AMERICAN INSTITUTES FOR RESEARCH®

Investing in Innovation (i3) Validation Study of Families and Schools Together (FAST)

Final Report

Johannes Bos, PhD

Elizabeth Spier, PhD

Victor Bandeira de Mello, PhD

Raquel González, PhD

Fangyi Huang, MA

FEBRUARY 2018

Investing in Innovation (i3) Validation Study of Families and Schools Together (FAST)

Final Report

February 2018

2800 Campus Drive, Suite 200
San Mateo, CA 94403
650-376-6400

www.air.org

Contents

Acknowledgements

We would like to thank the students and families who so generously gave their time to participate in this study.

The U.S. Department of Education's Office of Innovation and Improvement provided the Investing in Innovation funds that supported this work and we are appreciative of their investment in this important study.

We would like to express our appreciation for the high level of support that we received from so many teachers and other school staff across the School District of Philadelphia, as well as district-level staff. In particular, this study greatly benefited from the cooperation of the district's Office of Research and Evaluation.

We would like to acknowledge our partners at the Wisconsin Center for Education Research and FAST, Inc. for their excellent collaboration on this study and would like to express our gratitude to Turning Points for Children for demonstrating such tremendous commitment to improving the lives of children and their families.

And finally, we want to recognize the sacrifice and dedication of Kim Jones. Kim was a dearly valued member of Turning Points for Children and of this project, and she dedicated her life to enhancing and supporting the lives of children and families in Philadelphia. Her sudden and tragic death was felt throughout this project and was a painful loss to those who knew her. May her spirit and generosity continue to serve as an example to all.

Executive Summary

In 2010, the Office of Innovation and Improvement (OII) at the U.S. Department of Education established the Investing in Innovation (i3) Fund to identify and document best practices for improving outcomes for students. In 2012, OII awarded an i3 Validation Grant to the Wisconsin Center for Education Research (WCER) to carry out an impact study of the Families and Schools Together (FAST) program in collaboration with the American Institutes for Research (evaluator), Turning Points for Children (implementer), FAST Inc. (technical assistance provider), and the School District of Philadelphia (program site). The purpose of FAST is to strengthen families and build positive relationships between families and schools.

This study is a cluster randomized control trial (RCT) exploring the extent to which offering FAST to incoming kindergarteners and their families would contribute to turning around persistently low-performing schools and improving the academic outcomes of participating students. Sixty primary schools were randomly assigned to a treatment group that received the FAST program during the study and a control group that had FAST available to them after the conclusion of the study, with 30 schools in each group. In each of the 60 schools, two cohorts of incoming kindergarten students and their families were invited to take part in the study, for a sample size of 1,396.

FAST program take-up was far lower than the projected 60 percent and enrollees also attended fewer FAST sessions than the program typically expects of participants. To fully capture potential program effects on individual students and families, we assessed the effects of FAST based on both the full study sample, and a subsample consisting of those students and their families who attended FAST three or more times versus matched students and their families in matched comparison schools with no FAST program available.

For the larger RCT, we found no meaningful, enduring effects (positive or negative) of FAST on any of the key outcomes included in the logic model underlying the intervention. Specifically, we found no statistically significant program effects of FAST on parental social support, parent-child relationship building, parent-school engagement, the home environment, student academic learning, or student social and behavioral development. We also did not find that FAST worked significantly better or worse for any subgroups of students or in schools with particular characteristics. When we looked at student-level outcomes for our subsample of students whose families had attended FAST three or more times, we found strong positive effects on reading achievement at the end of Grade 1and more modest effects on mathematics achievement, but also a strong *negative* effect on children's school attendance in kindergarten.

In conclusion, this study showed that FAST is unlikely to meaningfully contribute to turning around low-performing schools, at least in the context of this evaluation, as carried out in the School District of Philadelphia. However, it is possible that there is a benefit to children's reading achievement among families who choose to participate in FAST.

I. Introduction

In 2010, the Office of Innovation and Improvement (OII) at the U.S. Department of Education established the Investing in Innovation (i3) Fund to identify and document best practices for improving outcomes for students. In 2012, OII awarded an i3 Validation Grant to the Wisconsin Center for Education Research (WCER) to carry out an impact study of the Families and Schools Together (FAST) program in collaboration with the American Institutes for Research (evaluator), Turning Points for Children (TPC; implementer), FAST Inc. (technical assistance provider), and the School District of Philadelphia (SDP; program site).

The purpose of this impact study is to test the extent to which offering FAST to incoming kindergarteners and their families would contribute to turning around persistently low-performing schools and improving the academic outcomes of participating students. This report presents the results of the impact study that was part of this i3 validation grant.

II. Families and Schools Together

In this section, we describe the FAST program and its underlying logic model and briefly describe how FAST was implemented in this study.

A. The Program

FAST aims to empower parents to improve their parenting skills, build positive relationships and social capital between families and schools, and create a supportive community to foster children's well-being and education.[1] Students and their parents participate in a series of eight weekly after-school sessions during which they get to know one another and interact with teachers and other school staff. The program has three stages: (1) initial outreach to encourage parent participation; (2) eight weekly, multifamily group sessions; and (3) FASTWORKS, which continues the program for two years through monthly parent-led sessions (FASTWORKS was not a focus of this evaluation).

After joining the program, each FAST school creates its own trained team that is responsible for recruiting and engaging FAST participants and operating FAST sessions for participating students and their families. Team members are intended to represent the ethnic and linguistic backgrounds of the students in the school, and include community professionals in mental health and substance abuse, school representatives (teachers, counselors, and/or family outreach workers), and parents who have children enrolled in the school. The FAST sessions include multiple groups of 10–12 families meeting simultaneously in the school during out-of-school time. The sessions include parent-led experiential exercises, which are designed to build relationships (a) between parents and their elementary school children, (b) among parents of children attending the same school, and (c) among children, parents, and school personnel. The ultimate purpose of the program is to foster a school-wide climate of family engagement in children's transition to elementary school and a strong partnership between parents and school staff.

[1] http://www.familiesandschools.org/how-fast-works/

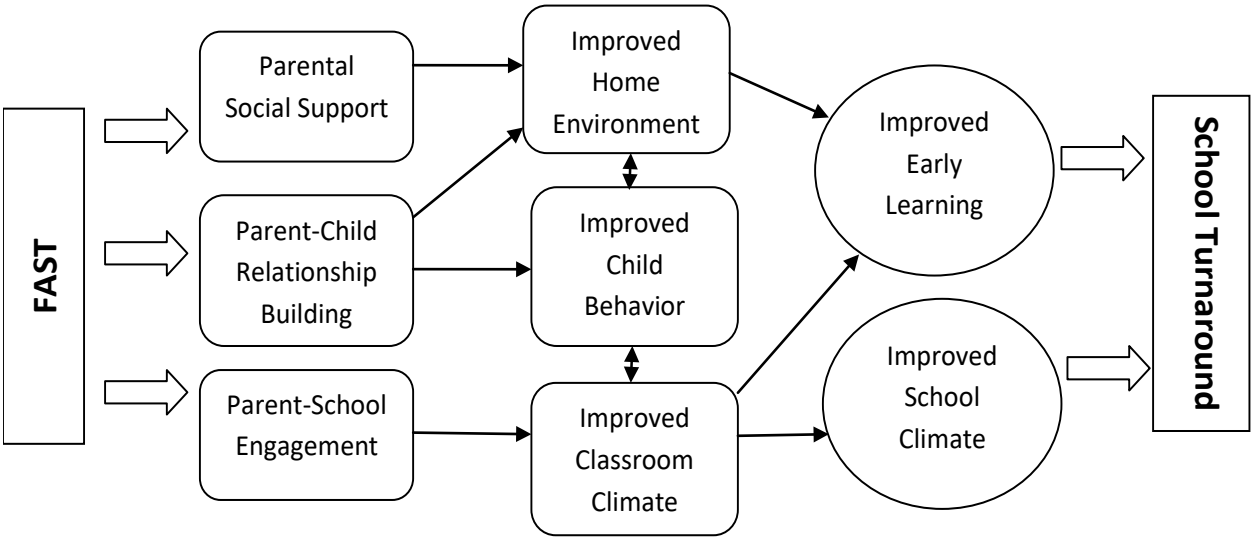
At the weekly FAST sessions, families gather in the school for one hour of parent-led family activities with team members coaching them. The activities may include a family craft, a family meal, family singing, or communication games. (None of the activities require parent literacy or mastery of English.) Because the parent-led activities happen in the school and often in the kindergarteners' classroom, students are expected to develop positive associations with the school, which are expected to support student engagement and learning. After the parent-led activities, school and community staff members then organize children's time for an additional hour. Children see the school and community staff in an informal role, leading fun activities. At the same time, small groups of parents meet and discuss topics of their choice, sharing advice on parenting. Through these activities, parents of same-aged children at the school get to know one another and it is expected that they are more likely to return to the school for other events. Next, parents practice being responsive to their children in "special play," which is 15 minutes of one-to-one parent-child time. The parent is coached to pay full attention to the child's free play choices, and to not criticize, interrupt, boss, or teach. Families who complete at least six of the eight weeks "graduate" from the program in a ceremony hosted by the principal.[2]

The program is designed to be adaptable to local circumstances and input. Its core components constitute 40 percent of the implementation of the program, and structured local adaptations represent 60 percent. This ratio of fixed-to-variable program components is intended to foster buy-in and ownership among the local implementation teams. For example, each participating family has the opportunity (and funds) to plan, cook, and host the group meal once during the eight-week FAST program. The idea is that, by sharing their favorite foods, children see their families' culture treated with respect by other parents, community members, and school representatives; learn to appreciate their schoolmates' diverse cultures; and experience commonalities that bridge these cultures.

FAST is considered an evidenced-based program due to a body of research that has been conducted on the impact of the program on participants. To date (excluding this new i3 impact study), five randomized control trials (RCTs) on FAST have been conducted, and each RCT has identified modest impacts (see Gamoran, López Turley, Turner, & Fish, 2012; Kratochwill, McDonald, Levin, Scalia, & Coover, 2009; Kratochwill, McDonald, Levin, Young Bear-Tibbetts, & Demaray, 2004; Layzer, Goodson, Creps, Werner, & Bernstein, 2001; Moberg, McDonald, Posner, Burke, & Brown, 2007). This validation study, though, is the first large-scale replication of FAST that directly targets the challenge of turning around persistently low-performing schools. In many of these schools, student and parent engagement are compromised and many students experience nonacademic barriers to school success. In the design of this validation project, the FAST program was expected to overcome these barriers by (1) engaging parents in a way that increases their comfort level with the school; (2) countering parent and child stress by building trusting relationships among parents, school staff, and community partners; and (3) reducing family conflict and child neglect by empowering parents to interact positively with their children (McDonald et al., 2012). Exhibit 1 shows the logic model underlying the FAST program and guiding this project.

[2] In this report, "FAST" refers to the eight-week program only. FASTWORKS is offered to families following graduation, but is not a focus of this study.

Exhibit 1. FAST Logic Model



B. Implementation of FAST in this Validation Project

Turning Points for Children, a Philadelphia-based non-profit organization implemented FAST in partnership with the School District of Philadelphia, and FAST, Inc., the original developer of the program. Although the implementation team largely followed the program design described above, program implementation in this validation project was significantly compromised. At the outset, the team aimed for a 60 percent participation rate in the kindergarten grade in each FAST school. The idea was that such high penetration was necessary for the program to meaningfully contribute to whole-school turnaround. However, typical participation was approximately 20 percent in each of the two years that the program was offered (the 2013–14 and 2014–15 school years). Participating families also attended fewer FAST sessions than expected (see González, Huang, Spier, Bos, & Holtzman, 2018 for an in-depth discussion of implementation challenges).

Given the low levels of program participation, the implementation team made some flexible adaptations to the program in an effort to encourage more families to attend additional sessions. These changes included extending the weekly FAST sessions from the typical 8-week cycle to a 9- or 10-week cycle in some schools so that more sessions were held. In addition, families were permitted to start in the fall cycle and continue in the spring cycle if they were unable to graduate in the fall. And finally, as the study children progressed through school years over the course of the study, FAST was open to those families each year (not just during the kindergarten year). See Part IV, Section A of this report for a detailed description and discussion of the fidelity of FAST implementation for this study.

III. Evaluation Design

The evaluation includes two distinct sub-studies. The first study is a longitudinal randomized control trial (RCT) of the FAST program in 60 schools in the School District of Philadelphia.

Half of these schools were randomized to receive FAST and half were randomized into a control group. We examined student outcomes for kindergarteners in all 60 schools participating in the RCT. In response to the lower-than-expected FAST participation rates mentioned in the previous section, we also developed a second study that assessed the impact of FAST on the outcomes of students who actually participated in the FAST program three or more times, based on a quasi-experimental design (QED).

This section provides a detailed discussion of these two sub-studies. We begin by first reviewing the research questions, which include questions to address program impact, as well as fidelity of implementation. Next, we discuss the design and implementation of the RCT, followed by a detailed description of the QED focusing on FAST participants and their families. Then we review data sources and measures, and end the section with a discussion of our analytic methods.

A. Research Questions

This evaluation has three main research questions regarding program impacts, plus three implementation-related research questions.

The main impact questions are:

1. Did schools implementing FAST show enhanced relationships within and among families?
2. Did schools implementing FAST show improved early learning outcomes for students in participating grades, thereby contributing to improved school turnaround in academic performance?
3. Does the impact of FAST differ based on school and student characteristics?

We also addressed these implementation-related research questions:

4. What was the overall level of fidelity of implementation?
5. What was the level of fidelity of implementation for each cohort (that is, after one year of implementation and after two years)?
6. How much variability across schools was observed in fidelity of implementation?

B. The Randomized Control Trial

Recruitment and Random Assignment

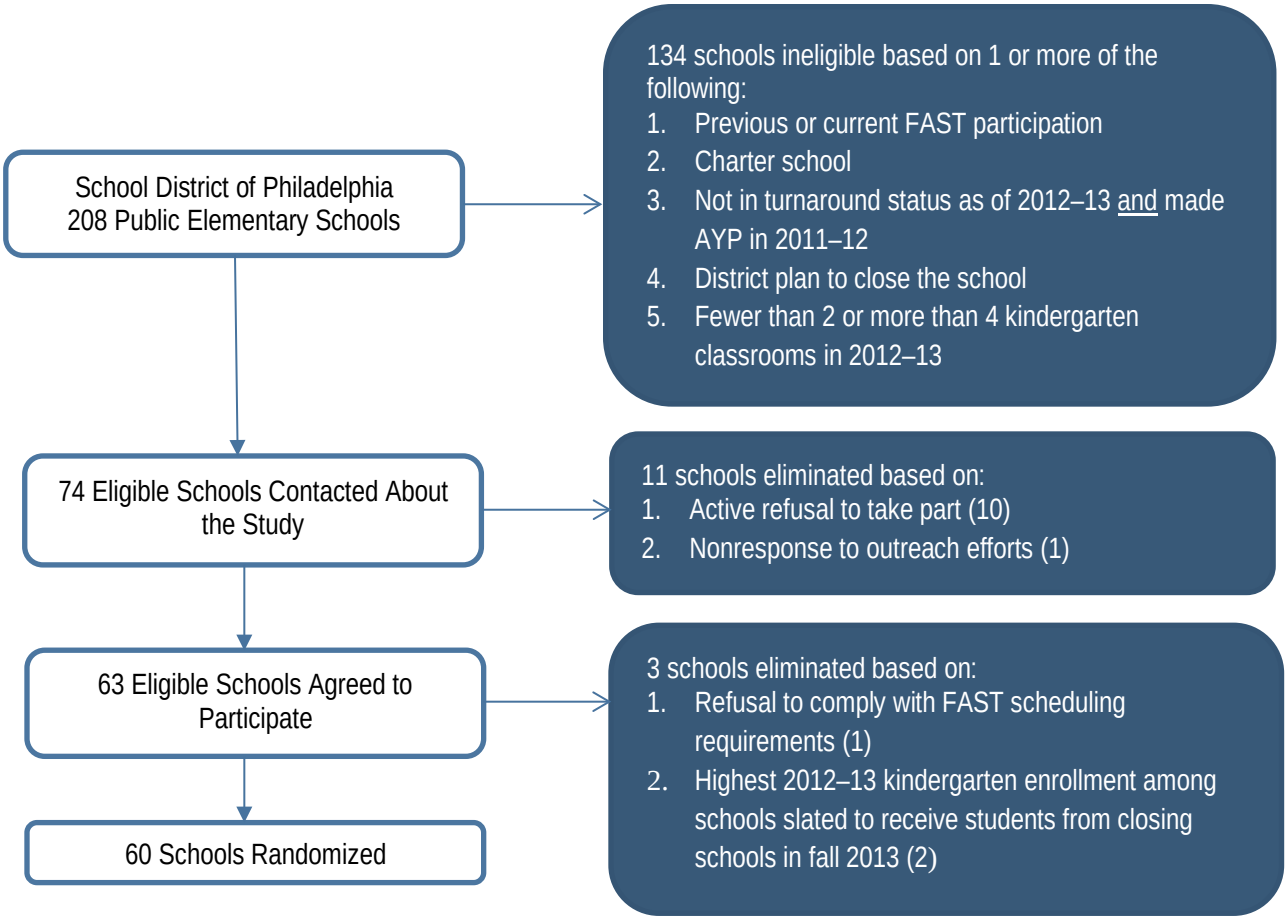
As of the 2012–13 school year, the SDP had 208 elementary schools. As shown in Exhibit 2, the sampling process for the RCT began with the entire list of 208 schools. More than half of SDP elementary schools were ineligible for the study because (a) they had already participated in the FAST program, (b) they were charter schools under minimal district supervision, (c) they were not in turnaround status as of the 2012–13 school year *and* had made their Annual Yearly Progress (AYP) during the 2011–12 school year (the most recent year with data available prior to study launch), (d) the district planned to close the school, and/or (e) the school had fewer than two or more than four kindergarten classrooms as of the 2012–13 school year (because it is not cost-effective to offer FAST to schools with only one kindergarten class, and schools with five or more kindergarten classes would be too large for quality implementation).

All remaining 74 schools that were eligible were asked to participate in the study. Of those, 63 agreed to participate. Of these 63 schools, 1 school was eliminated because school staff insisted that FAST sessions could only be held on Fridays, and 2 were eliminated because they had been designated as "receiving" schools for students from schools that were closing. Those two schools already had the highest enrollment (placing them at highest risk to go over the four-classroom limit for programming in the 2013–14 school year).

The 60 schools were randomized to the treatment and control conditions as follows:

1. The 60 schools were grouped into three blocks by turnaround status, based on information supplied by the district.
    - 10 "intervention" schools that received the highest level of improvement assistance from the district as persistently low-performing schools in 2012–13
    - 32 "support" schools that received the second highest level of improvement assistance from the district as persistently low-performing schools in 2012–13
    - 18 "at-risk" schools that were not designated "persistently low performing" in 2012–2013, but likely to receive a "low-performing" designation in the future based on failure to make AYP in the 2011–12 school year
2. A random number was generated for each school.
3. Within each of the three blocks (intervention, support, and at-risk), schools were rank-ordered from the lowest to the highest, based on the random numbers assigned to them.
4. Schools in the first half of each block were assigned to the treatment condition and the schools in the second half were assigned to the control condition. As a result, the treatment and control groups are balanced by design on the turnaround status of their schools.

Exhibit 2. Sampling Process for the RCT



Student-Level Recruitment

AIR staff recruited families for the evaluation in collaboration with the SDP's Office of Research and Evaluation (ORE). Staff from ORE were instrumental in facilitating recruitment with AIR. In addition, ORE staff identified a study liaison at each school to support recruitment and data collection. All student-level recruitment for this study occurred after school-level randomization, and after schools had been informed of their treatment status.

Our target sample was 12 children per cohort in each of the 60 schools, for a total of 720 children per cohort. Initially for Cohort 1, we randomly selected 12 students per school (target sample size per school, per cohort), and sent a recruitment packet to kindergarten teachers for them to distribute to those students. The recruitment packet included a flyer for the family to learn more about the study, a consent form, and an envelope to return the consent form back to the teacher. The consent form asked the family to consent for their child to be assessed in the school, allow their child's data to be retrieved and used for the study, and allow the study team to contact the family to conduct a series of telephone surveys. After sending materials multiple times, and receiving a low response, we decided to send materials to a larger group of students. We sent materials to a slightly larger number of randomly-selected students, ranked order all students

invited into the study, and continued to follow-up until we met our target number at each school. We then drew the sample based on the rank ordering of students whose families returned consent. For Cohort 2, we slightly modified this process, and from the onset randomly assigned a rank order to all kindergarten students in each school. We then distributed consent forms to all students, and again drew the sample based on the rank ordering of students whose families returned consent.

The completed consent forms returned to the school were then forwarded to ORE using the District's intra-office mail. Data from the consent forms were entered by ORE staff into a study-specific database. Data collection occurred for students who were randomly selected and had returned a consent form agreeing to participate in the study.

Recruitment for the RCT, in particular the Cohort 1 recruitment, took longer than anticipated and we used a number of strategies to reach our target sample size. Those strategies included:

- Providing teachers incentives to support recruitment (i.e., teachers received a $10 gift card for every consent form returned, regardless of whether families consented or declined participation in the study);
- Sending multiple mailings of the recruitment materials to schools which allowed teachers to send the recruitment materials several times to students' homes;
- Emailing teachers reminding them of the importance of the study and asking for their support in distributing and collecting consent forms; and
- Sending data collectors out to schools to support collection of materials and recruitment of families.

For Cohort 1, we sent out recruitment materials to 2,488 families, and 1,048 (42%) returned completed consent forms. Of those returned, 796 (76%) consented to participate, and 252 (24%) declined. For Cohort 2, we sent out recruitment materials to families of all 5,107 kindergarten students in study schools, and 2,739 (54%) returned completed consent forms. Of those returned, 2,130 (78%) consented for their families to be in the study, and 609 (22%) declined. Note that we drew a random subsample of the consenting students for actual participation in the study.

C. The Student-Level QED Study Component

Instead of focusing on randomly sampled kindergarteners across all 60 FAST and control schools, the second sub-study focused on students with actual exposure to FAST versus students from comparison schools with no FAST available. The sample for the student-level QED study was selected as follows: Based on program implementation in Year 1 (the 2013–14 school year), AIR worked with project partners to identify eight (out of 30) FAST schools that both had relatively high levels of program uptake and were large enough to include at least 60 incoming kindergarteners in the QED study. Using Mahalanobis distance matching, those eight FAST schools were matched with eight comparison schools based on six school background characteristics: total school enrollment, student attendance rate, and teacher attendance rate in 2012–13; percentage of economically disadvantaged students and percentage of minority students in 2013–14; and the average proficiency rate for Grade 3 math and reading in 2011–12.

Within the eight matched pairs of schools, AIR recruited as many families of Cohort 2 kindergarteners as possible for this student-level study. All of these students and their families participated in baseline data collection, which included measures of family functioning and student learning. FAST was then implemented in the eight FAST schools during the 2014–15 school year, and we identified which students' families had come to FAST three or more times. A total of 85 students from those eight schools participated in FAST for at least three sessions *and* had signed up for our study. FAST was open to families across eight-week cycles, so that families could continue to attend after "graduation." Their average FAST participation was eight sessions, which is a full cycle (although these sessions were often spread out over multiple cycles of FAST). Those 85 students were then matched with 85 similar students from the eight previously-matched comparison schools, based on similar Dynamics Indicators of Basic Early Literacy Skills (DIBELS) scores from the time of kindergarten enrollment, child gender, race/ethnic background, and parent employment status. This group of 170 students (85 FAST, 85 comparison) make up the sample for this student-level QED study.

D. Data Sources and Measures

In order to measure the impact of FAST on families and students, we used a variety of previously validated tools to capture four domains of interest: family functioning, family-school engagement, academic learning, and social and behavioral learning. We collected data from families, teachers, and directly from students at various time points throughout the study. The same data were collected for the RCT and for the QED (except that the QED only included Cohort 2 students). Exhibit 3 maps the domains of interest by instrument, unit of interest, and data collection schedule. Due to an oversight, the Family Involvement Questionnaire was not included in the assessment tools until the final round of data collection. We did not gather data on student academic outcomes at the end of kindergarten because academic improvements in learning accumulate over time, and we felt that the end of kindergarten in the first year of program implementation would be too short a timeframe to observe any such changes.

Exhibit 3. Data Collection Schedule

Domain	Topic	Measure	Unit	Data Collection Schedule by Cohort			
				Baseline	End KG	End G1	End G2
Family Functioning	Family relationships	Child-Parent Relationship Scale	Parent	C1 & C2	C1 & C2	C1 & C2	C1
	Family involvement	Family Involvement Questionnaire	Parent	–	–	C2	C1
	Family support	Reciprocal Support from Other Parents	Parent	C1 & C2	C1 & C2	C1 & C2	C1
Family-School Engagement	Teacher-family engagement	Parent-Teacher Relationship Scale	Parent	–	C1 & C2	C1 & C2	C1
	School-based involvement	Family Involvement Questionnaire	Parent	–	C1 & C2	C1 & C2	C1
	Student attendance	School attendance records	Parent	–	C1 & C2	C1 & C2	C1
Academic Learning	Literacy	Peabody Picture Vocabulary Test 4	Student	C1 & C2	–	C1 & C2	C1
		Woodcock-Johnson III Tests of Achievement	Student	C1 & C2	–	C1 & C2	C1
	Mathematics	Woodcock-Johnson III Tests of Achievement	Student	C1 & C2	–	C1 & C2	C1
Social and Behavioral Learning	Social and behavioral skills	Social Skills Improvement System Rating Scales	Student	–	C1 & C2	C1 & C2	C1

In the remainder of this section, we provide additional detail about each domain of interest, the instruments used, and the timing of each instrument.

Family Functioning

Data on family functioning were collected from parents, following the schedule shown in Exhibit 3. The assessment of this set of outcomes included a baseline and three follow-ups (over three school years) for Cohort 1 and two follow-ups (over two school years) for Cohort 2.

The Child-Parent Relationship Scale (CPRS; Pianta, 1992) is a 15-item survey tool that has two subscales: Conflict and Closeness. The CPRS is a self-report instrument completed by mothers or fathers that assesses their perceptions of their relationship with their child. The items are rated on a 5-point Likert scale. It is applicable to children ages 3–12. The developer has reported scale reliability (alpha) of .83 for the Conflict subscale and .72 for the Closeness subscale.

The Family Involvement Questionnaire (FIQ) was developed for use with parents or primary caregivers of children in preschool, kindergarten, and Grade 1 programs. This instrument was developed and validated using a target population of children in a large urban school district, which serves a large percentage of low-income, minority children, and reliability ranges from .86 to .90 (Fantuzzo, Tighe, & Childs, 2000). Here we used the Home-Based Involvement Scale (HBIS) of the FIQ, which measures support for children's learning at home.

The Reciprocal Support from Other Parents (RSOP) scale consists of six items, with parents providing responses on a 4-point Likert scale. This scale measures family access to social capital as a composite measure based on parent reports about three properties of their social networks—intergenerational closure, shared expectations, and reciprocal exchanges. The resulting composite scale has a documented reliability (alpha) of .76 (Desmond, 2012).

These assessment tools were not over-aligned with the FAST program.

Family-School Engagement

Data on family-school engagement were collected from parents, based on the schedule shown in Exhibit 3. The assessment of this set of outcomes included three follow-ups (over three school years) for Cohort 1 and two follow-ups (over two school years) for Cohort 2. No baseline data were collected for this outcome because when students first start kindergarten, there has not been sufficient time for family-school engagement to occur.

The Parent-Teacher Relationship Scale (PTRS) consists of eight items that address the quality of this relationship in areas such as trust and communication. Parents provide responses on a 5-point Likert scale. This tool has a published reliability of .86 (Vickers & Minke, 1995).

We also used the School-Based Involvement Scale (SBIS) from the FIQ (described above) to measure family-school engagement. We had planned to use the Home-School Conferencing subscale in this study, but inadvertently used the SBIS instead. The SBIS also measures active family engagement in schools, and is a suitable measure for this study.

A third data source for family-school engagement was students' attendance records, which provided data on the total number of days a student attended school in a given school year. These data were provided by SPD for students in our study.

These assessment tools were also selected to not be over-aligned with the FAST program.

Academic Learning

Data on academic learning were collected through direct assessment of students' learning, based on the schedule shown in Exhibit 3. This impact study included a baseline and two follow-ups (over three school years) for Cohort 1, and a baseline and one follow-up (over two school years) for Cohort 2. Children's learning was assessed with the Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4), and the Woodcock Johnson III Tests of Achievement (WJ-III). These standardized assessment tools also were not closely aligned with the intervention.

The PPVT-4 (Dunn & Dunn, 2007) was selected to assess students' vocabulary acquisition—a strong predictor of academic outcomes. The PPVT-4 is a widely used, norm-referenced assessment with a published reliability of at least .90. The WJ-III Tests of Achievement (Woodcock, McGrew, & Mather, 2001) was selected to assess students' skills in the areas of literacy (Letter Recognition, Reading Fluency, and Passage Comprehension subtests) and mathematics (Applied Problems, Calculation, and Mathematics Fluency subtests). The WJ-III is a widely used, norm-referenced assessment with a published reliability of at least .80. Both assessments can be used with children across the age/grade span included in this evaluation, allowing us to use the same measures to assess baseline and outcomes. Only the English version of these tools were used.

Social and Behavioral Learning

Data on social and behavioral learning were collected through teacher surveys, based on the schedule shown in Exhibit 3. This impact study included three follow-ups (over three school years) for Cohort 1 and two follow-ups (over two school years) for Cohort 2. For this outcome, a baseline assessment would not have been valid because teachers are unlikely to be able to accurately rate the social and behavioral skills of children they have just met. Students' social and behavioral development was assessed with the Social Skills Improvement System (SSIS) Rating Scales (Gresham & Elliott, 2008). This standardized assessment tool is also not closely aligned with the intervention.

For each student in the study sample, the teacher completed SSIS survey questions related to the Cooperation, Assertion, Responsibility, Engagement, and Self-Control subscales. These subscales capture skills that are essential for children to thrive in a classroom setting. The SSIS takes 10–25 minutes per child to complete and is appropriate for children ages 3–18. For the teacher version of the SSIS (Gresham & Elliott, 2008), published internal consistency reliability is $\alpha = .91$ and inter-rater reliability is $r^2 = .71$.

Fidelity of Implementation

Fidelity of implementation was measured with the FAST Program Integrity Checklist (PIC). The PIC was created by the program and is completed by program staff under routine conditions of

program implementation. The PIC captures numerous components of the program and measures compliance with (1) FAST values and goals, (2) the creation of a collaborative FAST team, (3) the frequency of FAST and FASTWORKS sessions, (4) universal access for families in target grades, (5) recruitment and outreach, (6) special play activities, (7) opening and closing activities, (8) family crafts, (9) family games and activities, (10) parent pairs/buddy time, (11) children's playtime plus parent meeting time, and (12) incentives. The PIC uses a three point system to measure compliance: ideal, adequate, and drift (see Appendix, Exhibit 1).

Typically, FAST operates with multiple "hubs" (groups of families meeting simultaneously), and the PIC is completed for each hub at a school. That was the initial plan for this study, as well. However, due to the consolidation of hubs based on low program uptake, one PIC was completed per school per FAST cycle.

E. Analytic Methods

In this section, we describe the analytic methods used to address the research questions about fidelity of implementation and program impacts based on both the school-level RCT and the student-level QED.

Analysis of Fidelity of Implementation

The purpose of the fidelity of implementation analysis is to provide a concise metric that captures the level of fidelity of FAST implementation over the course of this study. The rolling up of fidelity scores was based on the following process:

1. Each PIC score for each FAST element at each school was documented.
2. For each FAST element, 80 percent of schools must have achieved fidelity to reach fidelity at the program level for that element. By "reached fidelity," we mean obtained a rating of "ideal" or "adequate."
3. Fidelity must have been attained across all key FAST elements across all 30 schools to conclude that the program has been implemented with fidelity overall.

For each of the two study cohorts, we created a program-level summary fidelity score for each year of the program implementation. For each year, for each FAST component there were two measures of the same indicator, one taken for the fall cycle and one for the spring cycle. In cases of missing data, the percentage of schools passing the indicator was based on the number of schools that did have data available for that indicator. There were no instances where a school was missing both measures of an indicator for that year.

We also calculated descriptive statistics such as range and standard deviation to document the degree to which implementation varied across schools.

Impact Analyses Based on the School-Level RCT

Exhibit 2 in the appendix presents a detailed list of registered contrasts for the RCT. These are the treatment-control group comparisons that were agreed upon before outcome data were collected and whose results are presented in this report. All impact analyses based on the RCT

were conducted using a two-level model with students nested within schools. The basic model is structured as follows:

$$Y_{ij} = \beta_{0j} + \sum_p \beta_{pj} X_{pij} + r_{ij}$$

where *i* indexes students within schools, *j* indexes schools:

Y_{ij} is the outcome for student *i* at school j;

β_{0j} is the conditional mean outcome score for students at school *j*;

$\beta_{1j} \ldots, \beta_{Pj}$ are the regression coefficients for school *j*, associated with the predictors $X_1 \ldots, X_P$;

r_{ij} is a random error associated with student *i* at school *j*.

***School Level Model*:**

$$\beta_{oj} = \gamma_{00} + \gamma_{01} T_j + \sum_q \gamma_{0q} W_{qj} + u_{0j}$$

T_j is the treatment indicator, coded 1 if school *j* is a FAST school and 0 otherwise;

γ_{00} is the conditional mean outcome score for control schools;

$W_{1j} \ldots, W_{Qj}$ are Q school-level indicators for school *j*;

γ_{01} is the treatment effect (difference in average student outcome between treatment and control schools);

$\gamma_{02} \ldots, \gamma_{0(q+1)}$ *represent* the relationship between the Q school background characteristics and average student outcome; and

μ_{0j} is a random error associated with school *j*.

We included the following student-level baseline control variables in the final model to increase the precision of the impact estimates: ethnicity, socio-economic status, disability status, gender, and English proficiency. For the school-level model, we included the school-level percentages of kindergarten students with disabilities and kindergarten students who were English language learners, and total kindergarten enrollment in the year of analysis as covariates.

Impact Analyses Based on the Student-Level QED

See Exhibit 3 in the appendix for a list of the registered contrasts for the QED.

We conducted regression analyses to estimate the impact of FAST participation on student and parent outcomes using the following linear model

$$y_{ij} = f(T_j, X_{pij}, Z_j)$$

where *i* indexes students within schools, j indexes schools:

y_{ij} is the outcome for student *i* in school *j*;

T_j is the treatment indicator of school *j*;

X_{pij} are *P* student characteristics indexed by *i* and *j* as above; and

Z_{qj} are Q school-level indicators for school j, including n-1 indicator variables representing n matched pairs of schools.

The student characteristics included as covariates in the regression model were indicators for disability status, English language learner status, racial/ethnic minority status, parent employment, mother educational level, and food assistance.

School characteristics included as covariates were the school-level percentage of students in the kindergarten enrollment in the 2014–15 school year, number of kindergarten classes, percentage of students with disabilities and English language learners, and 7 dummies that indicate the 8 pairs of matched schools.

F. Attrition and Baseline Equivalence

In this section, we address overall and differential attrition, and baseline equivalence for the RCT and for the QED.

Sample Attrition for the RCT

Over the course of the study, we had no attrition at the school level. All 60 schools that were randomized remained in the study for the entire follow-up period. Here, the "original sample" consists of children who were randomly selected for participation (at the beginning of kindergarten), and whose parents gave active consent for their inclusion in the study. We also had very low levels of attrition at the student level, and no significant differential attrition. Exhibit 4 provides additional details.

Exhibit 4. Student-Level Attrition for the RCT

Cohort and Time Point	Treatment Group	Control Group	Total
Cohort 1: Original sample	313	367	680
Cohort 1: Lost kindergarten follow-up	60 (19.2% of original sample)	78 (21.3% of original sample)	138 (20.3% of original sample)
Cohort 1: Lost grade 1 follow-up	54 (17.3% of original sample)	59 (16.1% of original sample)	113 (16.6% of original sample)
Cohort 1: Lost grade 2 follow-up	43 (13.7% of original sample)	58 (15.8% of original sample)	101 (14.9% of original sample)
Cohort 2: Original sample	357	359	716
Cohort 2: Lost kindergarten follow-up	86 (24.1% of original sample)	93 (25.9% of original sample)	179 (25.0% of original sample)
Cohort 2: Lost grade 1 follow-up	53 (14.8% of original sample)	53 (14.8% of original sample)	106 (14.8% of original sample)

Baseline Equivalence for the RCT

To establish baseline equivalence for the RCT, we calculated treatment-control group differences for all baseline measures of our key outcome variables. Although there were no statistically significant differences, those differences when divided by the pooled standard deviation were between .05 and .25 standard deviation (SD). To establish baseline equivalence, we adjusted the models by including the measure at baseline in the models. As detailed in Exhibit 5 in the appendix, there were no statistically significant differences in any of these outcome measures at baseline.

Attrition for the QED

A group of 170 students (85 FAST, 85 comparison) from Cohort 2 made up the sample for this student-level QED. A total of 4 percent of the sample was lost to attrition at the end-of-kindergarten follow-up, and 15 percent lost to attrition at the end of Grade 1 (see Exhibit 5 below). There were no significant issues of attrition, or of differential attrition between the treatment and comparison groups. At the end of Grade 1, of the students remaining in the study, 41 of the original 85 matched pairs were still intact.

Exhibit 5. Student-Level Attrition for the QED

Group and Time Point	Treatment Group	Control Group	Total
Cohort 2: Original sample	85	85	170
Cohort 2: Lost kindergarten follow-up	2 (2.4% of original sample)	5 (5.9% of original sample)	7 (4.1% of original sample)
Cohort 2: Lost grade 1 follow-up	11 (12.9% of original sample)	15 (17.6% of original sample)	26 (15.3% of original sample)

Baseline Equivalence for the QED

The treatment-comparison difference was calculated as simple difference of unadjusted means. We established baseline equivalence on all key outcomes for the QED. Although there were no statistically significant differences, those differences when divided by the pooled standard deviation were between .05 and .25 SD. To establish baseline equivalence we adjusted the models by including the measure at baseline in the models. See Exhibit 6 in the appendix for statistical details.

IV. Results of the School-Level RCT

In this section, we present information regarding the fidelity of implementation of the FAST program, and the impact of FAST on the outcomes of interest.

A. Fidelity of Implementation of FAST

This study included three research questions with regard to fidelity of implementation:

4. What was the overall level of fidelity of implementation?
5. What was the level of fidelity of implementation for each cohort (that is, after 1 year of implementation and after 2 years)?
6. How much variability across schools was observed in fidelity of implementation?

One way to assess fidelity of implementation is to focus on the extent to which TPC and FAST delivered the various program components and activities as prescribed by the model and planned by the implementation team (Research Question 4). That information is captured by the aforementioned PIC, which periodically assesses the extent to which the program as delivered is consistent with the FAST model. Using this measure of fidelity, the overall level of fidelity of implementation was high. That is, the program was made available to the students and families in the 30 FAST treatment schools according to the expectations of the program developer and the implementation team. Across the 30 participating schools, each FAST component reached an acceptable level of fidelity of implementation (score of “ideal” or “adequate” on that component

for 80% or more of the schools) for both Year 1 (2013–2014 school year) and Year 2 (2014–2015 school year).

However, it is also important to establish the degree to which the program (as delivered) reached the students and families who were supposed to benefit from it. This implementation measure captures the extent to which the program delivered on its objectives to reach 60 percent of kindergarteners in participating schools and to successfully "graduate" a significant portion of their parents and families. In the treatment group, for Cohort 1, 37 percent (n = 118) attended one or more FAST sessions, 30 percent (n = 91) attended three or more sessions, and 25 percent (n = 78) attended six or more sessions (graduated). And for Cohort 2, 31 percent (n = 111) attended one or more FAST sessions, 24 percent (n = 83) attended three or more sessions, and 16 percent (n = 57) attended six or more sessions (graduated). These figures are far below the 60 percent participation rate and the 80 percent FAST completion rate anticipated when this study was originally designed.

We also calculated fidelity across the years of implementation (Research Question 5). To examine fidelity of implementation for Year 1 versus Year 2 of program delivery, we first calculated the number of scores of “ideal” or “adequate” divided by the total number of observations (30 schools, 12 components, each measured twice, minus any missing values) to achieve a percentage for overall fidelity. In Year 1, overall fidelity of the offered program services to the model was 97 percent. In Year 2, this rate was 98 percent. Therefore, the difference in levels of fidelity between the two years was minimal, with both years showing very high fidelity of implementation of the FAST components as measured by the PIC. As introduced above, there also was not much cohort-to-cohort variation in the extent to which kindergarteners and their parents participated in the program activities.

In response to implementation Research Question 6, we examined how fidelity of implementation varied across schools. Across schools at the individual component level (see Exhibit 1 in the appendix), the fidelity of the services offered never dropped below 90 percent, and there was 100 percent fidelity for three of the components across the two years combined. So there was a ceiling effect in terms of examining variability at the component level across schools, with all components showing high fidelity. There was some variability observed within schools, across components. Eleven of the 30 FAST schools had missing PIC data for spring of 2014, so it was difficult to draw accurate conclusions from Year 1. However, it is worth noting that in the fall of 2013 (first FAST cycle for Year 1), three schools only achieved fidelity for eight of the 12 components, with the remainder showing fidelity for 11 or all 12 components. For Year 2, all schools showed fidelity across at least 10 of the 12 components for both the fall and the spring FAST cycles. So overall, while three schools struggled with fidelity of implementation at the outset of the program, most were achieving full fidelity and all were at least at 80 percent fidelity across components by the second year of program implementation.

B. Impact of FAST on Key Outcomes

In line with the research questions and the logic model, we assessed the impact of FAST on family functioning, family-school relationships, students’ academic learning, and students’ social and behavioral learning. Exhibit 6 summarizes the impact study results based on the RCT. Effects were considered significant if the effect size was .25 SD or higher (regardless of p-

values, which are sensitive to sample size). In this exhibit, "none" means that any observed effect was below .25 SD. And "n/a" is entered where an outcome was not measured at a given time point. In the appendix, please see Exhibit 2 for a full list of the contrasts that were examined in this RCT, Exhibit 4 for the base sample size, Exhibit 5 for baseline equivalence of clusters, and Exhibit 7 for impact estimates.

Exhibit 6. Summary of Program Effects Identified through the RCT

	Cohort 1			Cohort 2	
Contrast Name	Kindergarten	Grade 1	Grade 2	Kindergarten	Grade 1
Family Functioning					
Family relationships, CPRS-Conflict	None	None	None	None	Negative[a]
Family involvement, HBIS	None	None	None	None	None
Family support, RSOP	None	None	None	None	None
Family-School Relationships					
Teacher-family engagement, PTRS-Joining	Positive[b]	None	None	None	None
Home-school engagement, School-Based Involvement	None	None	None	None	None
Student engagement, Student Attendance	None	None	None	None	None
Academic Learning					
Vocabulary, PPVT-IV	n/a	Negative	None	n/a	None
Literacy, WJ-III Broad Reading	n/a	None	None	n/a	None
Mathematics, WJ-III Broad Mathematics	n/a	None	None	n/a	None
Social and Behavioral Learning					
Social and Behavioral Skills, SSIS	n/a	None	None	n/a	None

[a]This small negative effect was observed for the Conflict subscale only. There was no observed effect on the Closeness subscale.
[b]This small positive effect was observed for the Joining subscale only. There was no observed effect on the Communication subscale.

Family Functioning

Offering FAST in schools produced a small but statistically significant negative effect on family functioning. Specifically, offering FAST had a small yet statistically significant negative effect on family conflict for Cohort 2 at the end of Grade 1 (effect size .26 SD), meaning that families in Cohort 2 in FAST treatment group schools reported *more* conflict than families in control group schools who were not offered FAST. We did not find a significant effect on this measure for Cohort 1, nor at any other time point for either cohort, so this observed negative effect may have been a spurious result. There were no statistically significant effects of FAST on family closeness at any point in time, nor on parent perceptions of reciprocal support from other parents or on home-based involvement in education. So overall, it appears that FAST had no meaningful and enduring effect on family functioning among kindergarteners in schools assigned to the program.

Family-School Relationships

Offering FAST in schools also did not produce any meaningful effects on family-school relationships. There was a small, statistically significant positive effect of FAST on one aspect of the family-school relationship (the Joining subscale of the PTRS) for Cohort 1 students at the

end of kindergarten (effect size .28 SD), but this effect disappeared in first and second grade and was not found at all for Cohort 2. We also did not find any significant effects of FAST on family-school relationships when we examined the Communication subscale of the PTRS; the SBIS; or measures of student attendance. Therefore, the observed positive impact of FAST on the PTRS Joining subscale in Cohort 1 might be a spurious result. It appears that overall, FAST had no meaningful and enduring effect on family-school relationships.

Academic Learning

Offering FAST in schools did not produce any meaningful effect on students' academic learning. Specifically, there was no statistically significant effect of offering FAST on students' overall reading scores or overall mathematics scores on the WJ-III at any point in time, nor was there any significant effect on vocabulary at any point in time as measured by the PPVT-4. So we can conclude that FAST did not impact student academic learning.

Social and Behavioral Learning

Offering FAST in schools did not produce any significant effects on students' social and behavioral learning. Specifically, there was no significant effect of offering FAST on teacher ratings for student social and behavioral development on the SSIS at any point in time. Therefore, we can conclude that FAST had no effect on student social and behavioral learning.

V. Results of the Student-Level QED Study

A. Impact of FAST on Key Outcomes

In this section, we report results from the student-level QED, exploring the same basic outcomes as with the RCT but comparing Cohort 2 students who participated in FAST with matched students in matched control schools who did not have access to FAST. Thus, this QED study was designed to measure the effects of actually *receiving* FAST rather than being enrolled in a school in which FAST was offered. See Exhibit 7 for a summary of program effects identified through the QED. In the appendix, please see Exhibit 3 for a full list of the contrasts that were estimated for the QED, Exhibit 6 for baseline equivalence, and Exhibit 8 for impact estimates.

Exhibit 7. Summary of Program Effects Identified through the QED

Contrast Name	Kindergarten	Grade 1
Family Functioning		
Family relationships, CPRS-Conflict	None	None
Family involvement, HBIS	None	None
Family support, RSOP	None	None
Family-School Relationships		
Teacher-family engagement, PTRS-Joining	None	None
Home-school engagement, School-Based Involvement	Positive	None
Student engagement, Student Attendance	Negative	None
Academic Learning		
Vocabulary, PPVT-IV	n/a	None
Literacy, WJ-III Broad Reading	n/a	Positive
Mathematics, WJ-III Broad Mathematics	n/a	None
Social and Behavioral Learning		
Social and Behavioral Skills, SSIS	n/a	None

Family Functioning

We did not find any significant effects (positive or negative) for FAST on any of the aspects of family functioning assessed in this study.

Family-School Relationships

Findings were mixed in the area of family-school relationships. There was a substantial positive effect (with an effect size of .96 SD) of FAST on school-based involvement – that is, the extent to which parents actively engaged in activities at their child's school (which may have included attending FAST sessions). However, this significant effect disappeared by the end of Grade 1. There was also a large *negative* effect of FAST on student attendance during the kindergarten year, but not in Grade 1 (effect size of -1.16 SD). There were no other significant effects of FAST on family-school relationships.

Academic Learning

We found one statistically significant effect of FAST on Grade 1 student achievement. Students in the FAST treatment group scored 0.8 SD higher than their comparison group counterparts on the Woodcock Johnson broad reading score. There was a smaller but still sizable effect on the Woodcock Johnson broad mathematics score of .44 SD.[3] This effect was not statistically significant.

[3] We also tested a model in which we only used pairs of individually matched students, excluding students for whom we have follow-up data if their matched counterpart was lost to follow-up. The impacts on academic learning were no longer statistically significant when we used that model. Note that in this model the overall sample size was reduced from 150 to 100 for these outcomes.

Social and Behavioral Learning

We did not find any meaningful effects of FAST on student social and behavioral learning.

VI. Findings: Answers to the Research Questions

In this section, we present the answers to each of the research questions, drawing on results from both the school-level RCT and the student-level QED. We discuss the implications of these findings in Section VII.

1. Did schools implementing FAST show enhanced relationships within and among families?

At the school level, offering FAST during the early grades did *not* have any meaningful, enduring effects on relationships within and among families. Specifically, we found no meaningful, enduring effects of FAST on family relationships (conflict and closeness), family involvement (home-based support for learning), or family social support from other families at their child's school. We also found no meaningful effects of FAST on teacher-family engagement, or on family involvement at their child's school, or on student attendance.

When we examined results at the student-level for students whose families had attended FAST three or more times (versus a comparison group from matched schools), we found a large *negative* effect of FAST on student attendance in kindergarten (-1.15 SD), although this effect vanished in Grade 1. We did not find any other effects of FAST on family functioning, family support, or family-school relationships.

2. Did schools implementing FAST show improved early learning outcomes for students in participating grades, thereby contributing to school turnaround in academic performance?

At the school level, we did not find any effect of offering FAST on students' vocabulary, reading, mathematics, or social and behavioral development. When we examined results at the student-level for students whose families had attended FAST three or more time versus the comparison group who were not offered FAST, we did find a large statistically significant positive effect on student reading achievement at the end of Grade 1 (1.1 SD) and a smaller effect on student mathematics achievement at the end of Grade 1 that was not statistically significant. We did not find any meaningful effects of FAST on student social and behavioral development.

3. Does the impact of FAST differ based on school and student characteristics?

We examined the extent to which the effects of FAST varied based on individual student ethnicity, socio-economic status, disability status, gender, and/or English proficiency; as well as the percentage of kindergarten students with disabilities and who were English language learners, and total kindergarten enrollment in the year of analysis at the school-level. We did not

find any meaningful differences in program effects based on any of these student- or school-level characteristics. Given the lack of program effects found overall, we did not pursue analyses that included the interaction of these characteristics with treatment status.

4. What was the overall level of fidelity of implementation?

The overall level of fidelity of implementation was high when examining the services that were offered in the treatment schools and the services and activities that participating families actually received or participated in. Across the 30 treatment schools, each FAST component reached an acceptable level of fidelity of implementation (score of "ideal" or "adequate" on that component for 80% or more of the schools) for both Year 1 (2013–14 school year) and Year 2 (2014–2015 school year). However, this high level of adherence to the FAST model did not translate into similarly high levels of program enrollment and family engagement. In fact, enrollment in FAST and subsequent participation in program activities were consistently far below expectations, both across cohorts and across individual schools. Thus, from the perspective of the experience of a typical kindergartner in a Philadelphia elementary school, the FAST program experience was much less intensive than intended in this study or experienced in other evaluations of the FAST program. It is worth noting that although FAST implementation received high scores based on the PIC, FAST was implemented for this study without the typical use of home visits to recruit families (it was against SDP policy to release family contact information to program staff).

5. What was the level of fidelity of implementation for each cohort (that is, after one year of implementation versus two years)?

The original research question refers to "cohorts," but the program enrollment was opened up so that both cohorts of students could participate in FAST in both kindergarten and Grade 1. So here we address the program in Year 1 versus Year 2 of implementation. In Year 1, overall fidelity was 97 percent, and in Year 2 it was 98 percent. Therefore, the difference in levels of fidelity between the two years was trivial, with both years showing very high fidelity of FAST implementation.

6. How much variability across schools was observed in fidelity of implementation?

Across schools, fidelity never dropped below 90 percent, and there was 100 percent fidelity for 3 of the 10 key FAST components across the 2 years combined. So, there was a ceiling effect in terms of examining variability at the component level across schools, with all components showing high fidelity. In the fall of 2013 (first FAST cycle for Year 1), 3 schools only achieved fidelity for 8 of the 12 components, with the remainder showing fidelity for 11 or all 12 components. For Year 2, all schools showed fidelity across at least 10 of the 12 components for both the fall and the spring FAST cycles. So overall, while 3 schools struggled with fidelity of implementation at the outset of the program, most were achieving full fidelity and all were at least at 80 percent fidelity across components by the second year of program implementation. So overall, there was little variability across schools in observed fidelity of implementation because fidelity was consistently high.

VII. Discussion

We conducted a rigorous impact study based on a school-level RCT to assess the extent to which offering FAST to families when their children were beginning primary school could contribute to school turnaround. The study was carried out in 60 primary schools in SDP that were in turnaround status or at risk due to persistently low performance. Our logic model (Exhibit 1) hypothesized that offering FAST would lead directly to improved parental social support, parent-child relationship building, and parent-school engagement. We hypothesized that these direct effects of FAST would further lead to an improved home environment, improved child behavior, and improved classroom climate. The result would be improved academic learning and improved school climate, which would contribute to school turnaround.

FAST was implemented with a high degree of fidelity across both program years, and there was little variability in fidelity of implementation across schools or across years. However, across all 30 treatment schools, program enrollment was much lower than the projected 60 percent and the engagement of families who did participate also was lower than intended. This likely reduced the overall effectiveness of the program as measured in this evaluation, both because most of the sample members in our study did not directly engage with FAST and because any expected overall effects on classroom climate and parent-to-parent relations would have depended on a substantial share of parents being exposed to the program.

Given the low program take-up rates, we conducted a secondary student-level QED study to assess the effects of FAST on individual students whose families had participated in FAST for three or more sessions, compared with matched students in the matched control schools who did not have FAST available to them. This secondary QED study found that parents in the FAST group showed greater engagement with school in kindergarten and also suggested that FAST substantially improved reading achievement and to some extent increased mathematics achievement at the end of Grade 1. Conversely and against expectations, this study found a large negative effect on student attendance in kindergarten. Because of the methodological limitations of this secondary QED study, these effects must be considered exploratory in nature. However, they suggest that participation in FAST in kindergarten has the potential to improve student achievement in Grade 1.

In conclusion, the school-level RCT suggests that FAST is unlikely to contribute to turning around low-performing schools, at least to the extent that the results from this particular study in the School District of Philadelphia are generalizable beyond the context of this study. However, the results of the student-level QED study suggest that there may be a potential benefit of FAST on the academic achievement of individual students whose families attended FAST three or more times, compared with students in similar schools that did not have FAST available.

References

Desmond, M. (2012). Disposable ties and the urban poor. *American Journal of Sociology*, 117(5), 1295–1335.

Dunn, L. M., & Dunn, D. M. (2007). *Peabody Picture Vocabulary Test, 4th Edition*. San Antonio, TX: Pearson Education.

Fantuzzo, J., Tighe, E., & Childs, S. (2000). Family Involvement Questionnaire: A multivariate assessment of parent participation in early childhood education. *Journal of Educational Psychology*, *92*(2), 367–376.

Gamoran, A., López Turley, R. N., Turner, A., & Fish, R. (2012). Differences between Hispanic and non-Hispanic families in social capital and child development: First-year findings from an experimental study. *Research in Social Stratification and Mobility*, *30*, 97–112.

González, R., Huang, F., Spier, E., Bos, J., & Holtzman, D. (2018). *FAST in Philadelphia: Exploring the Implementation of a Family Engagement Program. San Mateo, CA: American Institutes for Research.*

Gresham, F.M. & Eliott, S.N. (2008). *Social Skills Improvement System Rating Scales manual.* Minneapolis, MN: NCS Pearson.

Kratochwill, T. R., McDonald, L., Levin, J. R., Scalia, P. A., & Coover, G. (2009). Families and schools together: An experimental study of multi-family support groups for children at risk. *Journal of School Psychology, 47*, 245–265.

Kratochwill, T. R., McDonald, L., Levin, J. R., Young Bear-Tibbetts, H., & Demaray, M. K. (2004). Families and schools together: An experimental analysis of a parent-mediated multi-family group program for American Indian Children. *Journal of School Psychology*, *42*, 359–383.

Layzer, J. I., Goodson, B., Creps, C., Werner, A., & Bernstein, L. (2001). *National evaluation of family support programs. Volume B: Research Studies. Final report.* Cambridge, MA: Abt Associates.

Moberg, D. P., McDonald, L., Posner, J. K., Burke, M. L., & Brown, R. L. (2007). *Randomized trial of Families and Schools Together (FAST): Final report on NIDA grant R01-10067.* Madison, WI: University of Wisconsin–Madison.

Pianta, R. C. *(*1992*). Child–Parent Relationship Scale (CPRS).* Charlottesville*: University of Virginia.*

Vickers, H. S., & Minke, K. M. (1995). Exploring parent-teacher relationships: Joining and communication to others. *School Psychology Quarterly*, *10*(2), 133–150.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock Tests of Achievement.* Rolling Meadows, IL: Riverside.

Appendix

Exhibit 1. Fidelity of FAST Implementation by Year

Intervention Components	Implementation measure	Sample Size at the Sample Level	Representativeness of sample	Component Level Threshold for Fidelity of Implementation for the Unit that is the Basis for the Sample-Level	Criteria for Implemented with Fidelity at Sample Level	Component Level Fidelity Score for the Entire Sample	Implemented with Fidelity?
Year 1, Academic Calendar Year September 2013 – June 2014							
1. Values & Goals: Compliance	1	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
2. Collaborative FAST Team: Compliance	1	30	All	≤ 1	80% of schools ≤ 1	92%	Yes
3. Frequency of FAST Meetings	1	30	All	≤ 1	80% of schools ≤ 1	91%	Yes
4. Referrals versus Universal and Voluntary	1	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
5. Recruitment & Outreach	1	30	All	≤ 1	80% of schools ≤ 1	98%	Yes
6. FAST Activity: Special Play	1	30	All	≤ 1	80% of schools ≤ 1	96%	Yes
7. FAST Activity: Traditions for Opening and Closing	1	30	All	≤ 1	80% of schools ≤ 1	98%	Yes
8. FAST Activity: Family Craft	1	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
9. FAST Activity: Family Interaction	1	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
10. FAST Activity: Buddy Pairs	1	30	All	≤ 1	80% of schools ≤ 1	92%	Yes
11. FAST Activity: Parent Group & Child Play	1	30	All	≤ 1	80% of schools ≤ 1	94%	Yes
12. FAST Incentives	1	30	All	≤ 1	80% of schools ≤ 1	98%	Yes
Year 2, Academic Calendar Year September 2014 – June 2015							
1. Values & Goals: Compliance	2	30	All	≤ 1	80% of schools ≤ 1	98%	Yes
2. Collaborative FAST Team: Compliance	2	30	All	≤ 1	80% of schools ≤ 1	90%	Yes
3. Frequency of FAST Meetings	2	30	All	≤ 1	80% of schools ≤ 1	95%	Yes
4. Referrals versus Universal and Voluntary	2	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
5. Recruitment & Outreach	2	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
6. FAST Activity: Special Play	2	30	All	≤ 1	80% of schools ≤ 1	98%	Yes
7. FAST Activity: Traditions for Opening and Closing	2	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
8. FAST Activity: Family Craft	2	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
9. FAST Activity: Family Interaction	2	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
10. FAST Activity: Buddy Pairs	2	30	All	≤ 1	80% of schools ≤ 1	100%	Yes
11. FAST Activity: Parent Group & Child Play	2	30	All	≤ 1	80% of schools ≤ 1	98%	Yes
12. FAST Incentives	2	30	All	≤ 1	80% of schools ≤ 1	98%	Yes

Exhibit 2. Registered Contrasts for the RCT

ID	Contrast Name	Design	Treatment Group			Comparison Group	Outcome				Baseline		
			Description	Grade during intervention	Exposure	Description	Domain	Measure	Unit of Observation	Timing of Measurement	Measure	Unit of Observation	Timing of Measurement
E-A3	Family relationships, C1, KG, CPRS	School-level RCT	FAST, All C1 students	KG	1 year	BAU, All C1 students	Family relationships	CPRS: Conflict	Student	End KG, spring 2014	CPRS: Conflict & Closeness	Student	Begin KG, fall 2013
E-A4	Family relationships, C1, G1, CPRS	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Family relationships	CPRS: Conflict	Student	End G1, spring 2015	CPRS: Conflict & Closeness	Student	Begin KG, fall 2013
E-A5	Family relationships, C1, G2, CPRS	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Family relationships	CPRS: Conflict	Student	End G2, spring 2016	CPRS: Conflict & Closeness	Student	Begin KG, fall 2013
E-A6	Family relationships, C2, KG, CPRS	School-level RCT	FAST, All C2 students	KG	1 year	BAU, All C2 students	Family relationships	CPRS: Conflict	Student	End KG, spring 2015	CPRS: Conflict & Closeness	Student	Begin KG, fall 2014
E-A7	Family relationships, C2, G1, CPRS	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Family relationships	CPRS: Conflict	Student	End G1, spring 2016	CPRS: Conflict & Closeness	Student	Begin KG, fall 2014
~~E-B3~~[a]	~~Family involvement, C1, KG, HBIS~~	~~School-level RCT~~	~~FAST, All C1 students~~	~~KG~~	~~1 year~~	~~BAU, All C1 students~~	~~Family involvement~~	~~FIQ: HBIS~~	~~Student~~	~~End KG, spring 2014~~	~~FIQ: HBIS~~	~~Student~~	~~Begin KG, fall 2013~~
~~E-B4~~[a]	~~Family involvement, C1, G1, HBIS~~	~~School-level RCT~~	~~FAST, All C1 students~~	~~KG-G1~~	~~2 years~~	~~BAU, All C1 students~~	~~Family involvement~~	~~FIQ: HBIS~~	~~Student~~	~~End G1, spring 2015~~	~~FIQ: HBIS~~	~~Student~~	~~Begin KG, fall 2013~~
E-B5	Family involvement, C1, G2, HBIS	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Family involvement	FIQ: HBIS	Student	End G2, spring 2016	None	None	None
~~E-B6~~[a]	~~Family involvement, C1, KG, HBIS~~	~~School-level RCT~~	~~FAST, All C2 students~~	~~KG~~	~~KG~~	~~1 year~~	~~Family involvement~~	~~FIQ: HBIS~~	~~Student~~	~~End KG, spring 2015~~	~~FIQ: HBIS~~	~~Student~~	~~Begin KG, fall 2013~~
E-B7	Family involvement, C2, G1, HBIS	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Family involvement	FIQ: HBIS	Student	None	None	None	None
E-C3	Family support, C1, KG, RSOP	School-level RCT	FAST, All C1 students	KG	1 year	BAU, All C1 students	Family support	RSOP	Student	End KG, spring 2014	RSOP	Student	Begin KG, fall 2013
E-C4	Family support, C1, G1, RSOP	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Family support	RSOP	Student	End G1, spring 2015	RSOP	Student	Begin KG, fall 2013
E-C5	Family support, C1, G2, RSOP	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Family support	RSOP	Student	End G2, spring 2016	RSOP	Student	Begin KG, fall 2013
E-C6	Family support, C2, KG, RSOP	School-level RCT	FAST, All C2 students	KG	1 year	BAU, All C2 students	Family support	RSOP	Student	End KG, spring 2015	RSOP	Student	Begin KG, fall 2014
E-C7	Family support, C2, G1, RSOP	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Family support	RSOP	Student	End G1, spring 2016	RSOP	Student	Begin KG, fall 2014
E-D3	Teacher-family engagement, C1, KG, PTRS	School-level RCT	FAST, All C1 students	KG	1 year	BAU, All C1 students	Teacher-family engagement	PTRS-Joining	Student	End KG, spring 2014	None	None	None

ID	Contrast Name	Design	Treatment Group			Comparison Group	Outcome				Baseline		
			Description	Grade during intervention	Exposure	Description	Domain	Measure	Unit of Observation	Timing of Measurement	Measure	Unit of Observation	Timing of Measurement
E-D4	Teacher-family engagement, C1, G1, PTRS	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Teacher-family engagement	PTRS-Joining	Student	End G1, spring 2015	None	None	None
E-D5	Teacher-family engagement, C1, G2, PTRS	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Teacher-family engagement	PTRS-Joining	Student	End G2, spring 2016	None	None	None
E-D6	Teacher-family engagement, C2, KG, PTRS	School-level RCT	FAST, All C2 students	KG	1 year	BAU, All C2 students	Teacher-family engagement	PTRS-Joining	Student	End KG, spring 2015	None	None	None
E-D7	Teacher-family engagement, C2, G1, PTRS	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Teacher-family engagement	PTRS-Joining	Student	End G1, spring 2016	None	None	None
E-E3[b]	Home-school engagement, C1, KG, SBIS	School-level RCT	FAST, All C1 students	KG	1 year	BAU, All C1 students	Home-School engagement	FIQ: SBIS	Student	End KG, spring 2014	None	None	None
E-E4[b]	Home-school engagement, C1, G1, SBIS	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Home-School engagement	FIQ: SBIS	Student	End G1, spring 2015	None	None	None
E-E5[b]	Home-school engagement, C1, G2, SBIS	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Home-School engagement	FIQ: SBIS	Student	End G2, spring 2016	None	None	None
E-E6[b]	Home-school engagement, C2, KG, SBIS	School-level RCT	FAST, All C2 students	KG	1 year	BAU, All C2 students	Home-School engagement	FIQ: SBIS	Student	End KG, spring 2015	None	None	None
E-E7[b]	Home-school engagement, C2, G1, SBIS	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Home-School engagement	FIQ: SBIS	Student	End G1, spring 2016	None	None	None
E-F3	Student engagement, C1, KG, Student attendance	School-level RCT	FAST, All C1 students	KG	1 year	BAU, All C1 students	Student engagement	Student Attendance	Student	End KG, spring 2014	None	None	None
E-F4	Student engagement, C1, G1, Student attendance	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Student engagement	Student Attendance	Student	End G1, spring 2015	None	None	None
E-F5	Student engagement, C1, G2, Student attendance	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Student engagement	Student Attendance	Student	End G2, spring 2016	None	None	None
E-F6	Student engagement, C2, KG, School attendance	School-level RCT	FAST, All C2 students	KG	1 year	BAU, All C2 students	Student engagement	Student Attendance	Student	End KG, spring 2015	None	None	None
E-F7	Student engagement, C2, G1, School attendance	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Student engagement	Student Attendance	Student	End G1, spring 2016	None	None	None
E-H2	Vocabulary, C1, G1, PPVT-IV	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Vocabulary	PPVT- IV	Student	End G1, spring 2015	PPVT- IV	Student	Begin KG, fall 2013

ID	Contrast Name	Design	Treatment Group			Comparison Group	Outcome				Baseline		
			Description	Grade during intervention	Exposure	Description	Domain	Measure	Unit of Observation	Timing of Measurement	Measure	Unit of Observation	Timing of Measurement
E-H3	Vocabulary, C1, G2, PPVT-IV	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Vocabulary	PPVT- IV	Student	End G2, spring 2016	PPVT- IV	Student	Begin KG, fall 2013
E-H4	Vocabulary, C2, G1, PPVT-IV	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Vocabulary	PPVT- IV	Student	End G1, spring 2016	PPVT- IV	Student	Begin KG, fall 2014
E-I2	Literacy, C1, G1, WJ-III Broad Reading	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Vocabulary	WJ-III: Broad Reading	Student	End G1, spring 2015	WJ-III: Broad Reading	Student	Begin KG, fall 2013
E-I3	Literacy, C1, G2, WJ-III Broad Reading	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Literacy	WJ-III: Broad Reading	Student	End G2, spring 2016	WJ-III: Broad Reading	Student	Begin KG, fall 2013
E-I4	Literacy, C2, G1, WJ-III Broad Reading	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Literacy	WJ-III: Broad Reading	Student	End G1, spring 2016	WJ-III: Broad Reading	Student	Begin KG, fall 2014
E-J2	Mathematics, C1, G1, WJ-III Broad Mathematics	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Mathematics	WJ-III: Broad Mathematics	Student	End G1, spring 2015	WJ-III: Broad Mathematics	Student	Begin KG, fall 2013
E-J3	Mathematics, C1, G2, WJ-III Broad Mathematics	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Mathematics	WJ-III: Broad Mathematics	Student	End G2, spring 2016	WJ-III: Broad Mathematics	Student	Begin KG, fall 2013
E-J4	Mathematics, C2, G1, WJ-III Broad Mathematics	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Mathematics	WJ-III: Broad Mathematics	Student	End G1, spring 2016	WJ-III: Broad Mathematics	Student	Begin KG, fall 2014
E-K2	Social and Behavioral Skills, C1, G1, SSIS	School-level RCT	FAST, All C1 students	KG-G1	2 years	BAU, All C1 students	Social and Behavioral Skills	SSIS	Student	End G1, spring 2015	None	None	None
E-K3	Social and Behavioral Skills, C1, G2, SSIS	School-level RCT	FAST, All C1 students	KG-G2	3 years	BAU, All C1 students	Social and Behavioral Skills	SSIS	Student	End G2, spring 2016	None	None	None
E-K4	Social and Behavioral Skills, C2, G1, SSIS	School-level RCT	FAST, All C2 students	KG-G1	2 years	BAU, All C2 students	Social and Behavioral Skills	SSIS	Student	End G1, spring 2016	None	None	None

[a]The Home-Based Involvement subscale of the FIQ was inadvertently left off of the parent interview until the final year of data collection, when it was administered to both cohorts.

[b]The School-Based Involvement subscale of the FIQ was inadvertently used in place of the planned Home-School Conferencing Subscale.

Exhibit 3. Registered Contrasts for the QED

			Treatment Group			Comparison Group	Outcome				Baseline		
ID	Contrast Name	Design	Description	Grade during intervention	Exposure	Description	Domain	Measure	Unit of Observation	Timing of Measurement	Measure	Unit of Observation	Timing of Measurement
C-A1	Family relationships, C2, KG, CPRS	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	KG	1 year	BAU, C2 students in matched schools	Family relationships	CPRS: Conflict	Student	End KG, spring 2015	CPRS: Conflict & Closeness	Student	Begin KG, fall 2014
C-A2	Family relationships, C2, G1, CPRS	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Family relationships	CPRS: Conflict	Student	End G1, spring 2016	CPRS: Conflict & Closeness	Student	Begin KG, fall 2014
~~C-B1~~	~~Family involvement, C2, KG, HBIS~~	~~QED Matched schools~~	~~FAST, C2 students who attended FAST ≥4 times~~	~~KG~~	~~1 year~~	~~BAU, C2 students in matched schools~~	~~Family involvement~~	~~FIQ: HBIS~~	~~Student~~	~~End KG, spring 2015~~	~~FIQ: HBIS~~	~~Student~~	~~Begin KG, fall 2014~~
C-B2	Family involvement, C2, G1, HBIS	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Family involvement	FIQ: HBIS	Student	End G1, spring 2016	FIQ: HBIS	Student	Begin KG, fall 2014
C-C1	Family support, C2, KG, RSOP	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	KG	1 year	BAU, C2 students in matched schools	Family support	RSOP	Student	End KG, spring 2015	RSOP	Student	Begin KG, fall 2014
C-C2	Family support, C2, G1, RSOP	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Family support	RSOP	Student	End G1, spring 2016	RSOP	Student	Begin KG, fall 2014
C-D1	Teacher-family engagement, C2, KG, PTRS	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	KG	1 year	BAU, C2 students in matched schools	Teacher-family engagement	PTRS: Joining	Student	End KG, spring 2015	None	None	None
C-D2	Teacher-family engagement, C2, G1, PTRS	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Teacher-family engagement	PTRS: Joining	Student	End G1, spring 2016	None	None	None
C-E1	Home-school engagement, C2, KG, SBIS	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	KG	1 year	BAU, C2 students in matched schools	Home-School Engagement	FIQ: SBIS	Student	End KG, spring 2015	None	None	None
C-E2	Home-school engagement, C2, G1, SBIS	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Home-School Engagement	FIQ: SBIS	Student	End G1, spring 2016	None	None	None
C-F1	Student engagement, C2, KG, School attendance	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	KG	1 year	BAU, C2 students in matched schools	Home-School Engagement	Student Attendance	Student	End KG, spring 2015	None	None	None

ID	Contrast Name	Design	Treatment Group			Comparison Group	Outcome				Baseline		
			Description	Grade during intervention	Exposure	Description	Domain	Measure	Unit of Observation	Timing of Measurement	Measure	Unit of Observation	Timing of Measurement
C-F2	Student engagement, C2, G1, School attendance	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Home-School Engagement	Student Attendance	Student	End G1, spring 2016	None	None	None
C-H1	Vocabulary, C2, G1, PPVT-IV	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Vocabulary	PPVT-IV	Student	End G1, spring 2016	PPVT-IV	Student	Begin KG, fall 2014
C-I1	Literacy, C2, G1, WJ-III Broad Reading	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Literacy	WJ-III: Broad Reading	Student	End G1, spring 2016	WJ-III: Broad Reading	Student	Begin KG, fall 2014
C-J1	Mathematics, C2, G1, WJ-III Broad Mathematics	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Mathematics	WJ-III: Broad Mathematics	Student	End G1, spring 2016	WJ-III: Broad Mathematics	Student	Begin KG, fall 2014
C-K1	Social and Behavioral Skills, C2, G1, SSIS	QED Matched schools	FAST, C2 students who attended FAST ≥4 times	G1	2 years	BAU, C2 students in matched schools	Social and Behavioral Skills	SSIS	Student	End G1, spring 2016	None	None	None

Exhibit 4. Base Sample Size for the RCT

ID		Schools Randomized		Schools in Impact Analysis		Difference		Joiners		Total Loss	
	Contrast Name	T	C	T	C	T	C	T	C	T	C
A3	Family relationships, C1, KG, Child-Parent Relationship Scale: Conflict Subscale	30	30	29	30	1	0	No	No	1	0
A4	Family relationships, C1, G1, Child-Parent Relationship Scale: Conflict Subscale	30	30	29	30	1	0	No	No	1	0
A5	Family relationships, C1, G2, Child-Parent Relationship Scale: Conflict Subscale	30	30	30	30	0	0	No	No	0	0
A6	Family relationships, C2, KG, Child-Parent Relationship Scale: Conflict Subscale	30	30	30	30	0	0	No	No	0	0
A7	Family relationships, C2, G1, Child-Parent Relationship Scale: Conflict Subscale	30	30	30	30	0	0	No	No	0	0
B5	Family involvement, C1, G2, Home-Based Involvement Scale: Conflict Subscale	30	30	30	30	0	0	No	No	0	0
B7	Family involvement, C2, G1, Home-Based Involvement Scale: Conflict Subscale	30	30	30	30	0	0	No	No	0	0
C3	Family support, C1, KG, Reciprocal Support Scale	30	30	29	30	1	0	No	No	1	0
C4	Family support, C1, G1, Reciprocal Support Scale	30	30	29	30	1	0	No	No	1	0
C5	Family support, C1, G2, Reciprocal Support Scale	30	30	30	30	0	0	No	No	0	0
C6	Family support, C2, KG, Reciprocal Support Scale	30	30	30	30	0	0	No	No	0	0
C7	Family support, C2, G1, Reciprocal Support Scale	30	30	30	30	0	0	No	No	0	0
D3	Teacher-family engagement, C1, KG, Parent-Teacher Relationship: Joining Subscale	30	30	29	30	1	0	No	No	1	0
D4	Teacher-family engagement, C1, G1, Parent-Teacher Relationship: Joining Subscale	30	30	29	30	1	0	No	No	1	0
D5	Teacher-family engagement, C1, G2, Parent-Teacher Relationship: Joining Subscale	30	30	30	30	0	0	No	No	0	0
D6	Teacher-family engagement, C2, KG, Parent-Teacher Relationship: Joining Subscale	30	30	30	30	0	0	No	No	0	0
D7	Teacher-family engagement, C2, G1, Parent-Teacher Relationship: Joining Subscale	30	30	30	30	0	0	No	No	0	0
E3	Home-school engagement, C1, KG, School-Based Involvement	30	30	29	30	0	0	No	No	0	0
E4	Home-school engagement, C1, G1, School-Based Involvement	30	30	29	30	0	0	No	No	0	0
E5	Home-school engagement, C1, G2, School-Based Involvement	30	30	30	30	0	0	No	No	0	0
E6	Home-school engagement, C2, KG, School-Based Involvement	30	30	30	30	0	0	No	No	0	0
E7	Home-school engagement, C2, G1, School-Based Involvement	30	30	30	30	0	0	No	No	0	0
F3	Student engagement, C1, KG, Student Attendance	30	30	30	30	0	0	No	No	0	0
F4	Student engagement, C1, G1, Student Attendance	30	30	30	30	0	0	No	No	0	0
F5	Student engagement, C1, G2, Student Attendance	30	30	30	30	0	0	No	No	0	0
F6	Student engagement, C2, KG, Student Attendance	30	30	30	30	0	0	No	No	0	0
F7	Student engagement, C2, G1, Student Attendance	30	30	30	30	0	0	No	No	0	0
H2	Vocabulary, C1, G1, PPVT-IV	30	30	30	30	0	0	No	No	0	0
H3	Vocabulary, C1, G2, PPVT-IV	30	30	30	30	0	0	No	No	0	0
H4	Vocabulary, C2, G1, PPVT-IV	30	30	30	30	0	0	No	No	0	0

ID	Contrast Name	Schools Randomized		Schools in Impact Analysis		Difference		Joiners		Total Loss	
		T	C	T	C	T	C	T	C	T	C
I2	Literacy, C1, G1, WJ-III Broad Reading	30	30	30	30	0	0	No	No	0	0
I3	Literacy, C1, G2, WJ-III Broad Reading	30	30	30	30	0	0	No	No	0	0
I4	Literacy, C2, G1, WJ-III Broad Reading	30	30	30	30	0	0	No	No	0	0
J2	Mathematics, C1, G1, WJ-III Broad Mathematics	30	30	30	30	0	0	No	No	0	0
J3	Mathematics, C1, G2, WJ-III Broad Mathematics	30	30	30	30	0	0	No	No	0	0
J4	Mathematics, C2, G1, WJ-III Broad Mathematics	30	30	30	30	0	0	No	No	0	0
K2	Social and Behavioral Skills, C1, G1, SSIS	30	30	29	30	1	0	No	No	1	0
K3	Social and Behavioral Skills, C1, G2, SSIS	30	30	30	30	0	0	No	No	0	0
K4	Social and Behavioral Skills, C1, G1, SSIS	30	30	30	30	0	0	No	No	0	0

Exhibit 5. Baseline Equivalence of Clusters for the RCT

ID	Pre-test Measure Name	Treatment Group N of Students[1]	Comparison Group N of Students[1]	Unadjusted Treatment Group SD	Unadjusted Comparison Group SD	Standard Deviation Source	Comparison Group Mean	Treatment – Comparison Difference	Standardized T-C Difference	Pre-test shown in this row used as control in impact model for this contrast?	Code for T-C Difference Calculation
A3	CPRS: Conflict Subscale	224	259	7.2	6.3	A	15.7	0.9	0.1	No	B
A4	CPRS: Conflict Subscale	173	207	7.2	6.2	A	15.4	1.1	0.2	No	B
A5	CPRS: Conflict Subscale	147	169	7.4	6.5	A	15.4	1.1	0.2	No	B
A6	CPRS: Conflict Subscale	233	236	6.8	6.5	A	15.1	0.9	0.1	No	B
A7	CPRS: Conflict Subscale	182	203	6.7	6.2	A	14.7	1.1	0.2	No	B
C3	RSOP	223	257	0.6	0.6	A	1.4	0.1	0.1	No	B
C4	RSOP	172	206	0.6	0.7	A	1.4	0.1	0.1	No	B
C5	RSOP	146	169	0.6	0.7	A	1.4	0.0	0.1	No	B
C6	RSOP	230	234	0.7	0.6	A	1.4	0.1	0.1	No	B
C7	RSOP	181	203	0.7	0.6	A	1.4	0.0	0.1	No	B
H2	PPVT-IV	228	277	10.6	10.6	A	82.9	-1.5	-0.1	No	B
H3	PPVT-IV	201	243	10.8	10.7	A	82.7	-1.1	-0.1	No	B
H4	PPVT-IV	247	254	10.0	10.6	A	82.6	-0.5	0.0	No	B
I2	WJ-III: Broad Reading	209	265	17.6	18.4	A	416.7	2.4	0.1	No	B
I3	WJ-III: Broad Reading	185	232	17.7	18.3	A	417.0	3.3	0.2	No	B
I4	WJ-III: Broad Reading	245	245	14.9	16.0	A	411.7	-0.2	0.0	No	B
J2	WJ-III: Broad Mathematics	209	259	12.4	11.4	A	443.6	1.8	0.2	No	B
J3	WJ-III: Broad Mathematics	185	228	12.5	11.4	A	443.5	2.2	0.2	No	B
J4	WJ-III: Broad Mathematics	240	235	11.0	10.2	A	440.9	-0.6	-0.1	No	B

1 The sample counts in this table will not necessarily match those presented in Exhibit 7 because of differences in missing value counts in the outcome variable.

2 Measures at baseline were included in the impact models when available. However, the impact table shows the results for the models without the adjustments.

Note: (A.) Student-level standard deviations calculated from the sample shown on this row. (B.) The treatment-comparison difference was calculated as simple difference of unadjusted means, as described in "Method 1" of Example i3 Findings Reporting Shells--Effects 05-16-2016 (8).docx.

Exhibit 6. Baseline Equivalence of Students for the QED

ID	Pre-test Measure Name	Treatment Group N of Students	Comparison Group N of Students	Unadjusted Treatment Group SD	Unadjusted Comparison Group SD	Standard Deviation Source	Comparison Group Mean	Treatment –Comparison Difference	Standardized T-C Difference	Pre-test shown in this row was used as a control in the impact model for this contrast?	Code for T-C Difference Calculation
A1	CPRS: Conflict Subscale	53	48	5.22	7.15	A	15.94	-1.05	-0.17	No	B
A2	CPRS: Conflict Subscale	42	41	4.87	7.61	A	16.27	-1.43	-0.23	No	B
C1	RSOP	52	48	0.82	0.65	A	1.47	0.14	0.19	No	B
C2	RSOP	42	41	0.75	0.51	A	1.39	0.13	0.20	No	B
H1	PPVT-IV	55	45	9.34	11.18	A	82.93	-3.06	-0.30	No	B
I1	WJ-III: Broad Reading	52	45	15.44	12.57	A	411.76	4.88	0.34	No	B
J1	WJ-III: Broad Mathematics	52	45	10.58	9.52	A	441.24	2.62	0.26	No	B

1 Measures at baseline were included in the impact models when available. However, the impact table shows the results for the models without the adjustments.

Note: (A.) Student-level standard deviations calculated from the sample shown on this row.
(B.) The treatment-comparison difference was calculated as simple difference of unadjusted means, as described in "Method 1" of Example i3 Findings Reporting Shells--Effects 05-16-2016 (8).docx

Exhibit 7. Impact Estimates for the RCT

ID	Post-test Measure Name	Treatment Group N of Clusters	Treatment Group N of Students	Comparison Group N of Clusters	Comparison Group N of Students	Unadjusted Treatment Group SD	Unadjusted Comparison Group SD	Standard Deviation Source (code)	Comparison Group Mean	Impact Estimate	Standardized Effect Size	Impact Standard Error	p-value	Code for Impact Mode Description	Degrees of Freedom
A3	CPRS: Conflict Subscale	29	249	30	285	7.470	6.456	A	15.488	0.388	0.056	0.087	0.520	B	475
A4	CPRS: Conflict Subscale	29	192	30	234	7.861	6.554	A	14.910	1.449	0.202	0.097	0.039	B	367
A5	CPRS: Conflict Subscale	30	164	30	192	8.253	7.097	A	15.339	1.405	0.184	0.109	0.092	B	296
A6	CPRS: Conflict Subscale	30	264	30	255	6.670	6.815	A	15.004	0.630	0.093	0.091	0.307	B	459
A7	CPRS: Conflict Subscale	30	205	30	220	6.881	6.169	A	14.591	1.670	0.256	0.104	0.014	B	365
B5	FIQ: HBIS	30	164	30	192	11.351	10.091	A	49.182	0.302	0.028	0.118	0.810	B	296
B7	FIQ: HBIS	30	205	30	220	10.677	10.689	A	50.623	-0.584	-0.055	0.097	0.574	B	365
C3	RSOP	29	248	30	284	0.698	0.666	A	1.519	0.056	0.082	0.105	0.436	B	473
C4	RSOP	29	192	30	232	0.767	0.793	A	1.709	-0.016	-0.020	0.108	0.852	B	365
C5	RSOP	30	164	30	191	0.810	0.819	A	1.704	0.064	0.079	0.143	0.583	B	295
C6	RSOP	30	260	30	253	0.789	0.737	A	1.610	0.118	0.155	0.108	0.152	B	453
C7	RSOP	30	205	30	220	0.799	0.810	A	1.733	-0.002	-0.003	0.104	0.977	B	365
D3	PTRS: Joining Subscale	29	248	30	285	0.595	0.720	A	4.374	0.183	0.276	0.107	0.010	B	474
D4	PTRS: Joining Subscale	29	192	30	232	0.719	0.679	A	4.528	-0.033	-0.047	0.106	0.655	B	365
D5	PTRS: Joining Subscale	30	163	30	192	0.750	0.707	A	4.475	-0.083	-0.114	0.118	0.335	B	295
D6	PTRS: Joining Subscale	30	262	30	255	0.623	0.774	A	4.413	0.130	0.185	0.126	0.143	B	457
D7	PTRS: Joining Subscale	30	205	30	220	0.726	0.762	A	4.443	0.005	0.007	0.103	0.946	B	365
E3	FIQ: SBIS	29	248	30	285	10.864	9.313	A	45.214	1.520	0.151	0.097	0.119	B	474
E4	FIQ: SBIS	29	192	30	234	11.294	10.854	A	45.188	-0.063	-0.006	0.097	0.953	B	367
E5	FIQ: SBIS	30	164	30	192	11.356	10.575	A	44.385	0.302	0.028	0.118	0.810	B	296
E6	FIQ: SBIS	30	262	30	255	10.297	10.062	A	43.851	2.489	0.244	0.097	0.012	B	457
E7	FIQ: SBIS	30	205	30	220	10.506	9.452	A	44.059	0.669	0.067	0.105	0.522	B	365
F3	Student Attendance	30	308	30	363	7.624	7.020	A	91.655	1.012	0.139	0.099	0.164	B	611
F4	Student Attendance	30	265	30	317	13.793	13.382	A	91.139	0.335	0.025	0.097	0.799	B	522
F5	Student Attendance	30	223	30	268	8.950	6.743	A	93.591	0.121	0.015	0.103	0.881	B	431
F6	Student Attendance	30	346	30	344	8.817	8.510	A	91.590	-0.793	-0.091	0.094	0.331	B	630
F7	Student Attendance	30	290	30	291	7.078	8.832	A	92.638	0.551	0.069	0.116	0.552	B	521
H2	PPVT-IV	30	237	30	283	10.336	10.609	A	83.724	-2.387	-0.228	0.097	0.019	B	460
H3	PPVT-IV	30	209	30	249	6.795	8.080	A	88.337	-0.629	-0.084	0.104	0.423	B	398
H4	PPVT-IV	30	254	30	265	6.715	6.949	A	94.389	0.574	0.084	0.114	0.462	B	459
I2	WJ-III: Broad Reading Subscale	30	237	30	282	19.583	22.456	A	454.773	-0.129	-0.006	0.123	0.961	B	459

ID	Post-test Measure Name	Treatment Group N of Clusters	Treatment Group N of Students	Comparison Group N of Clusters	Comparison Group N of Students	Unadjusted Treatment Group SD	Unadjusted Comparison Group SD	Standard Deviation Source (code)	Comparison Group Mean	Impact Estimate	Standardized Effect Size	Impact Standard Error	p-value	Code for Impact Mode Description	Degrees of Freedom
I3	WJ-III: Broad Reading Subscale	30	210	30	248	18.164	19.818	A	470.327	0.522	0.027	0.111	0.805	B	398
I4	WJ-III: Broad Reading Subscale	30	249	30	264	21.463	22.393	A	457.087	-1.963	-0.089	0.117	0.444	B	453
J2	WJ-III: Broad Mathematics Subscale	30	237	30	282	12.165	12.715	A	463.713	-0.188	-0.015	0.101	0.882	B	459
J3	WJ-III: Broad Mathematics Subscale	30	210	30	248	11.634	13.687	A	475.270	0.829	0.065	0.106	0.541	B	398
J4	WJ-III: Broad Mathematics Subscale	30	248	30	264	10.239	12.450	A	465.004	-0.027	-0.002	0.118	0.984	B	452
K2	SSIS	29	227	30	270	26.636	27.585	A	93.522	-1.142	-0.042	0.106	0.692	B	438
K3	SSIS	30	173	30	205	26.819	27.309	A	93.390	0.278	0.010	0.118	0.931	B	322
K4	SSIS	30	230	30	233	25.225	27.873	A	95.133	-0.047	-0.002	0.124	0.989	B	403

Note: (A.) Student-level standard deviations calculated from the sample shown on this row.

(B.) The model used to estimate this impact has two-level structure with students nested in schools:

Level 1 $Y_{ij} = \beta_{0j} + r_{ij}$

Level 2 $\beta_{0j} = \gamma_{00} + \gamma_{01} T_j + u_{0j}$

where Y_{ij} is the outcome for student i at school j;

β_{0j} is the conditional mean outcome score for students at school j;

γ_{00} is the conditional mean outcome score for control schools;

γ_{01} is the treatment effect (difference between treatment and control school means);

T_j is the treatment indicator, coded 1 if school j is a FAST school and 0 otherwise.

r_{ij} is the residual term for student i at school j.

u_{0j} is a random error associated with school.

Exhibit 8. Impact Estimates for the QED

ID	Post-test Measure Name	Treatment Group N of Students	Comparison Group N of Students	Unadjusted Treatment Group SD	Unadjusted Comparison Group SD	Standard Deviation Source	Comparison Group Mean	Impact Estimate	Standardized Effect Size	Impact Standard Error	p-value	Code for Impact Model Description	Degrees of Freedom
C-A1	CPRS: Conflict Subscale	53	48	7.23	6.47	A	15.29	2.52	0.37	0.41	0.37	B	80
C-A2	CPRS: Conflict Subscale	42	41	7.54	6.52	A	15.34	-0.03	-0.00	0.40	0.99	B	62
C-B2	FIQ: HBIS	51	48	9.18	10.58	A	49.73	5.34	0.54	0.42	0.20	B	78
C-C1	RSOP	52	48	0.79	0.91	A	1.79	-0.05	-0.06	0.40	0.88	B	79
C-C2	RSOP	42	41	0.82	0.75	A	1.75	-0.17	-0.21	0.45	0.64	B	62
C-D1	PTRS: Joining Subscale	67	59	0.58	0.76	A	4.46	0.08	0.12	0.39	0.75	B	104
C-D2	PTRS: Joining Subscale	51	48	0.54	0.74	A	4.44	-0.23	-0.36	0.37	0.33	B	78
C-E1	FIQ: SBIS	66	59	8.37	10.93	A	43.02	9.31	0.96	0.38	0.01	B	103
C-E2	FIQ: SBIS	51	48	9.70	10.64	A	43.67	-1.25	-0.12	0.43	0.77	B	78
C-F1	Student Attendance	82	79	6.39	5.04	A	93.57	-6.67	-1.16	0.35	0.00	B	139
C-F2	Student Attendance	73	68	8.03	24.46	A	87.44	2.45	0.14	0.37	0.71	B	120
C-H1	PPVT-IV	55	45	7.03	8.11	A	94.09	2.35	0.31	0.37	0.41	B	79
C-I1	WJ-III: Broad Reading	52	45	22.28	20.62	A	452.49	17.97	0.83	0.39	0.04	B	76
C-J1	WJ-III: Broad Mathematics	52	45	11.78	10.28	A	464.20	4.85	0.44	0.38	0.26	B	76
C-K1	SSIS	53	58	24.94	21.44	A	100.90	1.02	0.04	0.46	0.92	B	90

Note: (A.) Student-level standard deviations calculated from the sample shown on this row.

(B.) Model: $Y_{ij} = f(T_j, X_{pij}, Z_j) + e_i$

ABOUT AMERICAN INSTITUTES FOR RESEARCH

Established in 1946, with headquarters in Washington, D.C., American Institutes for Research (AIR) is an independent, nonpartisan, not-for-profit organization that conducts behavioral and social science research and delivers technical assistance both domestically and internationally. As one of the largest behavioral and social science research organizations in the world, AIR is committed to empowering communities and institutions with innovative solutions to the most critical challenges in education, health, workforce, and international development.

AIR®

AMERICAN INSTITUTES FOR RESEARCH®

2800 Campus Drive, Suite 200
Suite 200
San Mateo, CA 94403
650-376-6400

www.air.org

Making Research Relevant

LOCATIONS

Domestic

Washington, D.C.
Atlanta, GA
Austin, TX
Baltimore, MD
Cayce, SC
Chapel Hill, NC
Chicago, IL
Columbus, OH
Frederick, MD
Honolulu, HI
Indianapolis, IN
Metairie, LA
Naperville, IL
New York, NY
Rockville, MD
Sacramento, CA
San Mateo, CA
Waltham, MA

International

Egypt
Honduras
Ivory Coast
Kyrgyzstan
Liberia
Tajikistan
Zambia