement staff—that is, staff determine that the student fully understands the requirements of the program and is excited by the opportunity. Parents must bring application materials to the interview and are required to attend a "new family induction" and orientation if their children

are accepted. Almost all youth (more than 95 percent) who complete the application and participate in the interviews are allowed to participate in the program, but about 20 percent of recruited families do not follow through on all of these steps. Higher Achievement believes that completing these steps, in itself, is a strong indicator of how motivated both the student and his/her family are.

Parents who applied to the program and whose children were ultimately enrolled in this study (both the treatment group and the control group) were looking for a program that could help their child succeed academically. When they applied, three quarters (74 percent) of the parents reported that they applied because they wanted their child to perform better in school,¹⁴ and close to two thirds (65 percent) applied because they wanted to get their child into a good high school. Almost a third said they wanted to get homework help for their child (30 percent).

Youth Demographics

The profile of the Higher Achievement recruits when they applied for admission indicates that the program is successfully reaching a group of students who are motivated academically yet face significant economic and resource barriers as they move through middle school and into high school.

Table 1 on the next page displays the demographic profile of the 423 students in the Summer Learning Study, of whom 208 are in the treatment group and 215 are in the control group.¹⁵ At the start of the larger evaluation, youth in the treatment and control groups were comparable across a broad range of demographic, behavioral and socioemotional characteristics. However, the treatment and control youth participating in the Summer Learning Study did differ slightly, as shown in Table 1 (see Appendix B for a more detailed discussion of our attrition analyses). Generally, relative to youth in the control group, treatment youth were more likely to come from households reporting incomes between \$26,000 and \$50,000 and less likely to come from households reporting incomes over \$75,000.¹⁶

Table 1
Youth Demographics at Baseline

	Control Percentage (n=215)	Treatment Percentage (n=208)	Treatment-Control Difference (n=423)
Age and Gender			
Age	9.73	9.85	0.12
Female	60%	64%	4%
Grade 4 ^a	73%	70%	-3%
Grade 5	27%	30%	3%
Ethnicity			
African American	75%	75%	0%
Asian	3%	3%	0%
Caucasian	0%	1%	1%
Latino/Hispanic	14%	10%	-4%
Multiracial	2%	5%	3%
Other	4%	3%	-1%
Household Composition			
Single-Adult Household	20%	26%	6%
Household Income and Free/Reduced-Price-Lunch Status			
Income Below \$25,000	26%	21%	-5%
\$26,000–\$50,000	25%	36%	11%**
\$51,000–\$75,000	12%	16%	4%
Income Over \$75,000	13%	8%	-5%*
Did Not Respond	25%	20%	-5%
Receives Free/Reduced-Price Lunch	66%	63%	-3%
Primary Language Spoken at Home			
Language Other Than English	17%	16%	-1%

Note: The first column in this table is the percentage of (or average for) those youth assigned to the control group when they applied to the program in 2007 or 2008. The second column is the “calculated” average for the treatment group (i.e., the sum of the first and third columns). The third column is the statistically estimated difference between the treatment and control groups, holding constant the cohort in which each youth was recruited for the study (i.e., Cohort 2 recruited in 2007 or Cohort 3 recruited in 2008).

^a This sample is heavily weighted toward younger youth because those youth in Cohort 2 who applied as fifth graders were not eligible to participate in the program during the Summer Learning Study period (Summer 2010).

*p < .10

**p < .05

Academic Performance and Attitudes

The youth recruited into Higher Achievement reflect the program's target population: They are performing fairly well in school, based on teacher-assigned self-reported grades, but their scores on standardized tests¹⁷ at the time they applied indicated that they could benefit from additional academic support. Furthermore, their responses to our survey questions suggested that they were, indeed, a highly motivated group (see Table 2 on the next page):

- Half reported earning mostly As and Bs in school, and 14 percent reported earning mostly As.
- Their attitudes toward school suggest that on average they felt fairly confident in their academic abilities; showed fairly high levels of creativity, curiosity, and industry and persistence (i.e., the tendency to work hard and get things done); and enjoyed learning. For example, on average they reported that statements such as "I love to learn new things" were between "sort of true" and "very true" for them. They also believed in their ability to change the future through their own efforts.
- Thirty-seven percent had received one-on-one tutoring in the previous year.

In contrast to their reported school grades and the other positive motivational indicators, their scores on standardized tests indicated they had much to gain from an intensive academic OST program. When they applied to the program, 39 percent of youth scored below the national average in reading comprehension and problem-solving. In sum, these are youth who are performing well enough based on their school grade-point average to stay off the radar for many educational interventions, but who could benefit from the boost that a program like Higher Achievement is designed to provide.

Risk Factors

Higher Achievement recruits youth at a very vulnerable time in their development—when they are transitioning to middle school and through the middle school years. This period can be difficult even for strong students (Eccles, Midgley 1989; Seidman et al. 1994; Blyth et al. 1983). Moreover, the vast majority of the program's recruits are ethnic minorities (see Table 1)—a group that may be especially vulnerable to setbacks during this transition (see Gutman, Midgley 2000).

Higher Achievement is reaching a group of students who are motivated academically yet face significant economic and resource barriers as they move through middle school and into high school.

Most recruited youth also face economic barriers that have been associated with reduced access to enriching summer activities and a troubling summer learning loss. Most come from low-income families: Almost a quarter have annual household incomes lower than \$25,000, and another quarter are from single-parent

homes. About 17 percent speak a primary language other than English in their home.

Youth also reported being exposed to significant stressors in the year prior to applying. About a third (33 percent) had moved in the prior year, and another third reported that they had been bullied. More than half (55 percent) reported that their parent or guardian had started working, and a similar proportion (53 percent) reported that someone they were close to had died. Youth reported experiencing an average of about five (4.48) of these types of stressors in the year prior to the baseline survey.

In addition, when completing the baseline survey, a sizable minority of youth had recently (i.e., in the last three months) engaged in misbehavior in and outside of school. For example, about two fifths (42 percent) reported that they had either stolen something, hit someone or broken something on purpose. And a third (33 percent) reported that they had been sent to the principal's office or had to have their parents come to school about a problem. Nineteen percent of youth also reported that their friends were not particularly academically motivated.

Table 2
Youth Performance, Attitudes and Behaviors at Baseline

	Overall Average (n=423)	Percentage At Risk (n=423)
Academic Performance in School^a (0.5 to 4.0 Scale; At Risk: < C Average)		
Self-Reported Grades	3.23	5%
Test Scores (Normal Curve Equivalent: 0–99; At Risk: < National Average for Grade Level)		
Reading Comprehension	52.70	39%
Problem-Solving	54.30	39%
Academic Attitudes^b (1 to 4 Scales; At Risk: < 2.45—i.e., on Average, Responded “Not Very True” or “Not at All True”)		
Industry and Persistence	3.39	4%
Creativity	3.32	6%
Self-Perceptions of Academic Abilities	3.27	6%
Enjoyment of Learning	3.46	4%
Curiosity	3.17	7%
Ability to Change Future Through Effort	3.46	3%
External Support		
Adult Support (1 to 6 Scale; At Risk: < 1 Supportive Adult)	3.74	2%
Academically Supportive Friends (1 to 4 Scale; At Risk: < 2.45—i.e., on Average, Responded “Not Very True” or “Not at All True”)	3.17	19%
One-on-One Tutoring (At Risk: Did Not Receive)	37%	63%
Misconduct (At Risk: Engaged in Behavior in the Last Three Months)		
School-Related Misconduct	33%	33%
Out-of-School Misconduct	42%	42%
Skipped School Without Permission	3%	3%

Note: The first column in this table is the percentage of (or average for) all youth involved in the Summer Learning Study when they applied to the program in 2007 or 2008. The second column is the percentage of youth who meet our threshold for risk (defined in parentheses for each measure listed).

^a The scale through which academic performance in school is measured is: 0.5 = Ds, Es and Fs; 1 = Ds; 1.5 = Cs and Ds; 2 = Cs; 2.5 = Bs and Cs; 3 = Bs; 3.5 = As and Bs; and 4 = As.

^b School liking is not included in this table because we did not ask this set of questions at baseline.

Despite these risk factors, very few youth scored low on the attitudinal scales we assessed. Only 3 percent had ever skipped school without permission. And only 2 percent reported that they did not have at least one supportive adult (outside of their relatives) whom they could, for example, talk to about personal problems or go to if they were having trouble in school.

Summary

As this chapter has described, Higher Achievement provides a strong setting for testing an intensive year-round, long-term OST program's ability to increase youth's involvement in positive summer activities and decrease the summer learning loss. Offering academic enrichment over several school years and summers, the program targets a group of disadvantaged youth during a period (middle school) when many experience declines in their academic progress (Blyth et al. 1983). Like all youth-serving programs, Higher Achievement is not without implementation challenges. However, its design incorporates many of the components discussed as central to effective school-year and summer programs, suggesting that it may hold promise for fostering academic success, in part through stemming the summer learning loss. The next chapters begin to look at how these practices play out in youth's experiences over the course of the summer.

The Impact of Higher Achievement on Youth's Summer Experiences

Chapter III

Prior research has suggested that the summer learning loss results, in large part, from a lack of exposure to enriching activities over the summer break. Thus, in addition to assessing the direct impact of Higher Achievement on the summer learning loss (the focus of the next chapter), the study provides an invaluable opportunity to examine the program's effect on youth's summer experiences—that is, how the opportunity to participate in Higher Achievement shapes the experiences and activities of youth relative to those of similar nonparticipating youth—a comparison few OST studies have had the data to examine.

This chapter relies on surveys administered to parents and youth in Fall 2010 to answer the following questions:¹⁸

- Are youth with access to Higher Achievement (i.e., treatment students) more likely than youth in the control group to attend academic summer programming?
- Does Higher Achievement enable youth to engage in more academically enriching summer experiences? Do they have a broader set of experiences than controls?
- Are treatment youth less likely to participate in leisure and sports activities, given Higher Achievement's strong academic focus?
- Are treatment youth more highly engaged than controls in the programming they do attend?

Participation in Summer Programming

An important aspect of positive youth development is the degree to which youth participate in a range of positive opportunities that can contribute to their social, emotional and cognitive growth. Higher Achievement is not the only such opportunity accessed by youth in the study. Indeed, Higher

Achievement's school-year programming may be supporting academic development, in part, by preparing youth to use their summer break as a time for learning and involvement in a range of positive activities (those offered directly through the Summer Academy and those offered elsewhere).

In fact, treatment youth were much more likely than controls to attend an academic summer program. Parents who completed our survey in the fall reported that more than half (57 percent) of treatment youth had attended Higher Achievement's Summer 2010 programming (see Table 3 on the next page).¹⁹ These

Treatment youth were more likely than youth in the control group to engage in a wide range of academically enriching activities during the summer of 2010.

youth participated an average of almost 20 hours per week, and half participated almost all of the days that summer programming was offered (i.e., 86 percent or more of offered days).²⁰ Almost all (97 percent) of youth who attended the program in the summer had

also attended Higher Achievement's After-School Academy the previous spring. The program also had fairly good carryover from spring to summer: About three quarters (73 percent) of youth who were attending in the spring continued their participation in the summer.

Youth in the treatment group were much more likely than youth in the control group to attend *any* academic program (including Higher Achievement), attending an average of almost 25 hours per week, but this difference results mainly from their attendance at Higher Achievement. That is, treatment and control youth were equally likely to attend both non-Higher Achievement academic summer programs and other programs that did not have an academic focus. However, controls spent almost twice as many hours attending both of these types of programs.

Summer Activities and Experiences

In addition to assessing how many youth attended Higher Achievement and other academic and non-academic summer *programs*, we also assessed the specific types of *activities* engaged in by treatments

Table 3
Activity Participation

	Control Percentage (n=215)	Treatment Percentage (n=208)	Treatment-Control Difference (n=423)
Attendance at Higher Achievement			
Attended During Summer 2010	0.00	57%	57%***
Hours per Week Attended for Those Who Attended	0.00	19.79	19.79***
Attendance in Any Academic Program (including Higher Achievement)			
Attended During Summer 2010	33%	74%	41%***
Hours per Week Attended for Those Who Attended	8.68	24.63	15.95***
Attendance in a Non-Higher Achievement Academic Program			
Attended During Summer 2010	33%	28%	-5%
Hours per Week Attended for Those Who Attended	8.68	4.84	-3.84***
Attendance in a Nonacademic Summer Program			
Attended During Summer 2010	34%	36%	2%
Hours per Week Attended for Those Who Attended	8.29	4.70	-3.59**

Note: The first column contains the percentage of (or average for) those youth assigned to the control group. The second column is a calculated average (i.e., the sum of the first and third columns). The third column is the statistically estimated difference between the treatment and control groups, holding constant youth's baseline scores on several key outcomes, age, gender, grade at baseline, free/reduced-price-lunch status, ethnicity, income, single-parent status, household language, parental education level and the cohort in which the youth was recruited.

**p<.05

***p<.01

and controls. These results are summarized in Table 4 on page 20 and Table 5 on page 21.

Treatment youth were significantly more likely than controls to report participating in several activities related to high school preparation (see Table 4). And they participated in a larger total number of these activities than controls (an average of 5.9 activities for treatments versus 4.8 for controls). This included such activities as visiting a high school to learn more about it, talking with peers and nonparental adults about high school options and deciding where they will apply to high school—all activities that Higher Achievement focuses on in both its Summer and After-School Academies. In addition, the parents of treatment youth were more likely to report that they personally got help from their child's OST program with the high school application process (17 percent, versus 9 percent for control parents).

Interestingly, despite these differences, fairly high proportions of both groups participated in several of the activities we asked about. For example, approximately half the youth in the control group (52 percent) talked with nonparental adults about high school possibilities, and almost half got information about a specific high school (48 percent) or decided where they would apply (45 percent).

Treatment youth were also more likely than youth in the control group to report engaging in a number of academically enriching activities. For example, they were much more likely to have visited a college campus over the summer, to have stood up in front of a group of youth to present their ideas or to have helped other students with their academic work. In fact, they were more likely to report having engaged in all of the non-high-school-related academic activities we asked about.

Table 4
Academic Summer Activities

	Percentage of Control Youth That Answered "Yes" (n=215)	Percentage of Treatment Youth That Answered "Yes" (n=208)	Treatment-Control Difference (n=423)
High School Preparation Activities			
Have you visited a high school to learn more about it?	19%	33%	14%***
Have you talked with students who attend a specific high school to see what they think about it?	53%	60%	7%
Have you gotten information about a specific high school?	48%	62%	14%***
Have you learned how to get information about high schools that interest you?	47%	55%	8%
Have you talked with your parents about different high schools?	70%	71%	1%
Have you talked with an adult (not your parent) about high school possibilities?	52%	68%	16%***
Have you talked with kids your age about high school possibilities?	58%	72%	14%***
Have you decided where you will apply to high school?	45%	56%	11%**
Have you practiced writing essays for high school applications?	12%	17%	5%
Have you practiced being interviewed for high school applications?	12%	15%	3%
Have you practiced filling out applications for high school?	14%	17%	3%
Have you gotten information about what it will be like when you go to high school?	52%	59%	7%
Total Number of High School Preparation Activities (0–12 scale)	4.81	5.85	1.04***
Other Academic Activities and Experiences			
Have you talked with other kids about a math or science problem?	27%	49%	22%***
Have you spoken to a group about your ideas or your work?	30%	51%	21%***
Have you visited a college campus to see what it would be like to be a college student?	17%	62%	45%***
Have you gotten praise for your achievements from your peers?	50%	64%	14%***
Have you helped other kids with academic work?	31%	56%	25%***
Have you written things (like poems, letters or essays)?	48%	64%	16%***
Have you stood up in front of a group of youth to present your ideas?	24%	51%	27%***
Have you spoken with an adult (not your parent) about going to college or college applications?	40%	55%	15%***
Have you participated in academic contests (like spelling bees, speech contests, math or science contests)?	9%	25%	16%***
Have you gotten one-on-one tutoring or help in an academic subject during the week?	20%	34%	14%***
Total Number of Other Academic Activities (0–10 scale)	2.93	5.04	2.11***

Note: The first column contains the percentage of (or average for) those youth assigned to the control group. The second column is a calculated average (i.e., the sum of the first and third columns). The third column is the statistically estimated difference between the treatment and control groups, holding constant youth's baseline scores on several key outcomes, age, gender, grade at baseline, free/reduced-price-lunch status, ethnicity, income, single-parent status, household language, parental education level and the cohort in which the youth was recruited. All of these comparisons include all youth in the Summer Learning Study, regardless of whether they participated in Higher Achievement.

**p<.05

***p<.01

Table 5
Nonacademic Summer Enrichment Activities

	Percentage of Control Youth That Answered "Yes" (n=215)	Percentage of Treatment Youth That Answered "Yes" (n=208)	Treatment-Control Difference (n=423)
Career-Related Activities			
Have you spoken with an adult (not your parent) about what job you might want to have in the future?	56%	70%	14%***
Have you spoken with an adult (not your parent) about what you need to do to get a good job?	45%	58%	13%**
Have you visited a business or organization to see what it would be like to work there?	27%	38%	11%**
Total Number of Career-Related Activities (0–3 scale)	1.27	1.66	.39***
Other Enrichment Activities			
Have you done some type of community service or volunteer work?	24%	28%	4%
Have you gone to events outside of your neighborhood (like sporting events, concerts, presentations)?	70%	75%	5%
Have you gotten involved in a club or other group?	34%	35%	1%
Have you visited museums or other places to learn about science, culture, art or the environment?	47%	59%	12%**
Have you gone to a library?	59%	57%	-2%
Total Number of Other Enrichment Activities (0–5 scale)	2.34	2.55	.21

Note: The first column contains the percentage of (or average for) those youth assigned to the control group. The second column is a calculated average (i.e., the sum of the first and third columns). The third column is the statistically estimated difference between the treatment and control groups, holding constant youth's baseline scores on several key outcomes, age, gender, grade at baseline, free/reduced-price-lunch status, ethnicity, income, single-parent status, household language, parental education level, and the cohort in which the youth was recruited. All of these comparisons include all youth in the study regardless of whether they participated in Higher Achievement.

**p<.05

***p<.01

Again, however, the proportion of youth in the control group who engaged in these activities was also fairly high. For example, 40 percent reported speaking with a nonparental adult about going to college or college applications; 48 percent reported writing things like poems, letters or essays; and 31 percent reported helping other youth with their academic work over the summer.

Youth with access to Higher Achievement reported engaging in more career-related activities, but they were similar to the control group in terms of their engagement in other types of non-academic enrichment activities. Again, although Higher Achievement boosted youth's access to career-related experiences—a noteworthy success within itself—fairly high proportions of youth in both the treatment and control groups participated in career-related activities and other types of nonacademic enrichment activities.

One might expect that because treatment youth were busy engaging in academic programming and activities they would be less engaged in other pursuits (sports, reading or community service, for example). We did not find that to be the case: There were no differences between treatment and control youth in how they reported spending their leisure time during the summer.

Youth Engagement in Summer Programs

Researchers have found that beyond “just being there,” the level of engagement in programming is an important contributor to youth retention, as well as to the program’s ability to produce intended benefits (see Weiss et al. 2005; Arbreton et al. 2008). Therefore, the Fall 2010 survey asked both treatment and control youth who attended a summer program (whether Higher Achievement, another academic program or a nonacademic program) to rate that program on a series of indicators of engagement. Specifically, they were asked questions to help us better understand if the programming made them feel supported by the adult staff, if they felt a sense of belonging to the program, the degree to which the program had a different feel from their school-day academics, their sense of the quality of group management within the program and their enjoyment of the activities. Because holding a leadership position is an important indicator of engagement, we also asked youth whether they had held a leadership position in their summer program.

We compared the responses of youth in the treatment and control groups, but it should be noted that these comparisons included only those youth who attended a summer program. Because treatment youth were more likely than controls to attend a summer program, the two groups are not comparable in the way they are in other analyses that use both groups in their entirety. Thus, these analyses must be seen as exploratory and suggestive rather than definitive in their conclusions.

Youth in both the treatment and control groups who attended summer programs reported fairly high levels of engagement in those programs; however, treatment youth reported higher levels of positive academic challenge and were more likely to engage in leadership experiences, whereas control youth reported higher levels of enjoyment in

the summer program they attended. The fact that control youth reported higher levels of enjoyment supports our finding that Higher Achievement staff struggled with youth engagement, particularly among older youth. However, treatment youth were more likely to report that their summer program provided them with a sense of positive academic challenge (e.g., “Staff make sure that the work I do really makes me think”), reflecting the expectation of hard work that is a central part of Higher Achievement culture. It is also worth noting that both groups reported an average of more than three out of four on each scale, indicating relatively high ratings of engagement—between “true” and “very true.” Finally, treatment youth were more likely than controls to report holding a leadership position in their summer program (although less than half—37 percent—reported holding such a position).

Summary

In this chapter, we described how Higher Achievement affected youth’s summer experiences and found that, relative to a group of similarly motivated peers, youth who were given the opportunity to participate in Higher Achievement were much more likely to attend an academically oriented summer program and spent more time in that program than controls. Results of other analyses indicate that treatment youth who attended summer programs reported experiencing higher levels of “positive academic challenge” and were more likely to report having held a leadership position than controls. However, these youth also reported lower levels of enjoyment. Other aspects of engagement, such as adult support and belonging, were similar for both groups.

Importantly, Higher Achievement also impacted youth’s engagement in a range of positive, enriching activities over the summer: Youth in the treatment group engaged in more academic, high school and career-related activities than did controls. This did not affect their ability to engage in leisure activities like sports. Of note, many youth in the control group also took advantage of academically focused summer programs in their communities, and sizable minorities engaged in a number of specific enrichment activities, though at lower rates than treatment youth. In the next chapter we discuss the impacts of Higher Achievement on the summer learning loss and related behaviors and attitudes.

Higher Achievement's Impact on Summer Learning

Chapter IV

In this chapter, we address two central questions. First, did youth in the treatment group experience a smaller dip (or bigger improvement) in academic performance, attitudes and behaviors over the summer than youth in the control group?²¹ Second, focusing on youth's performance on standardized tests, did particular groups of youth experience bigger dips or gains? To provide a context for these summer assessments, we also examine whether youth in the treatment group *started* the summer performing better than their peers in the control group—that is, did two to three years of Higher Achievement make a measurable difference in youth's performance as they began the summer of 2010? We address these questions using the study's random assignment design, in which any differences in outcomes can be confidently attributed to Higher Achievement.²²

We focused on four groups of outcomes, gathered via youth surveys and standardized tests administered in Spring 2010 and again in Fall 2010:

1. First, to assess students' **academic ability**, we had them complete brief versions of the problem-solving and reading comprehension sections of the 10th Edition of the Stanford Achievement Test.
2. Second, to assess **academic attitudes**, we examined youth's predictions of the grades they believed they would receive at school in the fall, the extent to which they like school and their preferences about the type of high school they would like to attend. Youth also responded to questions about their perceptions of their own industry and persistence, creativity, enjoyment

of learning, academic abilities, curiosity and the extent to which they believe they are instrumental in shaping their own future through effort.

3. Third, we assessed two measures of **support**: the extent to which youth's friends provide them with positive academic support and the level of support they receive from adults.
4. Finally, we asked students about their engagement in out-of-school **misbehavior**.

As the results of the analyses presented in this chapter

Higher Achievement's impacts on test scores by the spring of 2010 and on youth's engagement in constructive summer activities suggest that it is making a difference; however, the program did not improve test scores over the summer of 2010.

show, we found that Higher Achievement had a significant effect on test scores at the beginning of the summer but found no evidence that the program contributed to differences in changes over the summer and, interestingly, no evidence that either the treatment or control group experienced the summer learning loss we expected. Two measures we explored—the degree to which students enjoy learning

and students' preference to attend a competitive high school—showed program impacts, with Higher Achievement youth experiencing greater gains than control youth. There were no consistent differences among subgroups of youth—i.e., males versus females, higher- versus lower-performing students, geographical area of enrollment (five different "wards" representing the five different centers participating in the study) or family income—suggesting that the program works similarly with youth in these various subgroups.

Impacts of Higher Achievement on Summer Learning Loss

We examined the impact of the program in four key areas: academic performance, academic attitudes, peer and adult support, and misbehavior.

Table 6
Impacts on Academic Performance

	Spring 2010	Fall 2010	Summer Change
Reading Comprehension Test Scores			
Treatment	52.70	54.00	1.30
Control	49.60	52.60	3.00**
Treatment-Control Difference	3.10**	1.40	-1.70
Effect Size^a			-0.08
Problem-Solving Test Scores			
Treatment	55.90	56.70	0.80
Control	53.30	53.70	0.40
Treatment-Control Difference	2.60*	3.00**	0.40
Effect Size			0.02
Joint Test of Difference in Summer Change [Chi²₍₂₎]^b			1.93

Note: For each outcome, we present the results for youth in the treatment and control groups in the first two rows and the difference between these groups, the "Treatment-Control Difference," in the third row. Results for each time period (i.e., spring and fall) are presented in the first two columns. The third column presents the changes across the summer experienced by youth in the two groups. All numbers have been rounded; thus, the actual differences for respective rows and columns may not exactly match the provided differences. Please see Appendix C for a detailed description of how these values were estimated.

a Given the numerous types of outcome measures we have included in this study, it is difficult to directly compare the size of our impacts across all of these outcomes. To allow us to do this, we have provided effect sizes for each impact. Effect sizes are a rescaling of each impact into a measure that can be directly compared across different types of outcomes and different studies. Thus, for example the fact that problem-solving has an effect size of 0.02 and enjoyment of learning has an effect size of 0.18 (in Table 7 on the next page) means that the effect for problem-solving is smaller than the effect for enjoyment of learning. Similarly, the effect size for youth's desire to attend a competitive high school is larger than that for their enjoyment of learning. However, it is important to note that although effect sizes do offer the best method for comparing the size of impacts for different types of outcomes, there are some limitations to this methodology. For example, see McLean et al. for a discussion of NCE effect sizes (2000).

b When conducting statistical tests on more than one measure, it is likely that at least one comparison in the group will be statistically significant due simply to random variation (i.e., by chance). We thus conducted an additional "joint test" of the significance of the findings with all the variables examined together. A joint test allows us to ask whether a difference exists between the treatment and control groups using information from all of the outcome variables simultaneously rather than based on just the information from an individual outcome. If the joint test is statistically significant, it indicates that there is a difference between the treatment and control groups in the set of outcomes even if we do not observe significant differences for any single measure. Conversely, if the test is not statistically significant, it indicates that there is no difference between the two groups in the set of outcomes, even if one of the individual comparisons is significant. The final row presents the Chi² statistic for the joint hypothesis test that the difference in the summer change in scores across all of the measures listed in this table is equal to zero.

*p<.10

**p<.05

Academic Performance

The results of analyses assessing the impact of Higher Achievement on academic performance in Spring 2010 and over the summer are presented in Table 6.

By the start of Summer 2010, two to three years after recruitment, Higher Achievement had significantly improved treatment youth's performance on standardized tests. By Spring 2010, treatment students scored significantly higher than control students on both the reading comprehension and

the problem-solving tests (see the "Spring 2010" column in Table 6). These are noteworthy findings, highlighting the program's ability to measurably improve youth's academic performance after two to three years of participation. We discuss the two-year findings in more detail in a separate report.²³

The academically motivated youth who applied to Higher Achievement did not experience the summer learning loss in the summer of 2010. In fact, the reading comprehension scores of the control group actually increased over the summer. Given

Table 7
Impacts on Academic Attitudes

	Spring 2010	Fall 2010	Summer Change
Industry and Persistence			
Treatment	3.11	3.15	0.04
Control	3.17	3.16	-0.01
Treatment-Control Difference	-0.06	-0.01	0.05
Effect Size^a			0.09
Creativity			
Treatment	3.21	3.20	-0.01
Control	3.21	3.20	-0.01
Treatment-Control Difference	0.00	0.00	0.00
Effect Size			-0.01
Self-Perceptions of Academic Abilities			
Treatment	3.30	3.27	-0.03
Control	3.25	3.26	0.01
Treatment-Control Difference	0.05	0.01	-0.04
Effect Size			-0.07
Enjoyment of Learning			
Treatment	3.04	3.07	0.03
Control	3.11	3.05	-0.06
Treatment-Control Difference	-0.07	0.02	0.09**
Effect Size			0.18**
Curiosity			
Treatment	3.15	3.17	0.02
Control	3.19	3.16	-0.03
Treatment-Control Difference	-0.04	0.01	0.05
Effect Size			0.09
Ability to Change Future Through Effort			
Treatment	3.48	3.47	-0.01
Control	3.44	3.41	-0.03
Treatment-Control Difference	0.04	0.06	0.02
Effect Size			0.03

Table 7
Impacts on Academic Attitudes, *Continued*

	Spring 2010	Fall 2010	Summer Change
School Liking			
Treatment	2.84	2.97	0.13**
Control	2.83	2.93	0.10
Treatment-Control Difference	0.01	0.04	0.03
Effect Size			0.04
Prediction of Grades in the Fall			
Treatment	3.10	3.46	0.36***
Control	3.18	3.48	0.30***
Treatment-Control Difference	-0.08	-0.02	0.06
Effect Size			0.08
Percentage Wanting to Attend a Public High School			
Treatment	30%	19%	-11%
Control	30%	33%	3%
Treatment-Control Difference	0%	-14%***	-14%***
Effect Size			-0.45***
Percentage Wanting to Attend a Competitive High School			
Treatment	49%	67%	18%***
Control	44%	46%	2%
Treatment-Control Difference	5%**	21%***	16%***
Effect Size			0.39***
Joint Test of Difference in Summer Change [$\text{Chi}^2_{(10)}$]^b			21.76**

Note: For each outcome, we present the results for youth in the treatment and control groups in the first two rows and the difference between these groups, the "Treatment-Control Difference," in the third row. Results for each time period (i.e., spring and fall) are presented in the first two columns. The third column presents the changes across the summer experienced by youth in the two groups. All numbers have been rounded; thus, the actual differences for respective rows and columns may not exactly match the provided differences. Please see Appendix C for a detailed description of how these values were estimated.

a See footnote "a" in Table 6 for a definition of effect sizes.

b The final row presents the Chi^2 statistic for the joint hypothesis test that the difference in the summer change in scores across all of the measures listed in this table is equal to zero. The joint test for these comparisons is statistically significant. Thus, considering all of the outcomes together, we can conclude that there is a significant difference between the treatment and control groups. This suggests that the significant effects of the program on students' enjoyment of learning and high school preference are likely not simply the result of chance.

** $p < .05$

*** $p < .01$

the rich experiences the control group reported engaging in (described in Chapter Three), it is not entirely surprising that they did not experience the summer learning loss found in other studies. As noted in the last two chapters, the average applicants to Higher Achievement are not typical students: Their families are motivated and likely to enroll them in supplemental programs, even without the opportunity to attend Higher Achievement. Thus, the summer for these youth was not characterized by the dearth of enrichment activities that many other youth in economically deprived communities appear to experience.

We found no evidence that, relative to controls, Higher Achievement had an effect on stemming the 2010 summer learning loss. Over the summer, the two groups of students appeared to make comparable gains in reading comprehension. By the fall, the treatment students scored just slightly higher than the control students—a difference that was no longer statistically significant. The net difference between the *gains* in performance for each group was also not statistically significant, suggesting that the treatment students did not experience bigger or smaller gains over the summer, relative to the control group (as shown in the “Summer Change” column in Table 6). The results for problem-solving are similar, except in this case, treatment youth had significantly higher scores in the spring, and they maintained this edge in the fall. However, their summer experiences did not *increase* this edge.

Academic Attitudes

The second set of outcomes we considered was students' academic attitudes, assessed through 10 different measures and presented in Table 7. We hypothesized that Higher Achievement's curriculum, combined with staff's efforts to cultivate a culture that supports academic success, would strengthen youth's confidence in their academic abilities, foster their curiosity and engagement in learning, and help them aspire to attend a more challenging secondary school.

Neither group showed improvements or declines in most reported attitudes. The individual results for most attitudinal outcomes showed similar patterns. The control students scored very close to a 3.0 (on a 4.0 scale) in the spring and again in the fall, with

almost no difference between the two scores, except for their predictions of the kinds of grades they would get in the fall (which significantly improved over the course of the summer). The treatment students performed very similarly. On most outcomes, the gains in scores from spring to fall for each of these two groups were small enough that they are not statistically significant; the two groups also made very similar gains over the summer on most of these measures.

However, we did find two notable differences in students' academic attitudes—specifically, their assessments of how much they enjoy learning and the type of high school they reported wanting to attend. The high school preference finding is particularly important, given Higher Achievement's ultimate goal of increasing students' acceptance into competitive high schools. Control students' responses held roughly constant over the summer. But, in the fall, youth assigned to the treatment group were much more likely than they were in the spring to report wanting to go to a competitive high school; they were also less likely to report wanting to attend their local public school (although this latter change was not large enough to be statistically significant). These changes from spring to fall were significantly larger than those experienced by the control group. This finding suggests that, over the summer, Higher Achievement increased students' desire to matriculate to competitive area high schools.

Peer and Adult Support

Higher Achievement provides youth with not only a core set of adults who support them and guide them through the academic curriculum, but also a group of peers who are similarly motivated to achieve academic success. Our measure of peer academic support assessed the degree to which students perceive their friends as positive influences on their academics (e.g., “My friends help each other with their schoolwork”), while the measure of adult support assessed the number of adults in youth's lives who provide them with different types of support (e.g., “How many adults who are not relatives pay attention to what's going on in your life?”).

Table 8
Impacts on Peer and Adult Support

	Spring 2010	Fall 2010	Summer Change
Academically Supportive Friends			
Treatment	3.03	3.18	0.15**
Control	3.04	3.16	0.12*
Treatment-Control Difference	-0.01	0.02	0.03
Effect Size^a			0.04
Adult Support			
Treatment	4.09	4.14	0.05
Control	3.98	4.05	0.07
Treatment-Control Difference	0.11	0.09	-0.02
Effect Size			-0.02
Joint Test of Difference in Summer Change [Chi²(2)]^b			0.32

Note: For each outcome, we present the results for youth in the treatment and control groups in the first two rows and the difference between these groups, the "Treatment-Control Difference," in the third row. Results for each time period (i.e., spring and fall) are presented in the first two columns. The third column presents the changes across the summer experienced by youth in the two groups. All numbers have been rounded; thus, the actual differences for respective rows and columns may not exactly match the provided differences. Please see Appendix C for a detailed description of how these values were estimated.

a See footnote "a" in Table 6 for a definition of effect sizes.

b The final row presents the Chi² statistic for the joint hypothesis test that the difference in the summer change in scores across all of the measures listed in this table is equal to zero.

*p<.10

**p<.05

Higher Achievement did not appear to affect changes in peer and adult support over the summer months. Table 8 shows that on average, the control and treatment students' responses were fairly similar and improved slightly over the summer period. The gains they made were comparable, yielding no relative impacts in this area.

Misbehavior

We also found no effect on changes in youth reports of out-of-school misbehavior, including stealing, fighting and vandalism. We hypothesized that youth who engaged in a positive academic experience within a culture that emphasizes social justice would be less likely than their peers to engage in such misconduct. However, as shown in Table 9 on the next page, we did not find support for this hypothesis.

Impacts for Different Groups of Youth

To examine whether the program affected the summer learning loss differently for different groups of youth, we split the treatment and control groups into several subgroups based on youth's gender, geographical area of enrollment, income level (receipt of free or reduced-price lunch) and baseline performance on standardized tests (six groups representing high, medium and low performance on the reading and problem-solving standardized tests). We then examined summer impacts on standardized test scores for youth in these subgroups (for example, the impact—or change in test scores—for boys versus the impact for girls).

Our analyses (described in more detail in Appendix E) did not reveal strong patterns. That is, most of these groups experienced very similar changes,

Table 9
Impacts on Misbehavior

	Spring 2010	Fall 2010	Summer Change
Out-of-School Misconduct			
Treatment	54%	52%	-2%
Control	51%	49%	-2%
Treatment-Control Difference	3%	3%	0%
Effect Size^a			0.00

Note: For each outcome, we present the results for youth in the treatment and control groups in the first two rows and the difference between these groups, the "Treatment-Control Difference," in the third row. Results for each time period (i.e., spring and fall) are presented in the first two columns. The third column presents the changes across the summer experienced by youth in the two groups. All numbers have been rounded; thus, the actual differences for respective rows and columns may not exactly match the provided differences. Please see Appendix C for a detailed description of how these values were estimated.

a See footnote "a" in Table 6 for a definition of effect sizes.

suggesting that, in terms of improving their standardized test scores over the summer period, Higher Achievement is working similarly with these different groups.

Summary

The results of our study show that by the start of Summer 2010, two to three years after recruitment, Higher Achievement had made a significant positive impact on youth's standardized test scores, with treatment youth performing better than their peers who did not have access to the program.

When we examined academic progress over the summer, however, we found that, unlike many low-income youth, the youth in our study did not suffer a decline in their academic skills during the summer months. In fact, the control group's reading comprehension actually improved significantly. Against this backdrop, we found no evidence that Higher Achievement affected changes in academic performance over the summer months. That is, the summer period did not appear to increase (or decrease) the edge that treatment youth already had in the spring over their nonparticipating peers.

Notably, we did find that on two outcomes—the degree to which students enjoy learning and students' preference to attend a competitive high school—Higher Achievement youth made bigger gains over the summer than youth in the control

group. Our analyses did not suggest that different groups of youth (for example youth of different genders) made bigger or smaller gains in their standardized test scores over the summer as a result of Higher Achievement, suggesting that the program is working similarly with these different groups of youth.

It is important to point out that this study cannot identify the specific effect of Higher Achievement's Summer Academy, as this study tests the effects of the *entire* year-round program on one summer's experiences and learning, two to three years after enrollment. Our findings show that almost all youth who attended in Summer 2010 also attended the previous school year (and very likely, earlier years of programming). Thus, the changes we noted over the summer could have resulted from youth's experiences in the program during both the summer months and the previous two to three years.

Findings and Implications

Chapter V

Higher Achievement is a specialized, long-term academic program that targets rising fifth and sixth graders who have the motivation to succeed academically but lack the resources that could foster that success. The program aims to develop youth's skills, behaviors and attitudes to improve their academic performance and increase their acceptance into competitive high schools.

As part of a larger long-term evaluation, this study tested the effect of this year-round OST program on youth's experiences and learning during Summer 2010, two to three years after they enrolled in the program. In this concluding chapter, we summarize the findings from the study and follow with a discussion of their implications. The key findings address three broad questions:

First, did access to Higher Achievement enable youth to learn more over one summer period, two to three years after they enrolled, compared with their peers who did not have access to the program?

No. Youth in the treatment group did not make *greater* gains over the summer than did control group youth. However, it is noteworthy that during Summer 2010, both groups avoided experiencing the expected dip in their academic performance. Both advanced somewhat in reading comprehension (with the controls making significant improvements), and both were able to maintain their problem-solving skills.

At the start of the summer, youth with access to Higher Achievement scored significantly higher on standardized tests than members of the control group. We do not know exactly which components of the program over the preceding two to three years contributed to this advantage—whether youth

made these gains during one or more of the previous school years or one or more of the previous summers, or if these gains reflect a combination of summer and school-year programming. However, we do know that during Summer 2010, Higher Achievement did not improve the treatment youth's academic skills above and beyond what the program had already achieved by Spring 2010.

These findings do not speak to whether Higher Achievement might have curtailed the summer learning loss in any other summer or to the specific role of the Summer Academy within the

larger program; they only suggest that access to Higher Achievement's year-round programming did not directly impact the summer learning loss during one particular summer, two to three years after program enrollment.

Second, did Higher Achievement offer students opportunities that they would have been less

likely to experience without the program?

Yes. One of the most important findings from the study was the impact of the program on youth's involvement in academic, high school and career-oriented activities over the summer. Treatment youth were more than twice as likely to attend academically focused summer programs, and those who did spent almost triple the amount of time in these programs as their peers. Moreover, for all the academic activities we explored (e.g., getting tutoring, helping other youth with academics, participating in academic contests, writing, presenting material orally), as well as many high school preparation activities (e.g., visiting high schools or talking about the application process), treatment youth were significantly more likely to have taken advantage of these opportunities. They also were more likely to have explored future career choices. All of these activities are developmentally appropriate and relevant for middle-school-aged youth, and could very well be linked with future school success.

For financially strapped school districts that struggle to provide their students with adequate support, programs like Higher Achievement may help fill a gap in opportunities available to low-income students.

Third, did Higher Achievement motivate students to want to attend competitive high schools?

Yes. Higher Achievement's stated goal is to enable its participants to attend competitive high schools. To compete with the more privileged students applying to those schools, Higher Achievement youth not only need to hone their academic abilities and skills, they also need the desire to attend such schools and basic knowledge about how to apply. Our study shows that Higher Achievement succeeded in convincing its rising seventh and eighth graders that they want to attend these high schools. While just under half of control youth aspired to attend a competitive high school by the fall, two thirds of the treatment youth did. Access to the program also provided youth with experiences that could make their admittance more likely—for example, giving about a third of youth one-on-one tutoring or help in an academic subject. It also increased youth's enjoyment of learning—a boost that could help keep youth engaged in school and in the steps required to reach their educational goals.

Higher Achievement's focus on preparing youth to attend competitive high schools becomes more pronounced as youth approach the high school transition. For example, during the summer before youth enter the eighth grade, students visit competitive high schools, and staff meet with parents individually to discuss high school applications. It is encouraging that this focus seems to be having an effect on program participants. Indeed, shifting youth's preference to attend a competitive school may be a first step toward achieving that goal.

The question of whether these youth actually end up applying to and attending more competitive high schools is one we are addressing in the ongoing evaluation, which follows youth through the beginning of high school.

Implications

The findings from the study suggest several broad lessons:

Keeping middle school youth engaged in additional instructional time during the out-of-school hours is challenging, but it can be done. Although

only a little more than half of the youth we surveyed were still attending Higher Achievement in Summer 2010, that summer period was two to three years after their original enrollment. And those youth who attended did so at a fairly intensive rate: About half of the participants attended almost all of the days the program was offered. Also, there was a fairly seamless “bridge” between the spring and summer programs: 73 percent of youth who attended Higher Achievement in the spring also attended in the summer, and 97 percent of youth who attended in the summer had also participated in the spring. In addition, many of those who were not attending Higher Achievement were involved in other summer programming and learning opportunities.

As youth progress through middle school they are at increased risk for falling behind academically, getting involved in a host of dangerous behaviors, and ultimately, failing to successfully transition to high school. In short, middle school is a very difficult time for youth, and the choices they make can have a significant impact on their future. Ironically, it is also a time when they become difficult to engage. A program that does so successfully and that keeps them involved in positive activities, like those outlined in this report, is noteworthy.

Indeed, a range of positive supports in communities may help keep middle school youth engaged during the summer months and help stem the summer learning loss. The fact that we did not detect summer learning loss in either group of youth suggests that the myriad of supports they have been receiving, up to and including the summer, may be important for sustaining the gains made in the previous school year. The expected summer learning loss was likely mitigated by these highly motivated youth accessing a variety of positive academic supports. The youth in this study had families who were clearly resourceful at making the most of what their communities have to offer. While Higher Achievement pushed a greater proportion of youth to get involved in summer programming and activities, control youth (*without* access to Higher Achievement) also engaged in these activities—and more frequently than one would have surmised, given the economically disadvantaged communities in which they live. For example, more than half of the control youth

talked with nonparental adults about high school possibilities or what job they might want to have in the future, and a third of them attended an academically focused summer program.

This should not imply that Higher Achievement and other strong academic programs have no role in these communities. In fact, Higher Achievement provided youth with significantly more enriching activities than they would have engaged in otherwise. It may very well be that a range of programs like Higher Achievement is crucial in giving these youth the experiences documented here.

For financially strapped school districts that struggle to provide their students with adequate support, programs like Higher Achievement may help fill a gap in opportunities available to low-income students. The educational disparities that persist between higher- and lower-income children are not currently being resolved by school systems, which themselves are in dire need of resources. While this study of Higher Achievement did not show an impact on summer learning loss, it did show that investments in this type of program can lead to improvements in children's standardized test scores, increased involvement in positive activities during the summer "gap" and increased aspiration to enroll in competitive high schools—placing youth on a path toward higher educational attainment. These programs may be particularly important for youth who are motivated but at risk of falling through the cracks, as public school systems work to provide educational supports for youth at a range of skill levels.

When considering the role a program like Higher Achievement can play, it is important to note that it is a very comprehensive, long-term investment in children's lives, and any findings from this study should be considered within that context. This program is not a drop-in OST program. It provides youth with academic instruction and enrichment activities for 650 hours a year, over three to four years of their lives. Staff and mentors are well trained and supported. The curriculum is integrated with the school-day curriculum, and it is reviewed and updated regularly. Parent involvement is also a key component of the program. A look at the benefits that accrued during one summer

period, two or three years in, provides insight about the program's effects but certainly not a comprehensive assessment of its value.

The benefits of this type of long-term investment may show up more strongly when measured in high school and beyond; therefore, long-term evaluations, such as this one, are important. While one of Higher Achievement's potential strengths is its long-term combination of school-year and summer programming, the data gathered for this study focus on one brief time period, two or three years after youth first enrolled—from Spring to Fall 2010. Additional reports will explore the annual effects of Higher Achievement during the first two years of program exposure in more detail as well as its longer-term effects as youth go through the high school application process and begin their freshman year. Understanding these effects will be crucial in determining the true impact of this long-term intensive program.

It should also be noted that *with this study design, we could not test the effects of one Summer Academy in isolation from the rest of this year-round program.* Within this long-term, year-round OST program, it is possible that effects on learning loss might have occurred during other summers—for example, during youth's initial exposure (i.e., their first summer of participation). It could also be that the program simply does not boost standardized test scores over the summer. Even if this is true, however, the summer component of a year-round OST program may still have a role to play—for instance, fostering youth's interest in learning and keeping them engaged in the program and in school, possibly priming them for the kind of academic gains we measured in this study during the previous spring. More research is needed to distinguish the effects of the summer component from those of the broader program.

Final Thoughts

We set out to examine the role of a year-round, intensive OST program on youth's summer learning experiences and summer learning loss, two to three years after enrollment. The program's impact on summer experiences was clear, with treatment youth participating in a far greater number of summer learning opportunities. We did not, however, see

an impact on the expected summer learning loss. It might be tempting to conclude that the summer component of Higher Achievement is not needed; however, the findings from this study do not support that conclusion. To the contrary, our results indicate that Higher Achievement as a whole—its summer and school-year programs together—is boosting children’s standardized test scores, increasing their involvement in positive summer activities and raising their aspirations to enroll in competitive high schools. Whether this type of long-term investment is ultimately worthwhile will only become clear as we continue to follow these young people into high school.

Endnotes

1. Numerous OST programs are implemented after school and during the summer, but few are long term (i.e., serving the same youth over time).
2. An earlier version of the program operated from 1975 to 1998 and provided one third of the services included in the current program exclusively to gifted and advanced students.
3. For the majority of the project, Dr. Linden worked at Columbia University. We are grateful for the University's support of the project during this period.
4. In the first year of the study, two thirds of youth were randomly assigned to the treatment group and one third were assigned to the control group. In subsequent years, we changed to a 50-50 assignment ratio.
5. A total of 560 youth were eligible for participation in the Summer Learning Study. Of those youth who were eligible, 423 (about 76 percent) completed both spring and fall surveys.
6. Standardized tests were administered as part of survey administration at all youth follow-ups in the Summer Learning Study and the larger evaluation.
7. The programs had to operate, at least in part, during the school year to be included in the meta-analysis.
8. The authors identified a "SAFE" approach to OST programming, which includes the following components: "sequenced" strategies (i.e., step-by-step approaches to teach youth new skills); "active" forms of learning in which youth can practice those skills; "focused" time spent on skills training; and "explicit" and clear goal definitions.
9. The program is currently located in four cities: Washington, DC; Alexandria, VA; Baltimore, MD; and Richmond, VA. City offices are supported by a national office in DC. Within each city are one or more Achievement Centers located in an elementary or middle school. The Achievement Center in Alexandria started in 2006; we began recruiting applicants for that center one year after the start of the study. DC also has one additional center that started operating in 2010, after recruitment for the study was completed. Thus, that center is not included in the evaluation.
10. This percentage includes parents of all participating (seventh and eighth grade) students. When including only parents of those youth who would be attending eighth (as opposed to seventh) grade the following year and therefore would be more likely to get this type of help (as these services are focused on the older youth), the percentage is slightly higher (28 percent).
11. These percentages reflect responses to the Fall 2010 survey and include only parents who reported that their child attended Higher Achievement in Summer 2010.
12. This estimate is based on teacher reports.
13. Youth who leave the program are not "replaced" by new recruits. The program simply serves fewer youth in older age groups.
14. All data in this chapter describe the subsample of youth who contribute to our impact analyses in Chapters Three and Four—that is, the 423 youth who completed both our Spring and Fall 2010 assessments.
15. In the larger study, 951 students were recruited for the program during the study's three-year recruitment period (276 in the first year; 276 in the second; and 399 in the third). Youth were assigned randomly to the treatment and control groups, but were "stratified" on gender, grade, center and baseline achievement level (i.e., standardized test scores), so that the treatment and control groups had similar proportions of boys versus girls, youth who were (relatively) high versus low achievers, youth from different Higher Achievement centers and fourth versus fifth graders.
16. All of these demographic variables (whether or not we found significant differences between these two groups in the spring) were held constant in all key analyses reported in this study.
17. When conducting evaluation work, it is important to measure student performance in a way that can be compared across the different tests used in different evaluations. As a result, it is impossible to use many more familiar measures of performance, such as the number or percentage of questions a child answers correctly, because these measures tend to be sensitive to the particular test used. To avoid these kinds of issues, we use a standard normed scoring measure for standardized test scores called the Normal Curve Equivalent (or NCE). The NCE calculates an individual student's performance relative to the distribution of scores of a nationally representative sample of students in the same grade. The NCE ranges from 0 to 99 and has a mean of 50 and standard deviation of 21.06 (Mertler 2002). Because the score is normed relative to a reference sample, if a student were to progress at the national average rate after one year of instruction, then his or her NCE score would remain exactly the same. Thus, the student's NCE gain would be zero, even though his or her raw score (i.e., the number of questions answered correctly) might increase. To show a gain in scores, a student would have to progress at a *rate* above the national average.
18. To rely on the strength of random assignment, all youth in the treatment group are included in analyses addressing the first three bulleted sets of questions, whether or not they attended Higher Achievement. Keeping the treatment and control groups intact allows us to conclude, confidently, that any differences in outcomes are a result of the treatment group's having access to Higher Achievement. When we address the last bulleted question we include only those youth who attended some type of programming. Thus, results for this last question should be seen as suggestive, not conclusive.

19. Higher Achievement MIS data suggested that of the *entire* group of treatment youth who were admitted to the program in 2007 or 2008 and were eligible for program participation in Summer 2010 (i.e., not only those who were surveyed for the current study), 41 percent continued their participation in Summer 2010. Agreement between the MIS data and our survey data for those youth who completed the survey is very high, at 97 percent.
20. Those youth who no longer attended participated an average of 12 months before discontinuing their involvement. About half (52 percent) ended their participation within a year, and an additional 30 percent ended after their second summer in the program.
21. The Higher Achievement experience comprises much more than the Summer Academy. Many, if not most, of the youth participating in the program during the summer of 2010 also participated in two or three previous Summer and After-School Academies. Thus, by examining changes in scholars' academic performance and attitudes from spring to fall, we are not simply assessing the effects of the Summer 2010 portion of the program. We are investigating whether all of the components of the program before and during the summer of 2010 contributed to students' experiencing a change in outcomes over the summer that differs from what they would have experienced without access to Higher Achievement.
22. We used an "intent-to-treat" approach in these analyses. All youth who were originally assigned to the two groups remain in the analyses, whether or not they attended Higher Achievement or any other summer or school-year program. This is the only approach that will allow us to conclude that access to Higher Achievement is responsible for differences between the two groups at follow-up. Similar conclusions can be made when conducting analyses to test for differences across subgroups (in this case, groups based on gender, ward of enrollment, family income and baseline standardized test scores) because these characteristics were measured at baseline. Appendix D presents the results of additional analyses to test whether actually *attending* Higher Achievement or other academic OST programs is associated with summer changes. Results from these analyses support findings from the intent-to-treat analyses and do not suggest additional impacts.
23. See: Herrera, Carla, Leigh L. Linden, Amy J. A. Arbreton and Jean Baldwin Grossman. 2011. *Testing the Impact of Higher Achievement's Year-Round Out-of-School-Time Program on Academic Outcomes*. Philadelphia: Public/Private Ventures.

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Appendices

Appendix A

Research Design and Method

In this appendix, we describe the study's design, our data collection procedures and the scales we used to address study questions.

Research Design

The research design for the Summer Learning Study was layered upon an existing randomized controlled trial developed to evaluate the effectiveness of the Higher Achievement program. To assess whether Higher Achievement causes its participants to perform better than they would have without the program, we randomly assigned youth who applied for the program to one of two groups: a treatment group that would be offered the opportunity to attend Higher Achievement and a control group that would not be allowed to enter the program.

Random assignment ensures that the only systematic difference between these two groups at the start of the study is the treatment group's access to Higher Achievement. All other characteristics of the youth, including ability and motivation level, will be—on average—statistically identical. Watching the progress made by these two groups over time allows us to see whether those youth with access to Higher Achievement make more progress than those youth without access. At any point in time, the experience of the control group represents what the treatment group would have experienced had they not had the option to enroll in the program. The impact of the program can be determined by examining the difference in the average outcomes of the two groups.

The number of youth we could recruit for the study in any given year was limited by the number of youth who could be served by Higher Achievement during the upcoming summer and school year (i.e., the number of youth assigned to the treatment group). Thus, to ensure that our research sample was large enough that we could detect impacts, we built our sample in three cohorts over a three-year period.

We recruited youth into the study during the Higher Achievement application process. During this process, prospective participants and their parents were given information about the study, including an explanation of the study's purpose, the lottery-like selection approach we would use to determine who would be asked to participate in Higher Achievement, and the information we would collect from all applicants whether or not they "won" the lottery. The student and his or her parent/guardian were asked to sign an informed consent form. Once an applicant was deemed eligible by Higher Achievement staff, the

student and his or her parent/guardian completed a baseline survey, and the student's reading and problem-solving abilities were assessed using brief versions of the Stanford Achievement Test, 10th Edition (SAT 10) reading comprehension and problem-solving tests.

Once recruitment was completed, a lottery was used to determine which of the students would be assigned to the treatment group and offered admission to Higher Achievement. To ensure that student assignment was balanced based on Higher Achievement center, gender, grade level and ability level, the randomization was stratified by these characteristics—that is, the treatment and control groups were filled with similar proportions of fourth versus fifth graders, boys versus girls, students attending each of the five participating centers, and students scoring relatively high versus low on the SAT 10. Parents of students who were not selected (i.e., those who were placed in the control group) were given a representative list of other after-school programs.^{1,2}

Students and their parents were then asked to complete three spring follow-up surveys administered 12, 24 and 48 months following random assignment.

In addition, for the Summer Learning Study, we wanted to create a "summer snapshot" noting progress from spring to fall of 2010 for *all* study participants who were still eligible for program participation during the summer of 2010—those who had not already finished the eighth grade—whether or not they were currently participating, or had ever participated, in Higher Achievement. The study would compare the amount of change made from spring to fall in several key outcomes by youth who had access to Higher Achievement with that of those who did not have such access. Thus, the spring survey would serve as the study's "baseline." We hypothesized that access to Higher Achievement's year-round program would help youth in the treatment group improve more (or show less of a decline) in their attitudes, behaviors and academic performance over the summer than their peers.

Because almost half of our sample had already aged out of the program, we invited only a subset (560) of the 951 youth involved in the larger study and, for some youth, added a wave of data collection to their participation. Specifically, we did not include students from Cohort 1, the first cohort of youth recruited for the study who had aged out of the program. But students and their parents from Cohort 2 who were still eligible for participation (i.e., those who were rising eighth graders) were invited to an addi-

tional follow-up beyond the two they had already participated in. Also, the students in Cohort 3 (rising seventh and eighth graders) were already completing their second follow-up for the larger study in Spring 2010, and we included this last follow-up for Cohort 3 in the Summer Learning Study. The final sample for the Summer Learning Study therefore includes both rising seventh and eighth graders from Cohorts 2 and 3 but is heavily weighted toward rising

eighth graders. This is because Cohort 2 contributed only rising eighth graders to the study's sample, while Cohort 3 contributed both rising seventh and eighth graders. All youth in the Summer Learning Study were then invited to complete an additional follow-up in Fall 2010.

The spring survey for the Summer Learning Study included all questions from the previous waves of data collection with a few additional questions on high school preparation. The fall survey then repeated questions from the spring and asked more detailed questions about youth's summer activities and program involvement.

In the spring, 82 percent of youth and their parents completed our survey; in the fall, 79 percent completed it. A total of 423 youth/parents completed both the spring and fall surveys and contributed to the analyses presented in this report. Appendix Table 1 shows the response rates for each wave of data collection for the summer study.

Appendix Table 1
Response Rates for the Summer Learning Study

	Spring 2010	Fall 2010	Both Spring and Fall 2010
Number of Youth and Parent Respondents	461/560 (82%)	444/560 (79%)	423/560 (76%)

Appendix Table 2
Schedule of Youth and Parent Surveys for the Full Higher Achievement Evaluation

	Spring 2006	Spring 2007	Spring 2008	Spring 2009	Spring 2010	Fall 2010	Spring 2011 ^a	Spring 2012 ^a
Cohort 1 (n=276)								
Survey Round	Baseline	FU1 ^b	FU2		FU4			
Grade	4th/5th	5th/6th	6th/7th		8th/9th			
Response Rate	100%	85%	80%		78%			
Cohort 2 (n=276)								
Survey Round		Baseline	FU1	FU2	FUSp	FUFa	FU4	
Grade		4th/5th ^c	5th/6th	6th/7th	7th ^d	8th	8th/9th	
Response Rate		100%	86%	82%	82%	80%		
Cohort 3 (n=399)								
Survey Round			Baseline	FU1	FU2/FUSp	FUFa		FU4
Grade			4th/5th	5th/6th	6th/7th	7th/8th		8th/9th
Response Rate			100%	87%	82%	79%		

Note: Shaded cells represent those youth and survey rounds used in the Summer Learning Study.

- a These data collection efforts are either ongoing or planned for the future.
- b FU1 = First-Year Follow-up; FU2 = Second-Year Follow-up; FU4 = Fourth-Year Follow-up; FUSp = Spring Follow-up for the Summer Learning Study; FUFa = Fall Follow-up for the Summer Learning Study.
- c Only those youth from Cohort 2 who were in fourth grade in Spring 2007 were eligible for Higher Achievement in Summer 2010, so only the baselines of those youth are included in the Summer Learning Study.
- d Each cohort consisted of youth from two grades. However, for the Summer Learning Study, only those youth from Cohorts 2 and 3 who were not yet in the eighth grade could participate, because Higher Achievement's Summer Academy is not open to eighth graders (rising ninth graders).

Appendix Table 3
Data Used in the Evaluation

Type of Data	Time Point				
	2006	2007	2008	2009	2010
Higher Achievement Application	X	X	X		
Youth Survey	X	X	X	X	X
Parent Survey	X	X	X	X	X
Mentor Survey		X		X	
Teacher Survey		X		X	
Administrative Attendance Data					X
Site Visits		X	X	X	
Phone Interviews				X	X

Appendix Table 2 provides an overview of the structure of the sample and the timing of follow-ups for each cohort, as well as the response rates for each survey across the full Higher Achievement evaluation.

Data Collection

Data for the study were collected at several time points over the course of the larger evaluation and from several sources (see Appendix Table 3).

(1) **Higher Achievement application.** At the time of their application to Higher Achievement, parents completed consent and application forms that included basic demographic information about the youth's family, such as the youth's age and race, family income and language spoken at home.

(2) **Youth/parent surveys and standardized tests.** All students were surveyed and given short versions of the SAT 10 reading comprehension and problem-solving standardized tests at each testing. Parents also completed brief questionnaires while youth completed their surveys.

For each wave of the study, Survey Research Management (SRM), a survey firm hired to manage the collection of youth and parent surveys, recruited local community members (often teachers) to administer the standardized tests and surveys. Staff administered the surveys in groups during four or more testings at each time point at multiple

neighborhood school sites. These survey groups ranged in size from 2 to 28 participants, depending on whether youth attended earlier test sessions (larger groups) or later test sessions (smaller groups). SRM also conducted a limited number of individual home-based tests for those youth who could not attend the group administrations. Families were given an incentive of \$120 for their participation at each of the follow-up tests.

(3) **Mentor surveys.** After-School Academy mentors were surveyed in Spring 2007 and Spring 2009. Mentors were asked about their backgrounds and relevant experiences prior to working with Higher Achievement, their activities as part of the program, and the training and supports they received through the program. Surveys were administered by local research staff in 2007 and by Higher Achievement staff in 2009. Mentors completed their surveys in writing independently and submitted them in sealed envelopes; they received \$5 gift cards for their participation. In 2007, 176 of the 226 mentors responded to the survey (78 percent of mentors from the four wards participating at the time); in 2009, 285 of the 345 mentors (83 percent) responded. Only the 2009 mentor surveys were used in the current study.

(4) **Teacher surveys.** Summer Academy teachers were surveyed in August of 2007 and 2009. Teacher surveys contained questions similar to those asked in the mentor surveys. The teacher surveys were administered by Higher Achievement staff at both time points, and teachers received a \$5 gift card for their participation. In 2007, 78 percent of

the 32 teachers responded to the survey; in 2009, 90 percent of the teachers responded. Only the 2009 teacher surveys were used in this study.

(5) **Administrative attendance data.** Attendance data for Summer 2010 were gathered from the program's records of each scholar's daily attendance for that summer. As part of the parent surveys, parents were also asked whether and how often their children attended Higher Achievement and other types of summer programs during Summer 2010.

(6) **Site visit and interview data.** In 2007, 2008 and 2009, we conducted site visits at each center to observe and learn about Higher Achievement's school-year and summer programs. During each visit, we interviewed mentors, teachers and staff, and we held a youth focus group to learn about youth's perceptions of the programs. In 2009, we held phone interviews with key staff and a small group of mentors from each center; in Fall 2010, we conducted a brief interview of national office staff to learn about the schools in which the centers were located during Summer 2010.

Outcome Measures

We drew on Higher Achievement's theory of change to ensure that the outcomes we measured reflected realistic expectations about the program. With an eye toward comparability with other evaluations of after-school programs, we also included relevant performance outcomes for which there is some consensus among researchers, evaluators, and program and policy experts. When possible, we used measures employed in previous after-school evaluations (e.g., Walker, Arbretton 2004; Grossman et al. 2002). Appendix Table 4 describes the scales we used to assess the study's main outcomes.

Appendix Table 4
Measure Information and Reliability for Youth-Reported Outcomes

Youth Survey Outcomes	Title of Measure	Author(s) of Measure	Sample Items	Number of Items	Alpha		
					Baseline	Spring 2010	Fall 2010
Academic Performance							
Reading Comprehension	The Stanford Achievement Test, 10th edition	Pearson Education, Inc.	<i>Proprietary</i>	30	—	—	—
Problem-Solving	The Stanford Achievement Test, 10th edition	Pearson Education, Inc.	<i>Proprietary</i>	30	—	—	—
Academic Attitudes							
Industry and Persistence	Industry subscale from the Values in Action Inventory of Strengths for Youth (VIA-Youth)	Park, Peterson 2006	<i>Proprietary</i>	9	.71	.78	.80
Creativity	Creativity subscale from VIA-Youth	Park, Peterson 2006	<i>Proprietary</i>	8	.71	.81	.79
Enjoyment of Learning	Learning subscale from VIA-Youth	Park, Peterson 2006	<i>Proprietary</i>	7 ^a	.70	.76	.79
Curiosity	Curiosity subscale from VIA-Youth	Park, Peterson 2006	<i>Proprietary</i>	8	.67	.77	.78
Ability to Change the Future Through Effort	<i>RAPS Manual</i>	Institute for Research and Reform in Education 1998	If I get bad grades, it's because I didn't try hard enough.	6	.68	.79	.79
School Liking	Adapted from a scale tested with middle-school youth in a project conducted by Jacquelynne Eccles	Jacquelynne Eccles	In general, I like school a lot.	3	— ^b	.80	.77
Prediction of Grades in the Fall	Developed for this study		Overall, which of the following best describes the grades you think you will get on <u>your first report card</u> this school year?	1	—	—	—
Desire to Attend Public/Competitive High School	Developed for this study		What kind of high school would you like to attend? ...I would like to attend a competitive, college preparatory high school (for example, a private, parochial, charter or public magnet high school).	1	—	—	—
Self-Perceptions of Academic Abilities	Adapted from the <i>Manual for the Self-Perception Profile for Children</i>	Harter 1985	I do very well at my classwork.	5 ^a	.53	.63	.63

Appendix Table 4, Continued
Measure Information and Reliability for Youth-Reported Outcomes

Youth Survey Outcomes	Title of Measure	Author(s) of Measure	Sample Items	Number of Items	Alpha		
					Baseline	Spring 2010	Fall 2010
Peer and Adult Support							
Adult Support	Adult Support (subset of original items)	Gambone, Arbretton 1997	How many adults who are not relatives could you talk to about personal problems?	5	.79	.83	.86
Academically Supportive Friends	PALS	Midgley et al. 2000	My friends try to get me to do my best in school.	5	.77	.83	.80
Misbehavior							
Out-of-School Misconduct	Misconduct (subset of original items)	Brown et al. 1986; adapted by Posner, Vandell 1994	<u>In the last three months</u> , have you taken something on purpose that didn't belong to you? (Score of "1" if replied "yes" to one or more of 4 items.)	4	—	—	—

- a One item was dropped from the original scale to improve reliability.
 b School Liking was included only in the Spring and Fall 2010 surveys.

Appendix B

Attrition

In longitudinal studies like this one, despite researchers' best efforts to survey all of the youth who were recruited for the study when it began, not all youth remain in the sample over time. Those youth who drop out of the sample may be very different from those who remain, which could affect both the internal validity of the study (described in the next section) and our ability to extend our findings to the average Higher Achievement student.

To assess whether attrition could have affected the study in these ways, we conducted several sets of analyses comparing different subgroups of youth who "attrited" (i.e., dropped out) or remained in the study. We compared them on the set of demographic variables used as controls in our impact analyses as well as on our central outcome measures (i.e., test scores; see endnote 4).

Internal Validity

The first set of analyses we conducted addressed concerns about the internal validity of the study. Because the study is a randomized controlled trial, the random assignment of youth into the treatment and control groups should ensure that, on average, the students in these groups are similar to each other. As long as the students are, on average, the same in all characteristics, then the only difference between the two groups is that the treatment group has access to Higher Achievement and the control group does not. This study design allows us to attribute any difference in outcomes between the two groups to the treatment itself (i.e., Higher Achievement). If the groups were not comparable at baseline, then any differences in outcomes could be due to those varying characteristics rather than to the treatment. Researchers refer to the ability of a study to ascribe the differences in outcomes to the treatment in this way as the study's "internal validity." If the initial randomization does not generate comparable research groups, then the internal validity of the study is suspect.

Our study includes 560 youth whom we attempted to survey as part of the Summer Learning Study.³ Appendix Table 5 compares the baseline characteristics of those 280 youth randomly assigned to the control group with the baseline characteristics of the 280 youth assigned to the treatment group to assess whether the randomization succeeded in creating initially comparable groups. The table is organized in the same format as Table 1 of Chapter 2 and uses equation (1) from Appendix C to estimate differences between the groups, but instead of including only the students who were eventually surveyed, this table contains data on all of

the students who were included in the randomization and eligible to participate in the Summer Learning Study. The results show that the randomization succeeded in creating two initially comparable groups of students. None of the differences are statistically significant, and all of them are—practically speaking—very small. As a result, we conclude that, as of the randomization, the study has a high degree of internal validity.

Unfortunately, youth who originally agree to participate in the study may stop participating for a variety of reasons. They may move, they may be impossible to locate or they may simply choose to stop participating. As youth drop out of the study over time, it is possible that the kinds of students who leave each group might be different from those who remain. In the extreme, a differential attrition pattern could change the composition of the treatment group relative to the control group (or vice versa). This would compromise the internal validity of an otherwise successful randomization.

A common challenge, for example, is that students from economically stressed families are often most likely to fail to complete follow-up surveys. If access to Higher Achievement manages to keep treatment families more engaged and willing to complete follow-up surveys than families in the control group, we could see a differential attrition pattern in which these economically stressed students drop out of the control group at much higher rates than from the treatment group. Because economically stressed youth are also likely to score lower than other students on standardized tests, the average scores of the treatment group would be pulled down relative to those of the control group, underestimating the treatment effect.

Because we have documented that the research groups were comparable after the randomization, the primary question is whether the two groups that remain in the study are still comparable after omitting those students who have attrited. In Table 1 of Chapter 2, we verified this by comparing the non-attriting treatment and control youth included in the analyses in this report. As explained in Chapter 2, even after attrition is taken into account, the treatment and control youth have very similar baseline characteristics.⁴ As a result, we can conclude that at the time of the follow-up survey, the study still had a high level of internal validity, as it did after the randomization.

The reason that the surveyed students are so similar is that both the rates and types of students who dropped out of each research group were similar. We included students in

Appendix Table 5
Baseline Comparison of All Youth in the Treatment and Control Groups

	Control Percentage (n=280)	Treatment Percentage (n=280)	Treatment- Control Difference (n=560)
Age and Gender			
Age	9.74	9.80	0.06
Female	61%	61%	0%
Grade 4	72%	71%	-1%
Grade 5	28%	29%	1%
Ethnicity			
African American	74%	73%	-1%
Asian	3%	2%	-1%
Caucasian	1%	3%	2%
Latino/Hispanic	13%	13%	0%
Multiracial	3%	4%	1%
Other	5%	3%	-2%
Household Composition			
Single-Adult Household	20%	25%	5%
Annual Household Income and Free/Reduced-Price-Lunch Status			
Income Below \$25,000	25%	20%	-5%
\$26,000–\$50,000	28%	33%	5%
\$51,000–\$75,000	13%	17%	4%
Income Over \$75,000	11%	9%	-2%
Did Not Respond	23%	21%	-2%
Student Receives Free/Reduced-Price Lunch	65%	63%	-2%
Primary Language Spoken at Home			
Language Other than English	18%	17%	-1%

Note: This table contains a comparison of all 560 youth whom we attempted to include in the follow-up surveys, regardless of whether or not they actually completed the surveys. The first column presents the percentage of (or average for) those youth assigned to the control group. The second column presents the “calculated” average for the treatment group (i.e., the sum of the first and third columns). The third column is the statistically estimated difference between the treatment and control groups, holding constant the cohort in which each youth was recruited for the study (i.e., Cohort 2 recruited in 2007 or Cohort 3 recruited in 2008).

Appendix Table 6
Baseline Comparison of Attriting Youth in the Treatment and Control Groups

	Control Percentage (n=65)	Treatment Percentage (n=72)	Treatment- Control Difference (n=137)
Age and Gender			
Age	9.77	9.68	-0.09
Female	65%	52%	-13%
Grade 4	69%	73%	4%
Grade 5	31%	27%	-4%
Ethnicity			
African American	69%	66%	-3%
Asian	5%	0%	-5%*
Caucasian	2%	6%	4%
Latino/Hispanic	10%	22%	12%*
Multiracial	7%	3%	-4%
Other	7%	2%	-5%
Household Composition			
Single-Adult Household	18%	19%	1%
Annual Household Income and Free/Reduced-Price-Lunch Status			
Income Below \$25,000	23%	19%	-4%
\$26,000–\$50,000	40%	26%	-14%*
\$51,000–\$75,000	15%	18%	3%
Income Over \$75,000	6%	14%	8%
Did Not Respond	15%	22%	7%
Student Receives Free/Reduced-Price Lunch	61%	64%	3%
Primary Language Spoken at Home			
Language Other than English	21%	19%	-2%

Note: This table presents a comparison of the 137 youth we attempted to include in the study but who failed to complete at least one of the two surveys. The first column presents the percentage of (or average for) those youth assigned to the control group. The second column presents the "calculated" average for the treatment group (i.e., the sum of the first and third columns). The third column is the statistically estimated difference between the treatment and control groups, holding constant the cohort in which each youth was recruited for the study (i.e., Cohort 2 recruited in 2007 or Cohort 3 recruited in 2008).

*p < .10

analyses presented in the main body of the report only if they attended both survey sessions (e.g., the fall and spring sessions). If youth did not attend one or both sessions, then they were considered to have attrited from the sample and were not included in the main analysis. Overall, the percentages of youth who attrited from the treatment and control groups are very similar. Considering the entire sample, 24.4 percent of youth who took a baseline survey failed to show up for either the fall or spring survey sessions. In the control group, 23.2 percent of students attrited, while 2.5 percentage points more students attrited from the treatment group—a difference that is not statistically significant at conventional levels of significance (the *p*-value is 0.493).

However, although the attrition *rates* may be similar, it is still possible that different *types* of students attrited from the two research groups. Thus, for differences to be as minimal as they are in Table 1 of Chapter 2, the students attriting from each research group should be similar as well. Appendix Table 6 provides the results of this comparison using the same model presented in equation (1) of Appendix C and including only the sample of students who attrited.

While there are a few differences between the youth who attrited from each group, overall the attriting youth are fairly similar. Relative to the control group, attriting youth in the treatment group were more likely to identify themselves as Latino, less likely to identify as Asian, and less likely to have parents who reported incomes between \$26,000 and \$50,000 a year. The differences for all other variables are not statistically significant.⁵ This similarity in attriting youth explains why the non-attriting youth included in the study are also similar across research groups.

The preceding analyses have shown that overall the attriting (and non-attriting) treatment and control groups were similar in almost all characteristics at baseline. As a result, we can interpret the average differences in scores at follow-up as being the result of the intervention.

Extension of Findings

In addition to posing a potential threat to internal validity, attrition raises a question about whether we can extend our impact estimates to the average student served by Higher Achievement. Consider our earlier example in which students with lower socioeconomic status (SES) are more often likely to attrit from research samples. The preceding analysis shows that these students were equally likely to attrit from both the treatment and control groups.

However, if these youth are, overall, more likely than higher SES youth to attrit from the sample as a whole, then our treatment effects would be estimated primarily for the higher SES youth and would not necessarily apply to lower SES youth. For example, if only higher SES youth benefited from the program, then our high-SES sample might lead us to conclude that the program is more effective than it actually is for the average participant.

Appendix Table 7 presents the results of analyses comparing the baseline characteristics of those youth who ultimately attrit from the sample with those youth who remain in the sample. To estimate the differences presented in column three of the table, we use the same model used in equation (1) in Appendix C, but include a variable indicating whether the youth fails to attrit instead of a variable indicating whether or not the youth is in the treatment group.

As with the differences in the other tables, the differences in Appendix Table 7 are all small in magnitude, and none of them are statistically significant even at the 10-percent level. These results suggest that, on average, attriting youth are not significantly different from the youth who remain in the study. As a result, the estimated treatment effects in Chapter 4 can be applied to the overall average student in Higher Achievement, rather than only to a subset of participants.

Appendix Table 7
Baseline Characteristics of Youth Who Attrit and Do Not Attrit

	Attritor Percentage (n=137)	Non-Attritor Percentage (n=423)	Non-Attritor- Attritor Difference (n=560)
Age and Gender			
Age	9.73	9.78	0.05
Female	58%	62%	4%
Grade 4	72%	73%	1%
Grade 5	28%	27%	-1%
Ethnicity			
African American	68%	75%	7%
Asian	2%	3%	1%
Caucasian	4%	1%	-3%
Latino/Hispanic	16%	12%	-4%
Multiracial	5%	4%	-1%
Other	4%	4%	0%
Household Composition			
Single-Adult Household	19%	23%	4%
Annual Household Income and Free/Reduced-Price-Lunch Status			
Income Below \$25,000	21%	23%	2%
\$26,000–\$50,000	33%	30%	-3%
\$51,000–\$75,000	17%	14%	-3%
Income Over \$75,000	10%	10%	0%
Did Not Respond	19%	23%	4%
Student Receives Free/Reduced-Price Lunch	63%	65%	2%
Primary Language Spoken at Home			
Language Other than English	20%	16%	-4%

Note: This table compares the 423 youth included in the study with the 137 youth we were not able to survey. The first column presents the percentage of (or average for) those youth who did not complete both follow-up surveys. The second column presents the "calculated" average for those youth who did complete both surveys (i.e., the sum of the first and third columns). The third column is the statistically estimated difference between the two groups, holding constant the cohort in which each youth was recruited for the study (i.e., Cohort 2 recruited in 2007 or Cohort 3 recruited in 2008).

Appendix C

Statistical Techniques Used to Compare the Treatment and Control Groups

To assess differences between the treatment and control groups, we used four different statistical techniques. In this appendix, we discuss two of the techniques used to compare these groups as presented in Chapters 2 through 4. The other two techniques are discussed in Appendices D and E.

First, for instances in which we simply intended to compare the average characteristics of the two groups without controlling for any baseline or demographic characteristics (e.g., when we compared the groups' demographics in Table 1 in Chapter 2), we estimated the following linear equation using ordinary least squares:

$$y_1 = \beta_1 + \tau_1 \text{Treat}_i + \gamma_1 \text{Cohort}_i + \epsilon_{1i} \quad (1)$$

In this equation, the dependent variable, y_1 , is the characteristic for which we wanted to know the average difference between the treatment and control groups (e.g., gender, income level). The independent variables Treat_i and Cohort_i are indicator variables for treatment assignment (i.e., treatment or control) and the cohort in which youth were recruited (i.e., Cohort 2 or 3), respectively. Within this framework, the coefficient τ_1 is the estimated average difference between the treatment and control groups. To allow for the possibility of heteroskedasticity (i.e., that the error terms are correlated across observations, and thus not independently distributed), the standard errors are estimated using Huber-White robust estimates.

For most of our outcome comparisons, the precision of the differences estimated using equation (1) can be improved by controlling for (i.e., holding constant) baseline and demographic information. To do this, we estimate the following equation, again using ordinary least squares:

$$y_1 = \beta_2 + \tau_2 \text{Treat}_i + \gamma_2 \text{Cohort}_i + \delta_2 X_i + \epsilon_{2i} \quad (2)$$

This equation is the same as equation (1) except that we have added a group of variables, X_i , which includes baseline and demographic characteristics.⁶ The demographic variables include youth's age, grade, race, household language, annual household income, parents' educational achievement, and family composition as well as the number of household members over the age of 18 and the number of household members 18 years old or younger. The baseline variables include problem-solving, reading comprehension, industry and persistence, self-perceptions of academic abilities, curiosity, enjoyment of learning, and creativity (i.e., key performance and attitudinal outcomes for the larger evaluation).⁷ This equation was used for the analyses in Chapter 3 shown in Tables 3 through 5.

To estimate the difference in the changes in students' outcomes over the summer period—those analyses presented in Chapter 4—we use this model but replace the dependent variable with the change in outcomes over the summer (i.e., the fall score minus the spring score on the outcome).

Finally, many of the outcomes we examine are correlated with each other. In particular, we analyze several groups of related outcomes, including academic performance (test scores), measures of academic attitudes and measures of social support. For outcomes in each of these three categories, we estimate the impact on each individual outcome by estimating the linear model for all outcomes in the group using equation (2) and allow for correlation in the error terms across the different outcomes. We do this by estimating the set of equations for all outcomes in the group using the statistical technique of “seemingly unrelated regressions.” All of the joint tests presented in Chapter 4 are estimated using this framework.

Appendix D

The Effects of Summer Participation

The treatment effects estimated in Chapters 3 and 4 are “intent-to-treat” estimates. As we note in Chapter 3, however, some youth who were assigned to the treatment group did not participate in the Higher Achievement program, and many youth assigned to the control group (as well as many in the treatment group) did participate in other academic out-of-school-time programs. The intent-to-treat estimates presented in Chapters 3 and 4 provide an estimate of the effect of being assigned to the treatment group. However, given the participation patterns of youth in the study, this

estimated treatment effect is not necessarily the effect of *participating* in Higher Achievement or participating in an academic out-of-school-time program. Instead, it represents the effect of the *opportunity* to participate in Higher Achievement. We can, however, exploit the fact that assignment to the treatment group is correlated with participation in Higher Achievement and (because Higher Achievement is an academic OST program) participation in an academic OST program.

Appendix Table 8
Estimated Effect Sizes Using Two-Stage Least Squares Regression Analyses

	Higher Achievement Participation	Academic OST Program Participation
Test Scores		
Reading Comprehension	-.09	-.13
Problem-Solving	.02	.03
Academic Attitudes		
Industry and Persistence	.10	.14
Creativity	-.01	-.01
Self-Perceptions of Academic Abilities	-.08	-.11
Enjoyment of Learning	.19**	.28**
Curiosity	.10	.15
Ability to Change Future Through Effort	.03	.05
School Liking	.04	.06
Prediction of Grades in the Fall	.09	.13
Desire to Attend Public High School	-.53***	-.90***
Desire to Attend Competitive High School	.42***	.64***
Adult and Peer Support		
Academically Supportive Friends	.05	.07
Adult Support	-.02	-.03
Misconduct		
Out-of-School Misconduct	0.00	0.00

Note: This table contains estimates of the local average treatment effects. The first column presents estimates of the effects of having attended Higher Achievement since baseline, and the second column presents estimates of the effects of having attended an academically oriented OST program since baseline. All outcomes are measured in effect sizes.

**p < .05

***p < .01

To estimate the effects of *participating* in (1) Higher Achievement and (2) an academic OST program (i.e., “local average treatment effects”), we use an instrumental variables model. For participation of each type, we first estimate equation (2) in Appendix C using whether or not a child participated as the dependent variable. We then take the predicted values yielded from this model and use them to estimate the following linear model:

$$y_1 = \beta_4 + \tau_4 \text{Participate}_i + \gamma_4 \text{Cohort}_i + \delta_4 X_i + \epsilon_{4i} \quad (3)$$

The variable Participate_i represents the predicted value of whether the youth participated in Higher Achievement or in any academic OST program. This methodology is known as “two-stage least squares” regression. Again, as in Appendix C, we use the Huber-White robust estimates to correct for possible heteroskedasticity.

Two sets of regression analyses were conducted—the first using the predicted value for Higher Achievement participation in Equation (3) and the second using the predicted value for academic OST participation in Equation (3). These analyses provide estimates of the effects of ever having participated in either (1) the Higher Achievement program at any time since baseline or (2) any academic OST program since baseline. We estimated these effects for all of the primary outcome measures presented in Tables 6 through 9 in Chapter 4. Appendix Table 8 presents all estimated treatment effects, measured in effect sizes.

The intent-to-treat impact estimates presented in Chapter 4 are very similar to the estimated effects of ever having attended Higher Achievement, because 90 percent of all treatment youth who completed surveys in both the spring and fall participated in Higher Achievement at some point since baseline. The estimated effects for participation in any academic OST program are much larger, because many control children also participated in some academic OST programming. For example, the observed effect on Enjoyment of Learning is 0.28 standard deviations, while the intent-to-treat effect is 0.09 standard deviations. However, the observed patterns of effects are the same as those presented in Chapter 4 in that only the effects on enjoyment of learning and preferences for high school type are statistically significant.

In some cases, this type of analysis can demonstrate that participation in a program has an effect when none was observed in the intent-to-treat analyses. Mathematically, using the above procedure increases the size of the estimated treatment effect relative to the intent-to-treat estimate, but it also reduces the precision of the estimate. It is possible that the increase in the treatment effect estimate would be larger than the reduction in precision, which would yield a statistically significant estimate even when the intent-to-treat effect is not significant. In our case, however, this did not happen, and we observed that *participating* in either Higher Achievement or any academic OST program had effects on the same outcomes as assignment to the treatment group.

Appendix E

Analysis of Academic Benefits for Different Groups of Youth

In this appendix, we discuss Higher Achievement's academic impacts over the summer for several subgroups of youth: groups divided by gender, the geographic ward in which participants live, family income level and academic proficiency when youth first applied to the program. In theory, the program could affect each of these groups differently. For example, those youth who are most economically disadvantaged or who were performing relatively poorly on standardized tests may have the most to gain from a program like Higher Achievement and thus may experience the biggest effects over the summer.

We examine these subgroup findings to explore whether the program should target its services to particular youth or whether OST programs like Higher Achievement should explore additional strategies to ensure that all groups of youth are benefiting from program services as much as possible. We focus on standardized test scores because, of all of the outcomes measured in this study, test scores most accurately reflect the extent to which youth experienced the summer learning loss.

To examine the subgroup findings, we use two approaches. First, for each subgroup, we estimate the impacts using the same methodology used in Chapters 3 and 4 and described in Appendix C for the impacts for the full sample, but we estimate these impacts using only the subset of our sample of particular interest (e.g., girls). The model includes all of the same control variables contained in the model for the larger sample. Second, to determine whether the impacts for each of the two subgroups (e.g., girls versus boys) differ, we include the entire sample in the analysis and add a term to the equation that allows us to test whether the treatment effect (i.e., the impact) differs for the two subgroups.

For example, we use the following equation to estimate the difference between youth who receive free or reduced-price lunch and those who do not:

$$y_i = \beta_2 + \tau_2 \text{Treat}_i + \tau'_2 \text{Reduced}_i^* \text{Treat}_i + \gamma_2 \text{Cohort}_i + \delta_2 X_i + \epsilon_{2i} \quad (4)$$

This is the same equation as equation (2) in Appendix C, but with the variable $\text{Reduced}_i^* \text{Treat}_i$ added. The coefficient τ'_2 then provides an estimate of the difference in treatment effects between the two subgroups of students. A given difference is statistically significant if this term is statistically different from zero.

Appendix Tables 9 through 13 present the impacts of Higher Achievement on each subgroup over the summer period between Spring and Fall 2010. The stars next to each impact estimate reflect how certain we are that the subgroup impact (e.g., the comparison between the summer change for female treatments and the summer change for female controls) is a “real” difference and not simply due to chance—in particular, that the impact is not equal to zero. The final column in each table indicates whether the two impact estimates (e.g., that for boys and that for girls) are statistically different from each other. If the answer to this latter question is “no,” then the most conservative conclusion is that the impacts for the two groups are the same and are equal to the impact for the sample as a whole reported in Chapter 4 (i.e., no overall impact on standardized test scores).

In general, the test results in the third column represent findings from the stronger (more powerful) test and thus, the test on which conclusions should be based. Therefore, even in cases where tests for one of the two subgroups show significant differences between the treatment and control groups, if the final column does not show a difference between the two impacts, we should conclude that the two impacts are the same for both subgroups and focus solely on the overall average impact for the entire treatment group presented in Chapter 4. Many methodologists would not present subgroup estimates unless they could prove that the estimates differ from each other. However, we present all of the subgroup impact estimates below to spur the thinking of researchers and program operators on potential differences between these groups. The differences may be spurious, but they also may not be—especially if there is a consistent pattern worth considering.

Although we discuss the results for each group, taken as a whole, the subgroup analyses suggest that Higher Achievement had fairly similar effects on students of all types during this summer period. Across all of the analyses we conducted, we found only one difference between subgroup impacts. There was also no consistent pattern of impacts for individual subgroups to convincingly support the hypothesis that Higher Achievement is more or less effective for one group over another. Thus, the data did not produce strong evidence in favor of targeting Higher Achievement to particular groups of students. We discuss each set of subgroup analyses below.

Effects by Gender

Appendix Table 9 shows positive impacts for girls in problem-solving and negative impacts in reading comprehension (i.e., girls in the control group showed more positive changes over the summer than girls in the treatment group). Relative to boys in the control group, boys in the

treatment group were almost identical in the amount of change they experienced in both reading comprehension and problem-solving. The sizes of these impacts for boys and girls were not detectably different from each other for either reading comprehension or problem-solving.

Appendix Table 9
Summer Impact of Higher Achievement on Academic Performance by Gender

	Impact on Girls (n=262)	Impact on Boys (n=161)	Are the Impacts Statistically Different from Each Other?
Standardized Test Scores			
Reading Comprehension	-.13*	.04	No
Problem-Solving	.13*	.01	No

Note: This table contains estimates of the impact of Higher Achievement on youth's standardized test scores over the summer, based on participants' gender. The first column provides the estimates for girls; the second column provides the estimates for boys. All estimates in columns one and two are calculated using the same methodology used to estimate the differences in the change in scores over the summer in Table 6 of Chapter 4. Column three presents the outcome of a test for whether the difference between the impacts for the two groups is statistically significant using the methodology described in the first section of this appendix. All outcomes are measured in effect sizes. The total sample size is 423.

* $p < .10$

Effects for Students from Different Wards

The geographical wards served by Higher Achievement are very unique, representing different ethnic groups and different economic levels. The centers within these wards are also very distinct, led by different staff with distinct leadership styles (as discussed in Chapter 2). Thus, we hypothesized that youth in different wards might experience different impacts on the summer learning loss as a result of their access to the program.

In Ward B, treatments and controls experienced different amounts of progress over the summer in reading comprehension—a statistically significant impact. However, again we did not find a difference across the impacts for the wards for either reading comprehension or problem-solving.

Appendix Table 10
Summer Impact of Higher Achievement on Academic Performance by Ward

	Impact on Youth Ward A ^a (n=120)	Impact on Youth Ward B (n=48)	Impact on Youth Ward C (n=78)	Impact on Youth Ward D (n=86)	Impact on Youth Ward E (n=91)	Are the Impacts Statistically Different from Each Other? ^b
Standardized Test Scores						
Reading Comprehension	.10	.28*	-.22	-.02	.02	No
Problem-Solving	.02	.01	.13	-.13	-.13	No

Note: This table contains estimates of the impact of Higher Achievement on youth's standardized test scores over the summer, based on the Higher Achievement center to which students applied. The first through fifth columns provide the estimates for Wards A–E, respectively. All estimates are calculated using the same methodology used to estimate the differences in the change in scores over the summer in Table 6 of Chapter 4. Column six presents the outcome of a test for whether the difference between the impacts for the groups is statistically significant, using the methodology described in the first section of this appendix. All outcomes are measured in effect sizes. The total sample size is 423.

* $p < .10$

a The wards are labeled with letters to protect the anonymity of the youth and staff from each ward.

b Each of these standardized test scores required 10 tests to compare the impact for each of the 5 wards to each other. None of these comparisons were significant for either reading comprehension or problem-solving.

Effects by Income Level

Studies suggest that those youth who are most economically disadvantaged experience the sharpest declines in academic performance over the summer because they typically have the fewest resources in their communities to support continued practice of the skills learned in the previous school year. Thus, Higher Achievement might have the biggest effects for this group of youth.

To test this hypothesis, we used receipt of free or reduced-price lunch as a proxy for income⁸ and found that those youth who did *not* receive free or reduced-price lunch experienced negative impacts in reading comprehension (i.e., the controls made bigger gains over the summer than the treatments). However, the size of these impacts was very similar across those youth who received or did not receive free or reduced-price lunch (i.e., these impacts did not differ from each other).

Appendix Table 11
Summer Impact of Higher Achievement on Academic Performance by Income Level

	Impact on Youth Receiving Free/ Reduced-Price Lunch (n=261)	Impact on Youth Not Receiving Free/Reduced-Price Lunch (n=142)	Are the Impacts Statistically Different from Each Other?
Standardized Test Scores			
Reading Comprehension	-0.05	-0.24*	No
Problem-Solving	-0.03	-0.03	No

Note: This table contains estimates of the impact of Higher Achievement on youth's standardized test scores over the summer, based on the youth's free/reduced-price-lunch status. The first column provides the estimates for students receiving free or reduced-price lunch at school; the second provides the estimates for those not receiving free or reduced-price lunch. All estimates in columns one and two are calculated using the same methodology used to estimate the differences in the change in scores over the summer in Table 6 of Chapter 4. Column three presents the outcome of a test for whether the difference between the impacts for the two groups is statistically significant using the methodology described in the first section of this appendix. All outcomes are measured in effect sizes. The total sample size is 403. This sample size is smaller than that represented in the other tables in this appendix because 20 of the 423 families chose not to provide this information at baseline.

* $p < .10$

Effects by Academic Performance

An interesting programmatic question is whether Higher Achievement and other OST programs like it should specifically target students who are struggling the most academically. On average, youth who were referred to the program were doing fairly well in school in terms of their grades. However, they ranged quite a bit in their performance on standardized tests. Based on youth’s baseline standardized test scores, we split the entire baseline sample—all three cohorts—into three equal-sized groups (terciles) yielding a higher-achieving group in problem-solving, a “medium”-achieving group in problem-solving, and a lower-achieving group in problem-solving. We did the same for achievement in reading comprehension.⁹ We did not re-create these equally sized terciles for the current, smaller sample. Thus, a youth in the “high-performance” group in the larger study

is also in the “high-performance” group in the current study even though he may not score in the top third of the current sample. For this reason, the youth in the Summer Learning Study are not evenly distributed across these three groups (e.g., for reading comprehension, the “high performance” group is the largest of the three subgroups).

It was unclear beforehand which group of students would benefit most from the program. On the one hand, Higher Achievement may help the lower-achieving students more because those students have more to learn. On the other hand, the more proficient students may be able to get more academically out of the program than students who are struggling.

Appendix Table 12
Summer Impact of Higher Achievement on Academic Performance by Baseline Academic Performance (Reading Comprehension)

	Impact on Youth with Low Performance (n=141) ^a	Impact on Youth with Medium Performance (n=134)	Impact on Youth with High Performance (n=148)	Are the Impacts Statistically Different from Each Other? ^b
Standardized Test Scores				
Reading Comprehension	-.30***	-.03	.00	Yes
Problem-Solving	.01	-.01	.06	No

Note: This table contains estimates of the impact of Higher Achievement on youth’s standardized test scores over the summer, based on the students’ baseline reading comprehension performance. The first column provides the estimates for youth whose baseline reading comprehension score fell in the bottom tercile of the sample. The second and third columns provide estimates for those students whose scores fell in the middle and upper terciles of the sample. All estimates in the first three columns are calculated using the same methodology used to estimate the differences in the change in scores over the summer in Table 6 of Chapter 4. Column four presents the outcome of a test for whether the difference between the impacts for the groups is statistically significant using the methodology described in the first section of this appendix. All outcomes are measured in effect sizes. The total sample size is 423.

***p < .01

- a The groups are created by identifying the scores that mark the 33rd and 66th percentiles in our original full baseline sample and grouping students based on where their scores fall with respect to these points in the distribution.
- b Each of these standardized test scores required three tests to compare the impact for each group of youth to the other. None of these comparisons were significant for problem-solving. However, one comparison was statistically significant for reading comprehension: the comparison between youth with low baseline performance and those with high baseline performance. Youth with low performance had a greater (negative) impact than did youth with high performance.

When we examine the results for each of these three groups, we find that the academic performance impacts are very similar for youth in all three categories across both reading comprehension and problem-solving, with one exception: In reading comprehension, low-achieving treatment youth made smaller gains over the summer than did their counterparts in the control group. This was true both when we split the groups by baseline achievement in reading comprehension (Appendix Table 12) and when we split the groups by baseline achievement in problem-solving (Appendix Table 13). In fact, when splitting the youth by baseline achievement in reading comprehension, the difference between impacts for the three subgroups was statistically significant: Youth with low baseline performance in reading comprehension had significantly larger

negative impacts (i.e., the controls made bigger gains than the treatments in this group) than did their peers who started the program with high performance.

These findings could suggest that the program is not as effective with relatively low-performing youth, and that efforts to target medium- and higher-performing youth might yield stronger impacts. The large number of comparisons made in these analyses—combined with the fact that only one impact comparison was statistically significant—caution against such conclusions. However, this pattern is intriguing, and one that will be explored in the larger dataset as we examine impacts for the program one and two years after program entry and into high school.

Appendix Table 13

Summer Impact of Higher Achievement on Academic Performance by Baseline Academic Performance (Problem-Solving)

	Impact on Youth with Low Performance (n=144) ^a	Impact on Youth with Medium Performance (n=137)	Impact on Youth with High Performance (n=142)	Are the Impacts Statistically Different from Each Other? ^b
Standardized Test Scores				
Reading Comprehension	-.16*	-.03	-.01	No
Problem-Solving	.14	-.19	-.02	No

Note: This table contains estimates of the impact of Higher Achievement on youth's standardized test scores over the summer, based on the students' baseline problem-solving scores. The first column provides the estimates for youth whose baseline score fell in the bottom tercile of the sample. The second and third columns provide estimates for those students whose scores fell in the middle and upper terciles of the sample. All estimates in the first three columns are calculated using the same methodology used to estimate the differences in the change in scores over the summer in Table 6 of Chapter 4. Column four presents the outcome of a test for whether the difference between the impacts for the groups is statistically significant using the methodology described in the first section of this appendix. All outcomes are measured in effect sizes. The total sample size is 423.

* $p < .10$

- a The groups are created by identifying the scores that mark the 33rd and 66th percentiles in our original full baseline sample and grouping students based on where their scores fall with respect to these points in the distribution.
- b Each of these standardized test scores required three tests to compare the impact for each group of youth to the other. None of these comparisons were significant for either reading comprehension or problem-solving.

Appendices Endnotes

1. The list was designed to represent programs to which students would have otherwise applied. Our goal was not to compel parents to participate in these other programs, but rather to offer reassurance that Higher Achievement cares about their children. Despite the provision of this information, the lottery succeeded in creating a significant service contrast (i.e., treatment differential) between the treatment and control students—with treatment students being far more likely to participate in academically oriented OST programs.
2. Applicants were also explicitly prohibited from reapplying to Higher Achievement in subsequent years.
3. The full study includes 951 youth. Only those 560 youth who were not yet rising ninth or tenth graders (i.e., those who had not yet aged out of Higher Achievement) were invited to be a part of the Summer Learning Study.
4. We also compared youth on our primary outcome measures, test scores, at baseline. We found no differences between students in either reading comprehension or problem-solving in any of the comparisons made in this appendix between attriting and non-attriting youth, or all youth when comparing the treatment and control groups.
5. These analyses compare students across 18 characteristics. Thus, we would expect some differences to be large enough to be statistically significant due simply to random variation alone. Specifically, between the three tables included in this appendix and in Table 1 of Chapter 2, we present the results of 72 comparisons. We would expect, given random variation, to find seven differences to be statistically significant at the 10-percent level or higher, four at the 5-percent level or higher, and possibly one at the 1-percent level. In fact, we find none to be statistically significant at the 1-percent level, one at the 5-percent level, and four at the 10-percent level or higher.
6. Given the balanced distribution of characteristics for youth in the treatment and control groups, including these control variables will have little effect on the estimates of the treatment impact, but it will make the estimates more precise and increase the probability of finding a statistically significant impact. We estimated the treatment effects on our outcomes using several different sets of control variables. All of these combinations yield consistent estimates.
7. In addition to including the baseline values for these outcomes, we also include the square of the baseline value for the two test scores, problem-solving and reading comprehension.
8. This variable was used instead of income because more than 20 percent of parents did not provide their income on the Higher Achievement application, whereas 95 percent of parents indicated whether their child received free or reduced-price lunch at school.
9. Because we divided students into terciles based on their distribution in our sample rather than their position relative to the national distribution, our terciles differ slightly from similar children in the national sample. However, the distributions are close. Relative to the national distribution, our first tercile for reading comprehension ranges between the 1st and 40th percentiles, and the top tercile ranges from the 68th to the 99th percentile. For problem-solving, relative to the national distribution, our first tercile ranges between the 1st and 42nd percentiles, and the top tercile ranges from the 75th to the 99th percentile.



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