MOBILIZING VOLUNTEER TUTORS TO IMPROVE STUDENT LITERACY

Implementation, Impacts, and Costs of the Reading Partners Program

Robin Tepper Jacob
Catherine Armstrong
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March 2015

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Mobilizing Volunteer Tutors to Improve Student Literacy

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Funders for the Reading Partners Evaluation

This report is based on work supported by the Social Innovation Fund (SIF), a key White House initiative and program of the Corporation for National and Community Service (CNCS). The Social Innovation Fund combines public and private resources with the goal of increasing the impact of innovative, community-based solutions that have compelling evidence of improving the lives of people in low-income communities throughout the United States.

The Edna McConnell Clark Foundation is leading a SIF project that includes support from CNCS and 15 private co-investors: The Edna McConnell Clark Foundation, The Annie E. Casey Foundation, The Duke Endowment, The William and Flora Hewlett Foundation, The JPB Foundation, George Kaiser Family Foundation, The Kresge Foundation, Open Society Foundations, The Penzance Foundation, The Samberg Family Foundation, The Charles and Lynn Schusterman Family Foundation, The Starr Foundation, Tipping Point Community, The Wallace Foundation, and the Weingart Foundation.

Dissemination of MDRC publications is supported by the following funders that help finance MDRC's public policy outreach and expanding efforts to communicate the results and implications of our work to policymakers, practitioners, and others: The Annie E. Casey Foundation, The Harry and Jeanette Weinberg Foundation, Inc., The Kresge Foundation, Laura and John Arnold Foundation, Sandler Foundation, and The Starr Foundation.

In addition, earnings from the MDRC Endowment help sustain our dissemination efforts. Contributors to the MDRC Endowment include Alcoa Foundation, The Ambrose Monell Foundation, Anheuser-Busch Foundation, Bristol-Myers Squibb Foundation, Charles Stewart Mott Foundation, Ford Foundation, The George Gund Foundation, The Grable Foundation, The Lizabeth and Frank Newman Charitable Foundation, The New York Times Company Foundation, Jan Nicholson, Paul H. O'Neill Charitable Foundation, John S. Reed, Sandler Foundation, and The Stupski Family Fund, as well as other individual contributors.

The findings and conclusions in this report do not necessarily represent the official positions or policies of the funders.

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Overview

This study reports on an evaluation of the Reading Partners program, which uses community volunteers to provide one-on-one tutoring to struggling readers in underresourced elementary schools. Established in 1999 in East Menlo Park, California, Reading Partners' mission is to help children become lifelong readers by empowering communities to provide individualized instruction with measurable results. At each school, Reading Partners transforms a dedicated space into a "reading center," places a full-time team member on site to manage day-to-day operations, and recruits a corps of 40 to 100 community volunteers to work one-on-one with students in pull-out sessions during the school day or after school in kindergarten through grade 5. (This evaluation included only students in grades 2 through 5.)

In March 2011, Reading Partners received a three-year True North Fund investment of up to $3.5 million in grants from the Edna McConnell Clark Foundation and the Social Innovation Fund, matched by $3.5 million from True North Fund co-investors, to further expand its early-intervention literacy program to elementary schools throughout the country and evaluate its effectiveness. This report is the second publication from that evaluation. A policy brief released by MDRC in June 2014 reported the initial findings from the evaluation, which was conducted during the 2012-2013 school year in 19 schools in three states, with more than 1,100 students randomly assigned to the study's program and control groups.

This report builds on those initial findings by describing the Reading Partners program and its implementation in greater detail, exploring whether the program is more or less effective for particular subgroups of students, and assessing some of the potential explanations for the program's success to date. In addition, this report includes an analysis of the cost of implementing the Reading Partners program in 6 of the 19 sites.

Key Findings

- Despite the myriad difficulties inherent in operating a program whose direct service providers are volunteers, Reading Partners was implemented in the schools with a relatively high degree of fidelity to the program model. On average, students in the study received approximately 1.5 tutoring sessions per week, and spent 28 weeks in the Reading Partners program.
- Reading Partners had a positive and statistically significant impact on three different measures of student reading proficiency. These impacts are equivalent to approximately one and a half to two months of additional growth in reading proficiency among the program group relative to the control group and are robust across a range of student characteristic subgroups as well as across groups of students who had different levels of reading comprehension skills at the start of the study.
- Reading Partners is a low-cost option for underresourced schools because a majority of the costs are in-kind contributions, primarily from community volunteers. On average, schools bear only about 20 percent ($710 per program group student) of the total cost of the resources required to implement the program, and over half of these costs are in-kind contributions of space and staff time from the school.

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Preface

Over the last two decades, numerous federal, state, and local efforts have focused on improving the literacy skills of America's young people. Yet, despite these efforts, only limited progress has been made. One approach that has consistently shown promise in improving literacy outcomes, especially for young children, is one-on-one tutoring. One-on-one tutoring delivered by certified teachers has repeatedly demonstrated large positive impacts on the reading proficiency of struggling readers. Yet, while this approach has a solid research base demonstrating its effectiveness, it is both time- and resource-intensive, placing a heavy burden on teachers and schools, and thus is an expensive way to ameliorate the problem of low literacy. As such, it may not always be a viable option for already underresourced schools.

This report explores another model: using community volunteers to provide tutoring to struggling readers, but in a structured, programmatic framework designed and managed by a dedicated nonprofit organization. The Reading Partners program recruits community volunteers who devote a few hours each week to tutoring students in kindergarten through grade 5 in reading, using a structured curriculum. Tutors come from varied backgrounds, are not required to have experience working with children or teaching reading, and receive only limited training before beginning tutoring. But children are assessed and tutors use specific materials supplied by the program, while a site coordinator ensures that each student receives the intended instruction, advises tutors whose students have specific difficulties, and fills in when tutors are unable to make appointments.

This evaluation reaches the encouraging conclusion that the Reading Partners program successfully improved students' reading proficiency, even among children in the upper elementary grades. Furthermore, the cost to the schools was quite low and substantially less than the costs of other supplemental reading services that are typically offered to struggling readers. All this suggests that strong volunteer tutoring programs, like Reading Partners, may be a cost-effective option for underresourced schools and deserve greater attention in the national effort to improve literacy skills.

Gordon L. Berlin
President, MDRC

Acknowledgments

This evaluation of the Reading Partners program would not have been possible without the collaboration of Reading Partners and funding from the Edna McConnell Clark Foundation (EMCF) and the Social Innovation Fund.

We owe special thanks to the many program managers and site coordinators on the Reading Partners staff, whose daily efforts and enthusiasm allowed us to implement the evaluation with integrity, and to Dean Elson, Michael Lombardo, Matt Aguiar, and the rest of the Reading Partners leadership team for their ongoing support.

Additionally, we thank Rob Ivry, Fred Doolittle, William Corrin, Jean Grossman, Hank Levin, Rekha Balu, Marie-Andree Somers, Alice Tufel, Gabriel Rhoads, Jehan Velji, and the EMCF Evaluation Advisory Committee for their thoughtful comments on this report, and Andrea Shane, Claire Montialoux, Ellie Leahy, Nicole Clabaugh, Rachel Rifkin, Tom Smith, Brock Grubb, Mike Sack, Paulette Cha, and Joseph Quinn for their contributions to the project. Thanks also go to Stephanie Cowell and Carolyn Thomas, who prepared the report for publication.

This material is based on work supported by the Corporation for National and Community Service (CNCS). The mission of CNCS is to improve lives, strengthen communities, and foster civic engagement through service and volunteering. CNCS, a federal agency, engages more than five million Americans in service through AmeriCorps, Senior Corps, the Social Innovation Fund, the Volunteer Generation Fund, and other programs, and leads the president's national call-to-service initiative, United We Serve.

The Authors

Executive Summary

The Reading Partners program uses community volunteers to provide one-on-one tutoring to struggling readers in underresourced elementary schools. Established in 1999 in East Menlo Park, California, Reading Partners is a not-for-profit corporation whose mission is to help children become lifelong readers by empowering communities to provide individualized instruction with measurable results. The Reading Partners model is based on the premise that too many children in low-income communities are not reading proficiently and that many teachers, schools, and parents in those communities lack the resources and infrastructure to address the problem.

The evaluation that is described in this report finds that the Reading Partners program successfully improved students' reading comprehension, sight word efficiency, and fluency over the course of the school year by an amount that is roughly equivalent to one and a half to two months of learning. In addition to demonstrating these measurable impacts, the evaluation provides evidence that the cost to the schools was less than half the costs to schools of other supplemental reading programs. The costs for Reading Partners were lower because the volunteer tutors accounted for a large share of the resources that were used. Thus, this study provides additional evidence that volunteer programs can work and that one-on-one tutoring is effective in improving academic outcomes. Furthermore, the results suggest that effective tutoring programs, like Reading Partners, may be a cost-effective option for underresourced schools, because they bring additional resources to the school through community volunteers.

Background

In March 2011, Reading Partners received a three-year True North Fund investment of up to $3.5 million in grants from the Edna McConnell Clark Foundation and the Social Innovation Fund, matched by $3.5 million from True North Fund co-investors, to further expand its early-intervention literacy program to elementary schools throughout the country and evaluate its effectiveness.

In addition to answering questions about the effectiveness of the Reading Partners program, the evaluation was designed to examine the potential for volunteer tutoring more generally to help improve the reading proficiency of struggling readers. To meet its design objectives, the evaluation included an implementation study, an impact study, and a cost study. The implementation and impact studies included 19 schools with Reading Partners sites in three different states, and the cost study included a subsample of six of these schools, also across three different states. Together, the three facets of the evaluation are designed to address the following broad sets of research questions:

1. In what context was the Reading Partners program implemented, and was it implemented as intended — that is, with fidelity to the model? How much variability in fidelity of implementation was observed across the sites? What factors contributed to any observed variability?

2. On average, did the Reading Partners program have a positive impact on students' reading proficiency across three key components of early reading ability: sight word efficiency, reading fluency, and comprehension?

3. What resources are needed to implement the Reading Partners program as described in this evaluation and what proportion of the costs of implementing the program are borne by the school?

The implementation study included site visits to all the schools participating in the evaluation in the winter of the study year, interviews with key program and school staff and volunteers, and the collection of programmatic data from the sites and from Reading Partners' own management information system (MIS). The impact study used a student-level randomized controlled trial design, in which students were randomly assigned within each school either to a program group that would participate in Reading Partners during the 2012-2013 school year or to an "as is" control condition. A total of 1,265 students in grades 2 through 5 across the 19 schools were randomly assigned. Students were assessed on three different measures of reading proficiency in the fall and spring of the study year. Finally, the cost study calculated the intervention's total cost by summing the costs of all the resources that were necessary to implement the program.

The Reading Partners Model

Reading Partners is a "pull-out" program (meaning that students are pulled out of their regular classrooms or after-school program for a limited time period in order to meet with their tutors) that operates both during the school day and after school in designated spaces called "reading centers" at each of the partner schools. The program aims to serve students in kindergarten through grade 5 who are half a year to two and a half years behind grade level in reading, who are conversationally fluent in English, and who do not have any special needs (that is, do not have an Individualized Education Program).[1] The Reading Partners program consists of twice-weekly, one-on-one tutoring sessions that last 45 minutes each. Students are tutored by community volunteers who need not have any experience working in education or with children. Tutor-

[1]Individualized Education Programs are developed for children who are found through assessment to have a disability that affects their learning process. The program outlines how teachers will help these students learn more effectively, considering each of their learning styles and needs.

ing sessions are overseen by site coordinators — full-time Reading Partners team members, who are usually AmeriCorps members and who are also responsible for managing the day-to-day operations of the program.[2]

The Reading Partners model consists of six core components:

- **Regular, one-on-one tutoring**

A key feature of the Reading Partners model is to provide students with individualized reading instruction. This one-on-one support — as opposed to small-group support — is the main component that differentiates Reading Partners from many other supplemental services that are available to struggling readers.

- **Dedicated school space and use of materials**

Reading Partners tutoring is designed to take place on school grounds in a dedicated space, or reading center, which contains specific features designated by Reading Partners, such as work stations for tutor-student pairs, a library with materials that are suitable for readers at different levels, an area with resources for volunteers to use, and posters and other materials with a reading theme that can be displayed on the wall.

- **Structured and individualized curriculum**

Tutoring sessions follow a consistent structure. The tutor begins by reading aloud to model fluent reading and pausing periodically to ask the student comprehension questions or to check the student's knowledge of key vocabulary. The tutor then uses curricular materials to introduce or reinforce a specific reading skill or concept. Finally, the tutor works with the student to apply the skill or content while the student reads aloud.

- **Data-driven instruction**

Reading Partners uses data to implement and support the model, including the results of student assessments that are given three times a year. These assessments are used to create and update a student's Individualized Reading Plan (IRP), which identifies student goals and areas on which to focus.

[2]AmeriCorps is a program of the Corporation for National and Community Service that places young adults in service positions at nonprofit organizations, schools, public agencies, and faith-based entities. In return for their service, AmeriCorps members receive a living stipend, health insurance, and, when they complete their program, an education grant. See Corporation for National and Community Service, "Our Programs: AmeriCorps," online publication (2014), at www.nationalservice.gov.

- **Rigorous and ongoing training**

Reading Partners school-based staff and AmeriCorps members participate in organized training sessions before the school year begins as well as ongoing (usually monthly) sessions throughout the school year. Topics covered in these training sessions include the Reading Partners model, a detailed review of the curriculum, how to train volunteer tutors, and how to use data and the Reading Partners data system. A short initial training session, as well as periodic training on specific topics, is offered to tutors as well.

- **Instructional supervision and support**

Instructional supervision and support are provided on an ongoing basis by and for Reading Partners staff and volunteers. Site coordinators supervise volunteers during tutoring sessions and provide guidance and suggestions to tutors who need additional support. Program managers — more experienced staff members who generally have a background in teaching — work with site coordinators to troubleshoot a range of issues, including those related to communications with school staff, managing tutors, or identifying best practices to better support the progress of a specific student.

Key Findings

- **The Reading Partners Program was implemented with fidelity.**

Despite the myriad difficulties inherent in operating a program whose direct service providers are volunteers, Reading Partners was implemented in the schools with a relatively high degree of fidelity.

Students received regular one-on-one tutoring in a dedicated school space. On average, students in the study received approximately 1.5 tutoring sessions per week, and spent 28 weeks in the Reading Partners program. Although this intensity is slightly less than the program model recommends, on average students consistently received three tutoring sessions every two weeks. All sites in the study had a designated reading center where tutoring took place and where selected materials and resources were made available to program staff, tutors, and students.

Students' reading progress was monitored regularly. Ninety-five percent of the program group students who participated in the Reading Partners program for the entire year were assessed by Reading Partners staff using their own internal assessments at the three prescribed points that the Reading Partners model dictates: when a student first enters the program, midway through the school year, and at the end of the school year.

Staff and volunteers believed that they had adequate training and support to perform their jobs successfully. Although the volunteers received limited training before they began tutoring (approximately an hour of orientation and tutoring observation), most tutors indicated that they felt adequately trained for the role. They also felt well supported by the site coordinators, who provided monitoring and assistance during tutoring sessions as well as additional feedback on how to address specific issues with students outside of the tutoring session. The full-time Reading Partners staff and AmeriCorps members (including program managers and site coordinators) consistently indicated that they had access to ongoing support from their supervisors.

The biggest challenge that Reading Partners faced in implementing the program was ensuring tutor attendance and retention. Reading Partners requests that tutors make a one-semester commitment, and site coordinators at the study sites reported that many volunteers, particularly high school and college students, did not stay beyond that period of time. As a result, new tutors had to be brought on throughout the year. Furthermore, volunteers varied in their consistency and commitment. Site coordinators reported that tutors sometimes failed to arrive at their scheduled time and at times did not notify the site coordinator beforehand. However, Reading Partners put structures in place to address these problems, including the use of substitute tutors, make-up days, and tutoring sessions conducted by site coordinators. These tactics meant that a student did not necessarily miss tutoring sessions as a result of tutor inconsistency.

- **Reading Partners had a positive and statistically significant impact on three different measures of student reading proficiency.**

The study quantified the impact of Reading Partners through three different assessments: the Stanford Achievement Test (SAT-10) for reading comprehension; the AIMSweb oral reading fluency measure; and the Test of Word Reading Efficiency, 2nd Edition (TOWRE-2), for sight word efficiency. The effect size of each impact, which reflects the magnitude of the difference between the program and control groups, was 0.10 standard deviations for reading comprehension, 0.09 for reading fluency, and 0.11 for sight word efficiency. These statistically significant impacts are equivalent to approximately one and a half to two months of additional progress in reading among the program group members relative to students in the control group, who did not participate in the Reading Partners program.[3]

These results (between 0.09 and 0.11 standard deviations) are comparable in magnitude with results of other reading interventions that have been rigorously evaluated on a large

[3]Statistical significance indicates that the impact is likely a result of the intervention rather than a chance occurrence.

scale in grades 2 through 5. Although some interventions have produced large impacts for kindergarteners and first-graders, for students in grades 2 through 5 most rigorous evaluations of reading programs generally have found impacts between 0.10 and 0.25 standard deviations, and among rigorously evaluated tutoring programs in particular, impacts have been between 0.10 and 0.15 standard deviations.[4]

Since students in the control group were also receiving supplemental reading services, the impact of Reading Partners should be interpreted as the impact of the program relative to other supplemental service receipt, not the impact of Reading Partners compared with no intervention. Approximately two-thirds of students in the control group received at least one supplemental reading service and were more likely to receive small-group intervention support than were their counterparts in the program group. Because the control group students were also receiving supplemental reading instruction, the program group members received, in total, only about an hour more of reading instruction each week than the control group received.

Program impacts are robust across a range of student characteristic subgroups as well as across subgroups of students with varying levels of reading comprehension skills at baseline. Positive and statistically significant impacts were found on at least one measure of reading proficiency for each of the following student groups: male students, female students, English language learners (that is, students whose first language is not English), students who are fluent in English, students in lower grades (grades 2 and 3), students in upper grades (grades 4 and 5), and students with baseline reading comprehension scores in the lowest three quartiles of the study sample.

Reading Partners had a positive and statistically significant impact on the percentage of students who moved out of the lowest national quartile in terms of reading comprehension. At the end of the year, 19 percent of the program group students who had scored in the bottom quartile nationally at baseline had moved out of the lowest quartile, as opposed to only 12 percent of the control group students.

There were no consistent patterns between the impacts and various school-level measures of program context or fidelity. The study team explored the relationship between impacts and several aspects of program context and fidelity, including tutor consistency, fidelity of

[4]Yung Soo Lee, Nancy Morrow-Howell, Melissa Jonson-Reid, and Stacey McCrary, "The Effect of the Experience Corps® Program on Student Reading Outcomes," *Education and Urban Society* 44, 1 (2010): 97-118; Carrie E. Markovitz, Marc W. Hernandez, Eric C. Hedberg, and Benjamin Silberglitt, *Impact Evaluation of the Minnesota Reading Corps K-3 Program* (Chicago: NORC at the University of Chicago, 2014); Henry May, Abigail Gray, Jessica N. Gillespie, Philip Sirinides, Cecile Sam, Heather Goldsworthy, Michael Armijo, and Namrata Tognatta, *Evaluation of the i3 Scale-up of Reading Recovery: Year One Report, 2011-12* (Philadelphia: Consortium for Policy Research in Education, 2013).

implementation, years of operation, and dosage (the frequency and intensity of service delivery). Across these analyses, there is no indication of particular aspects of implementation or context that made Reading Partners more effective.

- **Reading Partners is a low-cost option for underresourced schools.**

The total resource value, or cost, of Reading Partners is approximately $3,610 per program group student. Other effective early literacy interventions that have been evaluated at scale are at least as costly as Reading Partners.[5] However, unlike many other resource-rich programs, a majority of Reading Partners' costs ($1,910 out of $3,610) are in-kind contributions, primarily from community volunteers. As a result, Reading Partners schools bear only a small portion of the total costs of the program. On average, schools contribute only 20 percent of the total resources required to implement the program ($710 per program group student), and over half of these costs are in-kind contributions of space and staff time.[6]

The volunteer time and transportation represent the largest portion of the total resources needed to implement the program. Almost half (42 percent) of the resources required for Reading Partners can be attributed to volunteers. Volunteers contributed, on average, the equivalent of $1,520 per program group student, which included both their time and transportation costs. Because the tutors are not compensated for their time or transportation, they subsidize a large portion of the costs of the program.

While Reading Partners is often more resource-intensive than the other supplemental services that are available to students in the study schools, many of those resources are provided in-kind and thus schools are required to contribute a much smaller portion of those costs. In addition to Reading Partners, the six school sites that were included in the cost study offered other supplemental services that provided reading instruction beyond what students received during regular classroom teaching. Those other services were provided to both program and control group students, although control group students received more of them than did the program group. The cost per student for the average of the other supplemental reading services of-

[5]Fiona M. Hollands, Yilin Pan, Robert Shand, Henan Cheng, Henry M. Levin, Clive R. Belfield, Michael Kieffer, A. Brooks Bowden, and Barbara Hanisch-Cerda, *Improving Early Literacy: Cost-Effectiveness Analysis of Effective Reading Programs* (New York: Center for Benefit-Cost Studies of Education, Teachers College, Columbia University, 2013); Jessica Simon, "A Cost-Effectiveness Analysis of Early Literacy Interventions," unpublished paper (New York: Columbia University, 2011).

[6]To calculate the cost per program group student, first the total cost (or the total resource value) of the Reading Partners program at each site was divided by the total number of Reading Partners tutoring sessions provided to all students in the program during the year (not just the sessions provided to students participating in the study), including students in kindergarten and first grade, to obtain the cost per session. Then, to determine the average cost of serving each program group student, the average cost per session was multiplied by the average number of sessions that the students participating in the study received.

fered at the six sites was $1,780 and ranged from $1,050 to $4,890 per student. The range in the total resources provided by the supplemental services across the six sites depended on both the number and type of supplemental services that were offered. Some services, like computer-based programs, were much less resource-intensive. When the cost of Reading Partners is compared with the cost of other supplemental services that schools offered to struggling readers, the cost to the school for Reading Partners was $710 per program group student, as noted above, while the average cost of the other supplemental reading services borne by the school or school district was $1,700.

Conclusions

Overall, the evaluation finds that the Reading Partners model is effective. The program produced measurable impacts on reading skills among students who had a fairly broad range of reading abilities when the study began and among students from a wide range of grades (grades 2 through 5). Reading Partners produced these impacts despite the lack of experience among tutors, the somewhat limited training the tutors received, and the relatively high degree of tutor turnover. Furthermore, the findings illustrate the high value of the Reading Partners program from the perspective of the schools. The program uses many resources, but the volunteers account for a large part of those resources. As a result, the schools bear only 20 percent of the costs.

Thus, the study provides evidence that if the right design and administrative structures are put into place, volunteer tutoring programs can be effective when implemented at scale, and volunteer tutoring programs may be a cost-effective option for underresourced schools.

Reading Partners manages to be effective even in the absence of oft-cited key components to successful tutoring, including, in particular, extensive tutor training and tutor consistency.[7] Further research is required to understand whether improving these components of the model would affect the magnitude of the impacts and whether the impact of Reading Partners is sustained for more than one year.

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[7]Batya Elbaum, Sharon Vaughn, Marie Tejero Hughes, and Sally Watson Moody, "How Effective Are One-to-One Tutoring Programs in Reading for Elementary Students at Risk for Reading Failure? A Meta-Analysis of the Intervention Research," *Journal of Educational Psychology* 92, 4 (2000): 605-619; Gary W. Ritter, Joshua H. Barnett, George S. Denny, and Ginger R. Albin, "The Effectiveness of Volunteer Tutoring Programs for Elementary and Middle School Students: A Meta-Analysis," *Review of Educational Research* 79, 1 (2009): 3-38; Robert E. Slavin, Cynthia Lake, Susan Davis, and Nancy A. Madden, "Effective Programs for Struggling Readers: A Best-Evidence Synthesis," *Educational Research Review* 6, 1 (2011): 1-26; Barbara A. Wasik, "Using Volunteers as Reading Tutors: Guidelines for Successful Practices," *The Reading Teacher* 51, 7 (1998): 562-570.

Chapter 1

Introduction and Evaluation Overview

Reading skills are the key building blocks of a child's formal education. Yet, the national statistics on literacy attainment are profoundly distressing:[1] Two out of three American fourth-graders are reading below grade level and almost one-third of children nationwide lack even basic
reading skills. For children in low-income families, the numbers are even more troubling, with 80 percent reading below grade level. Despite several decades of education reform efforts, only incremental progress has been made in addressing this reading crisis. From 1998 to 2013, the number of low-income fourth-graders reading at a proficient level increased by only 7 percentage points.

The Reading Partners program that is described in this report uses community volunteers to provide one-on-one tutoring to struggling readers in underresourced elementary schools. Established in 1999 in East Menlo Park, California, Reading Partners is a not-for-profit corporation whose mission is to help children become lifelong readers by empowering communities to provide individualized instruction with measurable results. The Reading Partners model is based on the premise that too many children in low-income communities are not reading proficiently and that many teachers, schools, and parents in those communities lack the resources and infrastructure to address the problem. For these reasons, the program typically serves students in federally designated low-income schools and focuses on using community volunteers to provide the needed support for struggling readers.

At each school, Reading Partners transforms a dedicated space into a "reading center," places a full-time staff member on site to manage day-to-day operations, and recruits a corps of 40 to 100 community volunteers to work one-on-one with struggling readers in kindergarten through grade 5 (although this evaluation included only students in grades 2 through 5). Operating independently within the school building, Reading Partners has grown to serve more than 7,000 students in over 130 schools throughout California, Colorado, Maryland, New York, Oklahoma, South Carolina, Texas, Washington, and Washington, DC, in the years since its inception.[2]

In March 2011, Reading Partners received a three-year True North Fund investment of up to $3.5 million in grants from the Edna McConnell Clark Foundation and the Social Innovation Fund, matched by $3.5 million from True North Fund co-investors, to further expand its

[1]U.S. Department of Education, National Center for Education Statistics (2013).
[2]Reading Partners (2013).

early-intervention literacy program to elementary schools throughout the country and evaluate its effectiveness. Box 1.1 contains more information about the EMCF Social Innovation Fund.

A policy brief released by MDRC in June of 2014 reported the initial findings from the evaluation, which was conducted during the 2012-2013 school year in 19 schools in three states and involved more than 1,100 students. It found positive impacts of the program on three different measures of reading proficiency.[3] The findings suggest that Reading Partners can be a valuable source of support for elementary grade students who are struggling with reading in underresourced schools and deserves wider use in school reform efforts to help improve reading proficiency.

This report builds on those initial findings by describing the Reading Partners program and its implementation in greater detail, exploring whether or not the program is more or less effective for particular subgroups of students, and assessing some of the potential explanations for the program's success. In addition, this report includes an analysis of the cost of implementing the Reading Partners program in 6 of the 19 sites; it additionally compares the cost of Reading Partners with the cost of the other supplemental reading services that these six schools offered to their students.

The report concludes that the program is effective for a wide range of student subgroups, including students who are officially designated by the school to be English language learners, students starting the program with the weakest skills, and both boys and girls. Furthermore, although Reading Partners is a resource-intensive program involving the time of many individuals, the volunteers themselves account for much of the cost of the program. Thus, the cost of implementing the program for schools and districts is quite low. In fact, the required school contribution for Reading Partners is substantially lower than it is for the other supplemental reading services that are available at the schools, precisely because the volunteers account for a large proportion of the program's costs. Although further research is warranted, the findings suggest that the regular one-on-one attention that the students in the program group received may have been one of the key contributors to the positive impacts of the program.

The Policy Context

Reading Partners is being implemented and evaluated in a national context in which increasing emphasis is being placed on interventions that are designed to improve reading instruction for

[3]Jacob, Smith, Willard, and Rifkin (2014).

Box 1.1

The EMCF Social Innovation Fund

The Edna McConnell Clark Foundation (EMCF), in collaboration with MDRC and The Bridgespan Group, is leading a Social Innovation Fund (SIF) project that aims to expand the pool of organizations with proven programs that can help low-income young people make the transition to productive adulthood. The SIF, an initiative enacted under the Edward M. Kennedy Serve America Act, targets millions of dollars in public-private funds to expand effective solutions across three issue areas: economic opportunity, healthy futures, and youth development and school support. This work seeks to create a catalog of proven approaches that can be replicated in communities across the country. The SIF generates a 3:1 private-public match, sets a high standard for evidence, empowers communities to identify and drive solutions to address social problems, and creates an incentive for grant-making organizations to target funding more effectively to promising programs. Administered by the federal Corporation for National and Community Service (CNCS), the SIF is part of the government's broader agenda to redefine how evidence, innovation, service, and public-private cooperation can be used to tackle urgent social challenges.

The EMCF SIF is particularly focused on young people who are at greatest risk of failing or dropping out of school or of not finding work, who are involved or likely to become involved in the foster care or juvenile justice system, or who are engaging in risky behavior such as criminal activity or sexual activity that could lead to teenage pregnancy.

EMCF, with its partners MDRC and Bridgespan, selected an initial cohort of nine programs and a second cohort of three programs to receive SIF grants: BELL (Building Educated Leaders for Life), Center for Employment Opportunities, Children's Aid Society—Carrera Adolescent Pregnancy Prevention Program, Children's Home Society of North Carolina, Communities in Schools, Gateway to College Network, PACE Center for Girls, Reading Partners, The SEED Foundation, WINGS for Kids, Youth Guidance, and Children's Institute, Inc. These organizations were selected through a competitive process based on prior evidence of impacts on economically disadvantaged young people, a track record of serving young people in communities of need, strong leadership and a potential for growth, and the financial and operational capabilities necessary to expand to a large scale.

The EMCF Social Innovation Fund initiative, called the True North Fund, includes support from CNCS and 15 private co-investors: The Edna McConnell Clark Foundation, The Annie E. Casey Foundation, The Duke Endowment, The William and Flora Hewlett Foundation, The JPB Foundation, George Kaiser Family Foundation, The Kresge Foundation, Open Society Foundations, The Penzance Foundation, The Samberg Family Foundation, The Charles and Lynn Schusterman Family Foundation, The Starr Foundation, Tipping Point Community, The Wallace Foundation, and the Weingart Foundation.

early elementary school students. Several national initiatives have been instituted in recent years (such as the Reading Excellence Act of 1997 and Reading First) in an attempt to provide schools with better resources to support their struggling elementary students. In addition, a number of states have either enacted or are considering enacting legislation regarding third grade reading proficiency, with 14 states and Washington, DC, having adopted laws that require students to be retained if they are not reading at grade level by the end of third grade.[4] This policy environment has implications for interpreting the results of the evaluation because it affects the degree to which other supplemental services are available to students in the study.

The No Child Left Behind Act of 2002 requires that schools provide low-income families with extra academic assistance or supplemental education services if their children are attending a Title I school that is in Program Improvement.[5] These supplemental education services come at no cost to families and can include tutoring or remedial help in subjects like reading, language arts, and math, as long as they are aligned with state content standards and grounded in high-quality research that provides evidence of their effectiveness.[6] Students can receive this extra help, which is often provided by external programs and vendors, before or after school, on weekends, or in the summer.[7]

Many of these supplemental education services use Response to Intervention (RtI) models, which provide a means of identifying and supporting struggling students. Under RtI, an approach for which funding was authorized under the Individuals with Disabilities Education Improvement Act of 2004, all students are monitored and assessed for placement into a multi-tiered system of intervention. Students who are identified as struggling learners are supported by an array of interventions at increasing levels of intensity. Increasing the intensity of an intervention can be accomplished in a number of ways, including conducting an intervention more frequently or adding to its duration, relying on more specialized instructors, or pulling students into smaller groups ("pull-out" programs). The progress of each at-risk student is monitored closely using research-based assessments to make decisions about intervention duration and intensity. Tier I, usually classroom instruction for all students, is considered the first level of intervention, with Tier II and Tier III being progressively more intense.[8] For example, daily one-on-one work with a specially trained reading interventionist is considered a Tier III inter-

[4]Rose (2012).

[5]Title I schools are those that receive federal funds based on the number of low-income children in attendance. Funds are used to improve academic achievement in reading and math in a variety of ways — offering teacher professional development, hiring additional teachers, or modifying curricula. A school in Program Improvement has been designated by the state to be in need of improvement for more than one year (U.S. Department of Education, 2012).

[6]Heinrich, Meyer, and Whitten (2010).

[7]U.S. Department of Education (2012).

[8]Fuchs and Fuchs (2006).

vention. Reading Partners is typically considered a Tier II intervention (for students needing some additional support), although some schools report using Reading Partners as a Tier III intervention.[9] Reading Partners is usually one among multiple Tier II interventions that are available for struggling readers at any given school.

Evidence-Based Approaches to Improving Literacy in Elementary School

A variety of interventions exist to help students who are learning to read in elementary school. Among them, two models — whole-school reform and one-on-one tutoring by trained teachers — have received widespread attention, in part because they have been rigorously evaluated at scale (meaning that they have been tested on hundreds of students in multiple schools) and found to be effective in improving reading skills. A third model, tutoring by volunteers or paraprofessionals, used by Reading Partners, has received less scrutiny.

Whole-School Reform

Whole-school reform involves schoolwide changes to the curriculum, assessments, and interventions for struggling students in an attempt to change a school's instructional culture and practices. The approach is exemplified by the Success for All program, in which teachers implement a highly structured reading curriculum, cooperative learning techniques, whole-school improvement practices, frequent assessments, and daily one-on-one tutoring for struggling students. The Success for All program has been widely evaluated and has been involved in two large-scale randomized controlled trials, all of which have found positive impacts of the program on students' reading skills.[10]

One-on-One Tutoring Delivered by Trained Teachers

One-on-one tutoring delivered by certified teachers has consistently demonstrated large impacts on the reading proficiency of struggling readers.[11] Among the best known and most widely researched of these programs is Reading Recovery. Reading Recovery is a short-term early intervention designed to help the lowest-achieving 15 percent to 20 percent of readers in first grade by providing daily one-on-one tutoring. Reading Recovery teachers, who receive

[9]A 2011 Reading Partners survey asked principals to indicate how Reading Partners was used in their schools. Of the 32 principals who answered the question about whether they used Reading Partners as an RtI intervention in their schools, 81 percent indicated that they did. Of the 26 who answered a question about what tier they used Reading Partners tutoring services for, 50 percent said they used Reading Partners as a Tier II intervention, and another 35 percent said they used Reading Partners as a Tier II/III intervention.

[10]Borman et al. (2007); Quint et al. (2013); Quint et al. (2014).

[11]Slavin, Lake, Davis, and Madden (2011); May et al. (2013).

extensive and ongoing training, provide participating students with daily 30-minute lessons tailored to individual student needs over a period of 12 to 20 weeks.

Tutoring by Volunteers or Paraprofessionals

While the whole-school reform approach and one-on-one tutoring by trained teachers each has a solid research base demonstrating its effectiveness, they are both time- and resource-intensive ways to ameliorate the problem of low literacy, and as such may not always be viable options for already underresourced schools.

A third, less validated approach involves using volunteers or paraprofessionals, as opposed to trained teachers, to provide tutoring to struggling readers. Tutoring by volunteers or paraprofessionals has the potential to be a less costly method for addressing the problem of low literacy, but to date, little rigorous evidence exists regarding the efficacy of this approach. Although available evidence on the effectiveness of one-on-one tutoring provided by volunteers is encouraging, there is currently only limited evidence that such programs can be implemented effectively on a large scale. Among seven studies of volunteer tutoring programs that were reviewed in a meta-analysis, only two were evaluated experimentally with intervention groups larger than 100 students. Only one of those two, the Experience Corps program, was found to have positive impacts.[12] Since then, Minnesota Reading Corps has also demonstrated effectiveness at scale.[13] Furthermore, prior research on the implementation and effectiveness of programs that rely largely on volunteers generally suggests that bringing them to scale might be quite difficult.[14]

The evaluation described in this report is designed to bring more information to bear on the potential effectiveness of such volunteer tutoring programs. This report reflects a third rigorous evaluation of a volunteer tutoring program delivered on a large scale (the other two being the evaluations of Experience Corps and Minnesota Reading Corps, described above), and the Reading Partners program is unique among these evaluations in that it relies on community volunteers who devote only a few hours each week to tutoring (as opposed to Minnesota Reading Corps, which primarily relies on AmeriCorps members who commit to tutoring full time or half time, and Experience Corps, an AmeriCorps affiliate in which senior-age volunteers commit up to 15 hours a week to tutoring).[15] It is intended to provide rigorous evidence about the efficacy of the Reading Partners program implemented at scale. Furthermore, it assesses the cost of

[12]Slavin, Lake, Davis, and Madden (2011).
[13]Markovitz, Hernandez, Hedberg, and Bilberglitt (2014).
[14]Grossman and Furano (1999); Hager and Brudney (2004).
[15]AARP Experience Corps (2014); Markovitz, Hernandez, Hedberg, and Bilberglitt (2014).

implementing a volunteer tutoring program and explores the cost of implementing the program from the perspective of a school.

Overview of the Evaluation

To answer questions about the effectiveness of the Reading Partners program and the potential for volunteer tutoring more generally to help improve the reading proficiency of struggling readers, this evaluation includes an implementation study, an impact study, and a cost study. The implementation and impact studies included 19 schools with Reading Partners sites in three different states, and the cost study included a subsample of six of those sites. Together, these three facets of the evaluation are designed to address the following broad research questions:

1. In what context was the Reading Partners program implemented, and was it implemented as intended or with fidelity (that is, with adherence to the program model as laid out by the program developers)? How much variability in fidelity of implementation was observed across the sites? What factors contributed to any observed variability?

2. On average, did the Reading Partners program have a positive impact on students' reading proficiency across three key components of early reading ability: sight-word efficiency, reading fluency, and comprehension?

3. What resources are needed to implement the Reading Partners program as described in this report and what proportion of the costs of implementing the program are borne by the school?

Implementation Study

The implementation study included site visits to all the schools participating in the evaluation in the winter of the study year, interviews with key program and school staff and volunteers, and the collection of programmatic data from the sites and from Reading Partners' own management information system. It was designed to enable the study team to describe the program and the context in which it was implemented in detail and to assess whether the program was delivered as intended. In addition, it was designed to explore whether any specific factors helped facilitate the implementation of the program or posed barriers to effective implementation, and how sites addressed those challenges. Implementation studies such as this one are essential for understanding the results of impact evaluations and contribute valuable information on the generalizability of the findings, the feasibility of implementing the program in other locations, and elements that might facilitate or strengthen future implementation.

Impact Study

The impact study was designed to test the effect of the Reading Partners program on student reading proficiency — that is, to determine whether the tutoring provided by the Reading Partners' volunteers increased the reading skills of the students who participated. The study used a student-level randomized controlled trial design, in which students were randomly assigned within each school to either a program group that would participate in Reading Partners during the 2012-2013 school year or an "as is" control condition without Reading Partners. Random assignment helps ensure that there are no systematic differences between the two groups of students at baseline, so that any positive effects can be causally attributed to the program with a high degree of confidence. Any differences between the outcomes of the program and control groups at the end of the study period are considered *impacts* of the program. A total of 1,265 students in grades 2 through 5 across the 19 schools were randomly assigned (646 to the program group and 619 to the control group). Although Reading Partners typically serves students in kindergarten through grade 5, the funding priorities of the granting institution, EMCF, typically focus on older children and adolescents. For that reason, the decision was made to include only second- through fifth-graders in this evaluation.

At the start of the school year, three assessments were given to all students in the study sample. The assessments measured reading comprehension, fluency, and sight word efficiency, all key components of early reading.[16] These same three assessments were administered to students again in the spring, as close to the end of the school year as possible.

Cost Study

The cost study describes the cost of implementing the Reading Partners program during the evaluation, based on a comprehensive list of the resources (or "ingredients") used in implementation, and analyzes who bears the burden of financing those costs. This method works by calculating an intervention's total cost by summing the cost of all the resources needed to implement the program, regardless of who financed them.[17] The analysis uses the same approach to examine the costs of the other supplemental reading services at a sample of study schools. This approach provides a rich description of the costs of Reading Partners, as well as the costs of the other supplemental reading services in a sample of the evaluation schools, and allows for a detailed analysis of who absorbs those costs and how those costs vary across sites.

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[16]Reading comprehension was assessed using the Stanford Achievement Test 10th Edition (SAT-10) reading comprehension subtest; fluency, the ability to read with speed and accuracy, was assessed using the AIMSweb one-minute oral reading fluency subtest; and sight word efficiency, the ability to quickly identify commonly used words without going through the process of decoding, was assessed using the Test of Word Reading Efficiency, 2nd Edition (TOWRE-2) sight word reading subtest.

[17]Levin (1975); Levin and McEwan (2001).

For budgetary reasons, only a subsample of schools could be included in the cost study. The team selected sites with strong implementation, that were geographically representative of the other sites in the study, and where reliable data could be collected on the resources used in Reading Partners and other supplemental reading services offered during the 2012-2013 school year. In order to execute this component of the study, MDRC partnered with the Center for Benefit-Cost Studies of Education at Teachers College, Columbia University. Cost studies like these are essential for helping researchers, practitioners, and programs themselves understand what resources are required for implementing a program.

Evaluation Sample of Schools

The sample for this study consists of 19 schools with Reading Partners reading centers that were recruited for the evaluation after Reading Partners senior staff identified them as potential participants. Only schools in which Reading Partners had been operating for at least one year before the study began were eligible, although the staff in these schools included both new and returning staff members. Schools were also eligible to participate only if Reading Partners anticipated that they would not be able to provide services to all the students who needed help with reading. This stipulation ensured that each program site was able to serve the same number of eligible students as it typically would, and did not deny services as a result of random assignment. A total of 31 schools were contacted during recruitment, and 19 of them joined the study.

The 19 participating schools were spread across 12 school districts and 6 Reading Partners programmatic regions (New York City; Washington, DC; and, in California, East Bay, South Bay, Sacramento, and Los Angeles).[18] There were 16 schools in California, 2 in New York, and 1 in Washington, DC. All of the schools were established Reading Partners sites; 8 of the 19 schools were in their second year of operating a Reading Partners center, while the rest had been operating a Reading Partners center for at least three years. The schools in the Reading Partners study sample had high numbers of students receiving free or reduced-price lunch (a proxy for coming from a low-income family), minority students, and English language learners. The majority of the participating schools were schoolwide Title I schools. Eight of the study schools were in varying stages of federal School Improvement status and two were in the final year of a three-year School Improvement Grant (grants to state education agencies to support school improvement goals in the nation's lowest-performing schools).

Table 1.1 shows the characteristics of the study sample compared with other Reading Partners schools that were not included in the sample, with all federally designated Title I

[18]While 19 schools participated in the study, there were only 17 distinct Reading Partners centers. In the study, two sets of two colocated schools shared a reading center.

Reading Partners Evaluation

Table 1.1

Characteristics of Reading Partners Study Schools and Other School Samples (2011-2012)

	Study	Other Reading Partners Schools[a]			U.S. Title I Schools[b]			Average U.S. Schools[c]		
Characteristic	Schools	Mean	Difference	P-Value	Mean	Difference	P-Value	Mean	Difference	P-Value
Eligible for Title I program (%)	88.89	96.20	-7.31	0.209	100.00	-11.11 ***	<0.001	75.39	13.49	0.184
Students eligible for free/reduced-price lunch[d] (%)	81.70	84.52	-2.82	0.411	69.06	12.65 ***	0.008	53.47	28.23 ***	<0.001
Race/ethnicity (%)										
Black	20.74	28.44	-7.71	0.304	20.74	0.00	1.000	15.92	4.82	0.404
Hispanic	61.75	52.95	8.80	0.204	29.83	31.92 ***	<0.001	23.34	38.40 ***	<0.001
Asian	9.60	8.30	1.29	0.639	3.43	6.16 ***	0.002	4.67	4.92 **	0.025
White	5.70	7.28	-1.58	0.496	41.28	-35.58 ***	<0.001	51.60	-45.90 ***	<0.001
Other	2.22	3.03	-0.81	0.336	4.73	-2.51	0.263	4.47	-2.25	0.234
Male (%)	51.89	51.82	0.07	0.970	53.54	-1.64	0.462	53.00	-1.1	0.564
Average number of students	494	451	43	0.318	468	26	0.622	472	22	0.677
Grade 2	79	69	10	0.169	68	10	0.217	70	8	0.331
Grade 3	76	65	11	0.142	68	8	0.384	70	5	0.554
Grade 4	74	65	9	0.227	67	7	0.396	70	5	0.591
Grade 5	76	64	12	0.131	67	9	0.290	69	6	0.488
School setting[e] (%)										
Urban	73.68	91.67	-17.98 **	0.027	39.77	33.91 ***	0.003	31.77	41.91 ***	<0.001
Suburban	26.32	8.33	17.98 **	0.027	21.28	5.03	0.592	29.50	-3.19	0.761
Town	0.00	0.00	0.00	NA	10.07	-10.07	0.145	8.79	-8.79	0.176
Rural area	0.00	0.00	0.00	NA	28.87	-28.87 ***	0.005	29.94	-29.94 ***	0.004
Sample size	19	84			24,914			42,202		

(continued)

Table 1.1 (continued)

SOURCE: MDRC calculations from 2011 and 2012 National Center for Education Statistics Common Core of Data (CCD).

NOTES: Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

[a]"Other Reading Partners Schools" include all other nonstudy Reading Partners schools that meet the "Average U.S. Schools" criteria below.

[b]"U.S. Title I Schools" include all non-Reading Partners schools that meet the "Average U.S. Schools" criteria below and were all designated Title I schoolwide schools.

[c]"Average U.S. Schools" include non-Reading Partners schools that offer grade 2 through grade 5, are defined as "regular" schools by the CCD, and are located within the 50 U.S. states and the District of Columbia.

[d]The value given for students eligible for free/reduced-price lunch is calculated from the 2011 CCD because data are missing in the 2012 CCD. Data for all other variables are from the 2012 CCD.

[e]"Urban" is defined as territory inside an urbanized area and inside a principal city having a population greater than 100,000. "Suburban" is defined as territory outside a principal city and inside an urbanized area with a population of less than 250,000. “Town” is defined as territory inside an urban cluster that is (1) less than or equal to 10 miles from an urbanized area (“fringe”), or (2) more than 10 miles and less than or equal to 35 miles from an urbanized area (“distant”), or (3) more than 35 miles from an urbanized area (“remote”). “Rural” is defined as territory that is (1) less than or equal to 5 miles from an urbanized area and less than or equal to 2.5 miles from an urban cluster (“fringe”), or (2) more than 5 miles but less than or equal to 25 miles from an urbanized area and more than 2.5 miles but less than or equal to 10 miles from an urban cluster (“distant”), or (3) more than 25 miles from an urbanized area and more than 10 miles from an urban cluster (“remote”).

schools in the United States, and with all elementary schools in the United States.[19] The Reading Partners study schools were somewhat less urban (and more suburban) than Reading Partners schools as a whole, but there were no other statistically significant differences between the two types of schools. (This discussion refers only to statistically significant differences — that is, differences that are unlikely to have arisen by chance.) The Reading Partners study schools include a higher percentage of Hispanic students than the average Title I school, reflecting the large concentration of California schools in the study. The study sample also includes more urban schools than are represented among all schoolwide Title I schools, since Reading Partners does not attempt to serve small, rural schools, for which the number of available volunteers is quite limited. Consistent with the Reading Partners model, the Reading Partners schools in the study sample are poorer, more urban, and have higher percentages of minority students than the

[19]Title I schools are eligible for additional funding because of their high proportion of students from low-income families.

population of U.S. schools as a whole. Thus, the sample of schools included in the evaluation appears to be broadly representative of Reading Partners sites across the country.

▪ ▪ ▪

The remainder of this report is organized as follows: Chapter 2 provides a detailed overview of the Reading Partners program. Chapters 3, 4, and 5 present the findings from the implementation, impact, and cost components of the study, respectively, and Chapter 6 offers some interpretations and conclusions.

Chapter 2

The Reading Partners Program

This chapter provides a detailed description of the Reading Partners program model as it was implemented during the 2012-2013 school year, including its staffing structure and core components. The information provided in this chapter is a combination of the model as described by Reading Partners and as understood from data collected over the course of this study. Reading Partners has continued to innovate and refine its program model since that time and thus this description may not fully reflect current operating practices. Figure 2.1 provides an overview of the program in its ideal implementation.

Reading Partners is a "pull-out" program that operates both during the school day and after school.[1] The highly structured, modular curriculum is delivered by volunteer tutors on a one-on-one basis in 45-minute sessions, twice a week. Each school that participates in the Reading Partners program has a designated "reading center" where the tutoring takes place. Nationally, the average student is enrolled in the program for more than five months, and many students participate in the program for a full school year or longer. The curriculum used by Reading Partners during the 2012-2013 study year was research-based and aligned with California state content standards. From 2012 to 2014, Reading Partners has worked to systematically align the curriculum with the Common Core State Standards, which establish a single set of suggested national educational standards for students in kindergarten through twelfth grade in English language arts/literacy and mathematics.[2]

Target Population and Selection Criteria

Reading Partners aims to serve students in kindergarten through grade 5 in underresourced schools who are half a year to two and a half years behind grade level in reading. In addition, Reading Partners aims to serve students who are conversant in English and do not have any special needs (that is, do not have an Individualized Education Program).[3] Many Reading Partners students are in fact designated by their schools as English language learners (ELLs) —

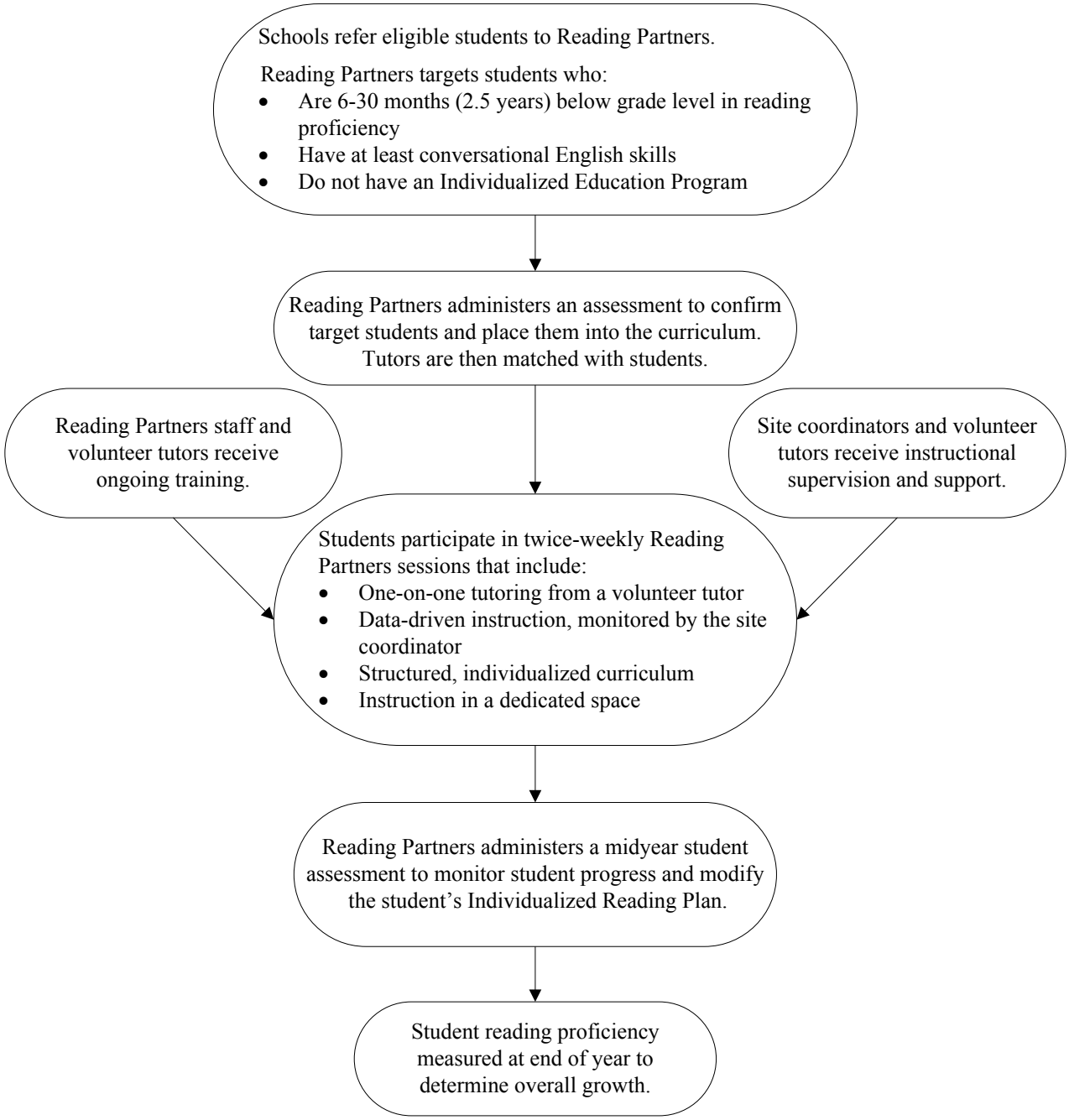
[1]"Pull-out" refers to a type of program that takes students out of the mainstream classroom or after-school program for a portion of the day, with the goal of providing specialized instruction.

[2]Since 2010, 46 states have adopted the Common Core (National Council of State Legislatures, 2014).

[3]Individualized Education Programs are developed for children who are found through assessment to have a disability that affects their learning process. The program outlines how teachers will help these students learn more effectively considering each of their learning styles and needs.

Figure 2.1

Reading Partners Program



however, ELL students who are enrolled in Reading Partners are generally conversationally fluent in English.

Students are referred to Reading Partners by teachers or principals.[4] At each site, teachers, principals, and reading specialists identify students who are reading below grade level and consider the different reading interventions that are available to students. Often, Reading Partners is one program on a menu of supplemental services that are available to students in under-resourced schools, particularly if the school has been designated under the No Child Left Behind act to be "in need of program improvement" for more than one year.[5] School staff members often use a combination of information to determine whether or not a student should be referred to Reading Partners, including students' state standardized test scores, students' performance on local assessments, academic performance in the classroom, and behavior (based on teacher observation).

Reading Partners' Organizational Structure, Staff, and Volunteer Tutors

An overview of the Reading Partners staffing structure that supports program delivery at each Reading Partners center is provided in Figure 2.2. Each Reading Partners center is managed by a *site coordinator.* Site coordinators oversee the instruction that the volunteer tutors provide and the day-to-day operations of the Reading Partners program at school sites, managing 40 to 100 volunteer tutors over the course of the year. The number of active volunteer tutors at any one point in time, however, can vary significantly. In addition, site coordinators provide training and support to volunteer tutors; use Reading Partners materials, tools, and activities to ensure that students' learning needs are met; and serve as liaisons with school staff (teachers, reading coordinators, administrators, and so forth). Site coordinators also tutor students directly, especially when a substitute tutor is needed and there are more students than available tutors.

Site coordinators are almost exclusively AmeriCorps members and most are recent college graduates.[6] The site coordinator position is intended to be a two-year post. All site

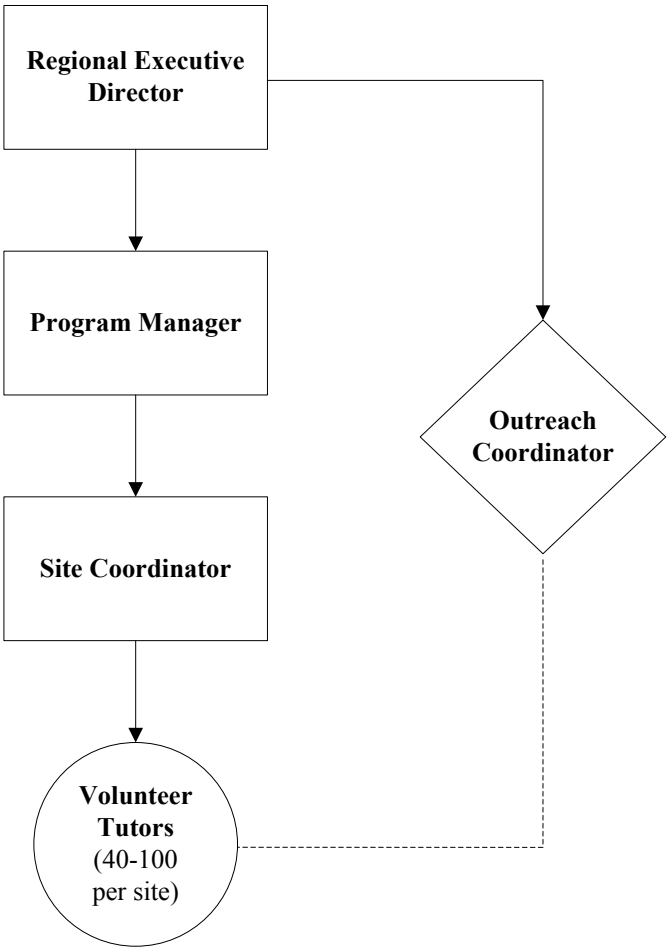
[4]To accommodate the study, school staff members were asked to identify and refer a pool of eligible students to Reading Partners earlier in the school year than usual. From this pool, all eligible students were randomly assigned into the program, rather than hand-picked and enrolled into the program on an ongoing, rolling basis, as is typical.

[5]U.S. Department of Education (2012).

[6]AmeriCorps is a program of the Corporation for National and Community Service that places young adults in service positions at nonprofit organizations, schools, public agencies, and faith-based entities. In return for their service, AmeriCorps members receive a living stipend, health insurance, and, when they complete their program, an education grant (Corporation for National and Community Service, 2014).

Figure 2.2

Staffing Support Structure for a Reading Partners Center



NOTE: Within Reading Partners, regional executive directors supervise multiple program managers, and program managers supervise multiple site coordinators. Additionally, outreach coordinators are responsible for recruiting volunteers for multiple site coordinators.

coordinators report to and are supported by *program managers,* who often have classroom teaching experience. Program managers are charged with being the primary literacy program expert for a portfolio of school sites and manage a team of up to five site coordinators. The program manager's roles and responsibilities include building and cultivating relationships with schools, districts, and other community organizations; conducting monthly training sessions for volunteer tutors and site coordinators; ensuring that Individualized Reading Plans (IRPs) for all students are created; and ensuring that data are used to maximize students' reading skills development. Another key responsibility of program managers is to visit the reading centers in their portfolio of school sites regularly to monitor the implementation of the programs at each site, and to provide support where needed — by, for example, communicating with school staff.

Outreach coordinators also play a key role in the Reading Partners model. However, their primary role does not involve direct interaction with students. They are responsible for recruiting volunteers year-round in order to meet the need for volunteers at each program site. Outreach coordinators, who are also AmeriCorps members, oversee the entire recruitment process and are responsible for initiating contact with every individual who expresses interest in volunteering for Reading Partners. As part of the recruitment effort, outreach coordinators are also charged with identifying and establishing relationships with partner organizations such as universities, religious institutions, and businesses that can provide a steady stream of tutors. Historically, high schools and postsecondary institutions have served as the largest source of tutors.

Outreach coordinators and program managers report directly to a *regional executive director*, a senior member of the organization. Regional executive directors oversee programs within a given region and are charged with supporting tutor recruitment, ensuring school support, and engaging in additional fundraising.

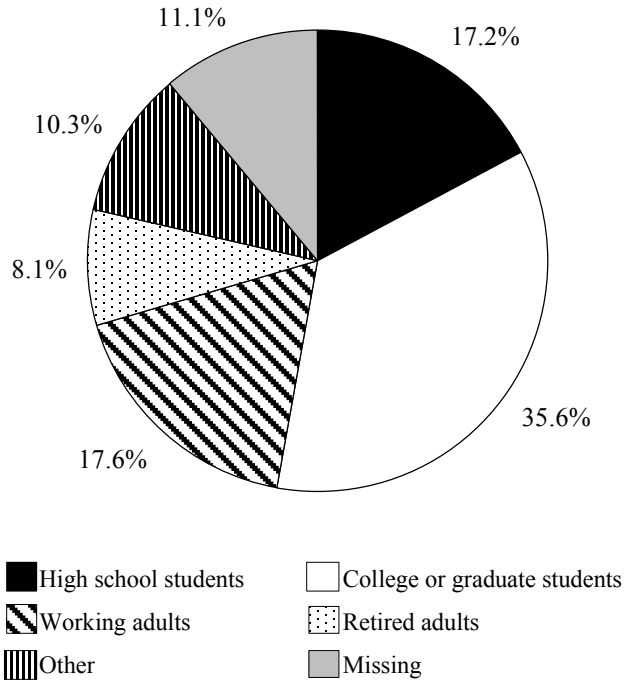
Volunteer tutors are responsible for providing one-on-one tutoring to Reading Partners students and implementing the Reading Partners curriculum. Tutors at the study schools often learned about Reading Partners through their schools, through community organizations, or through online avenues. Reading Partners publicizes tutoring opportunities on a variety of websites, including Volunteer Match, Volunteer Center, Go Volunteer, Christian Volunteering, Idealist, and Craigslist. Others learned about Reading Partners through friends or community organizations. All tutors are asked to make a one-semester commitment (generally around four months), and as part of that commitment, to identify regular days and times that they can come in to work with one or more students every week. Additionally, tutors must pass a background check that allows them to work with students.

No prior experience working with children is necessary to become a Reading Partners tutor, and as such the tutor pool is diverse. Tutors range in age (14 to 70 years of age and older),

Reading Partners Evaluation

Figure 2.3

Backgrounds of Tutors in Study Schools



SOURCE: MDRC calculations from Reading Partners management information system data.

NOTE: Tutors characterized as "Other" include, but are not limited to, caregivers, nonworking individuals, and those who describe themselves as "transitioning."

gender, and race/ethnicity, and are represented by people from many walks of life. As shown in Figure 2.3, about 36 percent of tutors included in this study were college or graduate students, 18 percent were working adults, 17 percent were high school students, 8 percent were retired adults, and 10 percent were caregivers, unemployed, or making the transition from being unemployed to working; a final 11 percent did not provide this information. However, as shown in Appendix Table C.1, the tutor pool composition within each site varied widely, with some sites being composed almost entirely of college or graduate students (up to 83 percent in one site) and other sites having large proportions of working adults (up to 40 percent) or high school students (up to 31 percent). Typically, the composition of the tutor pool was influenced by proximity to, and relationships built with, local colleges or high schools, and access to public transportation.

A little less than half (22 of the 49) of the tutors who were interviewed for the study had some experience working with children in some capacity, whether it was leading a church youth group, helping in an after-school program, working at a children's summer program, or previous teaching experience. However, interviews with volunteer tutors also revealed that fewer (11) had experience in an organized tutoring program.

Core Components of Reading Partners

The Reading Partners model consists of six core components, each described in turn below. The core components are (1) regular, one-on-one tutoring; (2) dedicated school space and use of materials; (3) a structured and individualized curriculum; (4) data-driven instruction; (5) rigorous and ongoing training for staff and volunteers; and (6) instructional supervision and support.

Regular, One-on-One Tutoring

A key feature of the Reading Partners model is to provide students with individualized reading instruction. As such, volunteer tutors deliver the Reading Partners curriculum to students on a one-on-one basis. The one-on-one support — as opposed to small-group support — is the main component of the program that sets Reading Partners apart from other supplemental services that are available to struggling readers. The one-on-one sessions are intended to be delivered twice a week for 45 minutes by a volunteer tutor. While not explicitly part of the model, the assumption is that a student will also benefit from a supportive relationship with a caring adult, suggesting that consistency is an implicit goal. However, as described in more detail below, tutors often visit schools only once a week for up to a few hours (working with one student for 45 minutes or multiple students consecutively), so many students are paired with two different tutors throughout the school year, typically meeting with one tutor on the first day and another tutor on the second day.

Dedicated School Space and Use of Materials

The Reading Partners tutoring is designed to take place on school grounds in a dedicated tutoring space — typically a designated classroom — that is transformed into a reading center. Every reading center features a "read-aloud" library where students and tutors can select books at different levels of difficulty, a corner of the room with couches or bean bags for read-aloud sessions, work stations for tutor-student pairs, a "take-home reading" area where students can select books to read at home, and reading-themed materials on the walls. In addition, Reading Partners provides each site coordinator with a list of items that all Reading Partners centers are expected to have — for example, a resource table for volunteers, a "word wall" showing common words for students to use as a reference, and a bulletin board to display student work.

These components and materials are designed to create an engaging learning environment in which multiple tutor-student pairs can be working at the same time.

Structured and Individualized Curriculum

The Reading Partners curriculum that was implemented during the study year was modularized, with each lesson following a consistent structure. The curriculum consisted of two modules: a beginning readers module (consisting of one level) and a comprehension readers module (consisting of four levels).

The beginning readers module (Level 1) contained 50 lessons, which were primarily phonics-based and covered various letter-sound combinations and practice with high-frequency words. Typically, students were able to get through one beginning readers lesson in one 45-minute session. However, some students in this module took up to two sessions to complete a lesson. Supplemental lessons were also available for some lessons in case a student needed additional practice.

The comprehension readers module comprised Levels 2, 3, 4, and 5, each of which consisted of 24 lessons. The lessons in this module focused on topics such as cause and effect, making inferences, fact and opinion, summarizing, and predicting. Typically, students finished a comprehension readers lesson in two to three sessions.

The tutoring session typically began with the tutor picking up the student from the classroom. During the walk to the Reading Partners center, the tutor engaged in friendly conversation with the student, helping to build rapport and a personal connection. The lesson itself followed a consistent structure. Each lesson began with the tutor reading aloud from a text that the student chose. During that time, the tutor modeled fluent reading, paying close attention to tone, pronunciation, and punctuation. Tutors paused to ask the student comprehension questions or to check the student's knowledge of key vocabulary. After the read-aloud, the tutor turned to the Reading Partners curriculum materials, which introduced a new skill or concept or reinforced a skill or concept that had been taught previously. The tutor worked with the student to complete the task in the curriculum materials. Finally, the student applied the new skill or concept while reading aloud from a text that was provided to support the lesson, and with support from the tutor. A description of a typical Reading Partners tutoring session can be found in Box 2.1.

Data-Driven Instruction

Reading Partners uses data to implement and support the model. For example, in determining whether or not a student should be referred to Reading Partners, a combination of data are considered: student performance on state standardized tests, performance on

Box 2.1

A Reading Partners Tutoring Session

1. **Meeting the student** (5 minutes). Tutors pick Reading Partners students up from their classrooms or after-school programs and walk with them back to the Reading Partners center. During that time, tutors talk with the students about how they're doing and engage in caring and friendly conversation. This approach lays the groundwork for a healthy tutor-student relationship and helps to build rapport between the tutor and student.

2. **Tutor read-aloud** (10 to 15 minutes). Once the tutor-student pair reaches the Reading Partners center, the lesson begins with a student choosing a book at the appropriate level from the Reading Partners library and finding a quiet space to sit with the tutor. The tutor then reads the book aloud to the student, modeling how to read expressively, pay attention to punctuation, and pronounce words correctly. During the read-aloud, the tutor pauses to ask the student open-ended questions and to discuss the book's content and vocabulary.

3. **Introduction of a new skill or concept** (10 to 15 minutes). The tutor introduces a new skill or concept and helps the student complete an introductory task. For example, a beginning student may learn about words with an "oa" sound, while a more advanced comprehension student may learn about the concept of cause and effect.

4. **Student read-aloud and application of a new skill or concept** (15 to 20 minutes). While the student reads a literary or informational text aloud, the tutor provides support and encourages the student to apply the new skill or concept by asking targeted questions.

school-administered assessments (for example, Developmental Reading Assessment, Basic Phonics Skills Test), and information provided by teachers on the Reading Partners referral form (such as observational assessments of a student's level of comprehension or ability to use a knowledge of letters and sounds to read written words correctly — often referred to as "phonics").

After the teacher or principal refers the student to Reading Partners, the site coordinator or program manager administers the Rigby PM Benchmark assessment, an established tool that measures oral fluency, accuracy, and comprehension.[7] Site coordinators and program managers receive training and a protocol for administration, and set aside practice time before conducting assessments one-on-one with students. Using a dedicated set of reading materials at various levels of difficulty, the trained administrator asks the student to read the book aloud. The administrator measures accuracy by recording any errors or corrections that the student makes during

[7]The Rigby is published by Houghton Mifflin Harcourt.

the read-aloud. The student is also asked comprehension questions about the main idea of the story, primary characters, setting, and other salient features of the text. Oral fluency is assessed by asking the student to participate in a second read-aloud that is timed for one minute. Administration of the Rigby PM assessment takes approximately 30 minutes or less depending on the student's reading level. However, several iterations of the assessment may be administered to correctly identify a student's independent reading level and to accurately place the student within the Reading Partners curriculum.

The Rigby PM assessment is administered again midway through the school year, and once more at the end of the school year. Each student's progress is documented in an IRP, a document that contains a student's Rigby scores at the beginning, middle, and end of the school year; goals for the student; and areas to focus on. After the midyear Rigby assessment, Reading Partners staff use the data to update the IRP, identify areas for growth, and adjust student placement where needed. For students who are struggling or are not making gains during the first half of the school year, a targeted action plan is developed. Students' Rigby assessment data and progress are also shared with teachers and principals; some teachers also share these data with parents when report cards are distributed.

Rigorous and Ongoing Training

Reading Partners staff and AmeriCorps members undergo formal, instructional training before they are placed at a school. Formal training for Reading Partners staff takes two forms: organized training sessions held before the school year starts, and ongoing (usually monthly) sessions held throughout the school year. New program managers receive two weeks of training that provides an introduction to the Reading Partners program model, its history, core instructional beliefs, and culture, as well as rigorous training on the curriculum and other systems, such as how to manage internal databases throughout the program year. Experienced program managers and all site coordinators (both new and returning) also undergo intensive training before each school year begins. Topics that are covered during these training sessions include a detailed review of the curriculum, how to set up a Reading Partners reading center, how to train volunteer tutors, and how to use data to inform instruction. The ongoing sessions for Reading Partners staff, which are provided by more senior Reading Partners staff, are offered on specific topics and range from training that focuses on improving organization and relieving stress to how to better support beginning readers.

For volunteer tutors, the primary training is a "shadow session," which is a combination of orientation and tutoring observation led by the site coordinator. The entire training takes less than one hour and then tutors begin working with their own students. Ongoing training sessions, led by site coordinators, are also available to volunteer tutors but are not mandated by Reading Partners. Topics range from how to better support English language

learners to managing students' behavior and attention. These sessions are offered on a regular basis, often twice a month.

Instructional Supervision and Support

Reading Partners staff provide instructional supervision and support on an ongoing basis. Site coordinators provide supervision, coaching, and support to volunteer tutors, and program managers provide support and guidance to site coordinators.

Program managers provide instructional supervision and support to site coordinators in two ways. First, program managers provide technical support related to implementing the Reading Partners model. In this role, program managers work with site coordinators to troubleshoot problems on a range of issues, including challenges related to specific students and their progress or behavior, working with tutors and managing their performance and attendance, helping to manage communication with both teachers and administrators, and identifying best practices to better support a struggling reader. Second, program managers may also support site coordinators, who are often recent college graduates, by working with them on issues such as time management and organization. Program managers have regular check-in meetings with site coordinators, but also provide informal, impromptu support on an as-needed basis.

Site coordinators also provide tutors with instructional supervision and support on an ongoing basis. As managers of the reading center, site coordinators are there every day and observe instruction as volunteer tutors work one-on-one with students. Site coordinators may provide suggestions and guidance on what reading or engagement strategies to use with a particular student, and may also sit in on a tutoring session to provide additional instructional support.

These aspects of the Reading Partners program are revisited in Chapter 3. That chapter includes an assessment of the degree to which the program was implemented with fidelity to the model across the study sites and a discussion of both the stronger aspects and the challenges of program implementation.

Chapter 3

Understanding Implementation Fidelity

The primary goal of exploring implementation and measuring fidelity in this study is to assess the extent to which the Reading Partners model is implemented as intended across all 19 school sites.[1] Measuring the program's adherence to the model helps the reader understand how the program impacts relate to implementation. Measuring fidelity also ensures that the outcomes from a well-designed impact study like a randomized controlled trial can in fact be attributed to the program model itself.[2] Finally, a thorough understanding of implementation fidelity can help readers understand whether the findings are generalizable to other Reading Partners locations.

Specifically, this chapter explores three broad categories of implementation questions:

- **Context:** What were the characteristics of the schools included in the study and the students served by Reading Partners in those schools? Who delivered the program, and how were they recruited and trained? How did the school setting affect program delivery?
- **Service delivery:** Was the program delivered as intended — that is, with fidelity to the model? What were the barriers to and facilitators of program delivery? Did particular aspects of the model pose special problems? Were there categories of schools with noticeably stronger or weaker implementation, and did those differences affect program impact?
- **Implementation lessons:** How did local contextual factors influence the implementation of the Reading Partners instructional model? What implementation challenges were encountered and how were they addressed? What are lessons for other programs that may wish to implement similar strategies?

Data Collection

To collect the data necessary to answer these questions, in the winter of 2013, two-person teams made one-day visits to each of the participating sites to assess the context in which the program

[1]Other implementation studies may also focus on other dimensions of fidelity, such as quality of implementation and participant responsiveness (Dane and Schneider, 1998; Durlak and DuPre, 2008). Those dimensions were not a primary focus of this fidelity analysis.

[2]O'Donnell (2008).

was administered and to gauge the quality of program implementation. Seven members of the research team conducted these visits, with each member making between two and eight visits. Before they made their visits, the research team attended a half-day training session that included a review of all protocols, discussion of appropriate behavior in schools, and guidelines for conducting effective interviews. Written guidelines for the site visits were distributed before the training was conducted, which the research team members reviewed independently.

The site visits included interviews with the program manager, site coordinator, outreach coordinator, regional executive director, school principal, school reading coordinator or reading specialist (if there was one), and approximately three tutors at each site.[3] Site visitors also conducted short, unstructured observations of three tutoring sessions and filled out a "facilities checklist" for each site, in which they recorded whether the room was set up as intended by Reading Partners and whether or not it had all required materials. Finally, the site visit included a systematic review of 10 randomly sampled student folders. The student folders contained information about session attendance, the person who conducted the session, results of the assessments, the content of each tutoring session, and notes from tutors about what was covered in each session. An overview of the data that were collected as part of the implementation study is shown in Table 3.1, and copies of protocols from site visits are available upon request.

To help augment the information collected during site visits, extant program data were obtained from Reading Partners' own management information system (MIS). These data included information about individual student tutoring start and end dates, attendance, the number of different tutors assigned to a student over the course of the school year, and the background characteristics of both students and tutors.

As described in more detail in Appendix A, interview transcripts, notes, and observation write-ups were analyzed using a systematic coding process. A coding scheme was developed to align with the overall framework of the implementation study and was organized to capture data in the three main categories outlined above, and team members were assigned a set of codes to apply across all of the qualitative data. Once all data had been coded, team members provided a written synthesis that described emerging themes.

The discussion of findings begins with an overall assessment of implementation fidelity as measured by a study-developed fidelity index, and is followed by a more in-depth discussion of each component. The chapter concludes with a discussion of the factors that affected the implementation fidelity of the Reading Partners program.

[3]Some interviews were conducted by phone when an in-person interview was not possible.

Reading Partners Evaluation

Table 3.1

Summary of Implementation Data Collection, by Source

Data Source	Number Targeted	Number Collected
Interviews		
Principal	19	19
Reading coordinator	11	11
Regional executive director	6	6
Outreach coordinator	7	6
Program manager	10	8
Site coordinator	17	17
Tutor[a]	51	50
Student folder reviews[b]	170	171
Reading center checklists	17	17
Tutor observations[c]	51	51

SOURCE: Site visits to study schools.

NOTES: [a]At two schools, only two tutor interviews were conducted. At one school, four tutor interviews were conducted.

[b]Student folder reviews looked for documentation of student Rigby assessments, notes from tutoring sessions and on progress through the curriculum, and students' Individualized Reading Plans. At one site, 11 folders were reviewed.

[c]At three schools, only two tutor observations were conducted. At one school, four tutor observations were conducted, and at one other school, five tutor observations were conducted.

Implementation Fidelity Measure

Implementation fidelity was assessed along the six core components of the Reading Partners model, as described in detail in Chapter 2: (1) regular, one-on-one tutoring; (2) dedicated school space and use of materials; (3) structured and individualized curriculum; (4) data-driven instruction; (5) rigorous and ongoing training; and (6) instructional supervision and support. To help summarize and quantify the overall level of implementation fidelity across all 19 schools, the study team developed a fidelity index based on five of the six core components. The third component listed above — structured and individualized curriculum — was not incorporated into the index because the data collected were not appropriate for quantifying fidelity along this dimension. This component is discussed qualitatively.

The fidelity index contained 17 items that were created using quantitative data from the Reading Partners' MIS; qualitative assessments of fidelity based on interviews with Reading Partners staff, school staff, and volunteer tutors; a review of student folders that are kept on site in reading centers; and a facilities checklist, which assessed whether the reading centers contained the required components. Criteria for each item were developed by the implementation study team in collaboration with Reading Partners. The respective weights given to each component of the fidelity index were determined by Reading Partners' *a priori* assessment of the most important characteristics of the program and not necessarily what the research team concluded retroactively. For example, within the category of "dedicated school space and use of materials," Reading Partners maintained that having a dedicated space that could not be shared was more important than having all required materials in place in the reading center. For this reason, having a dedicated space that did not have to be shared was weighted more heavily than having all required materials. Each Reading Partners school was scored across all 17 items. Two members of the research team and the project's principal investigator reviewed all scoring decisions. Fidelity was assessed using data from the entire program year. A copy of the fidelity index, its key indicators, data sources, and criteria for scoring can be found in Appendix A.

Overall, the fidelity index reveals that implementation fidelity across all 19 schools was relatively high, and that the program outcomes can likely be attributed to the Reading Partners program model. As shown in Figure 3.1, the fidelity scores for the 19 schools range from a low of 12 to a high of 22; the maximum possible score on the index is 23. Scores were grouped into three categories of implementation based on their overall distribution. Scores of 15 and below (less than 65 percent of the total points possible) were considered "low fidelity"; scores of 19 or higher (over 83 percent of the total possible) were considered "high fidelity"; and scores between those delineations (15.5 to 18.5) were considered "moderate fidelity." Of the 19 sites, two schools were designated as low fidelity; nine schools had moderate fidelity; and eight schools fell into the high-fidelity category. Chapter 4 explores the extent to which this variability in fidelity explains variation in program impacts.

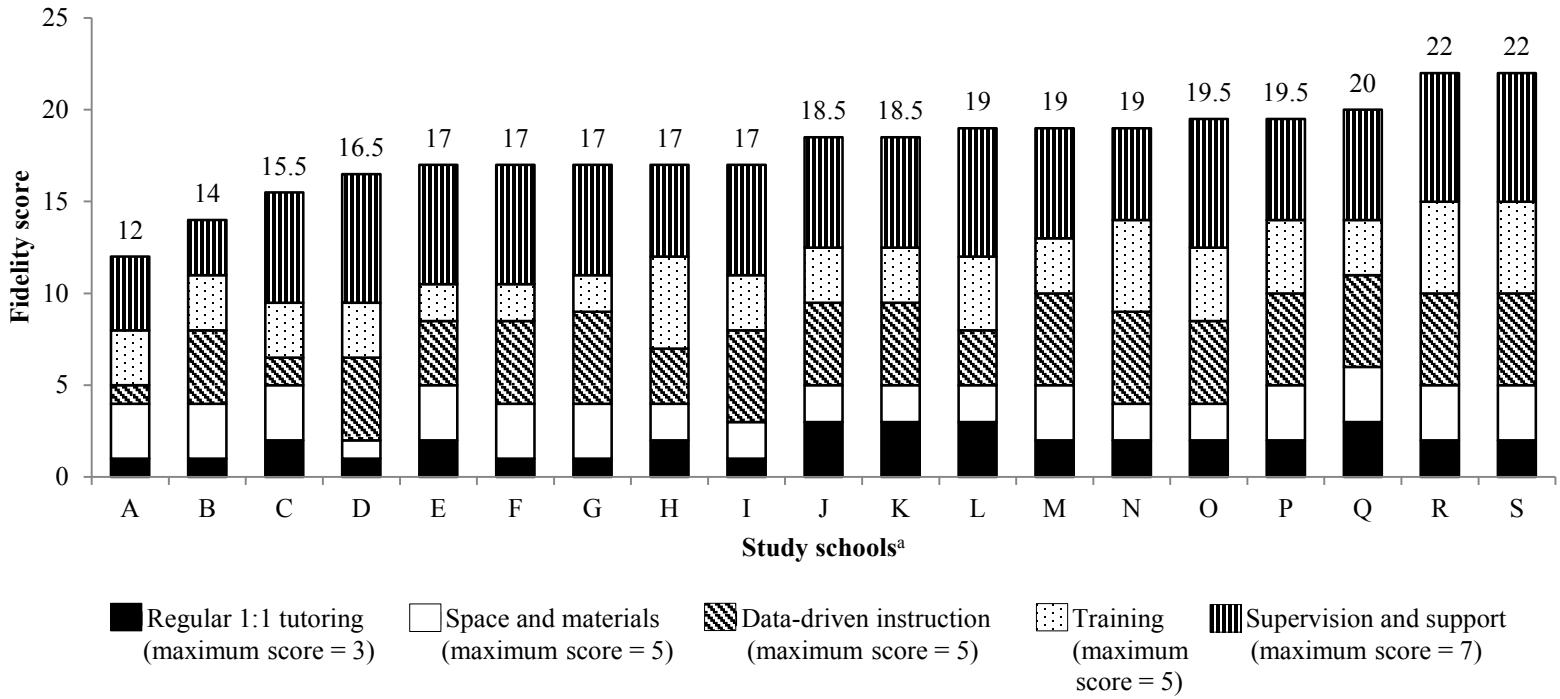
Regular, One-on-One Tutoring

The Reading Partners model states that all students who participate in the program should receive one-on-one tutoring, as opposed to small-group support, which is more typical of literacy programs across the country. The one-on-one support is the main component of the program that sets Reading Partners apart from other supplemental services that are available to struggling readers. As one regional executive director described, "I think a lot of the other organizations that we come across provide literacy in different formats and usually it's in small groups, so I think that the one-on-one piece is critical."

Reading Partners Evaluation

Figure 3.1

Fidelity Scores of Study Schools



SOURCE: Site visits to study schools.

NOTE: The fidelity index comprises metrics evaluating the five key quantifiable components of the Reading Partners model. The total maximum score is 23. A further explanation of the fidelity index and scoring guidelines can be found in Appendix A.

[a]To prevent identification of individual schools or programs, site letter identifiers are not consistent across analyses.

Analysis of the MIS data and site coordinator interviews revealed that except for one school, tutoring was exclusively one-on-one at all sites. At one school, students sometimes met with a pair of tutors, who worked with the student at the same time — a strategy employed by a site coordinator to help manage the large number of volunteer tutors. The site coordinator at this site noted that a partnership with a local high school had in the past led to an influx of volunteer tutors that caused a "chaotic" environment in the after-school tutoring sessions. In response, the site coordinator paired the high school tutors in order to reduce the number of pairs she had to monitor from six one-on-one tutoring sessions to three two-to-one tutoring sessions. Other sites did not seem to have this challenge.

In addition to one-on-one instruction, the Reading Partners model has a frequency component. The program is designed to provide students with two 45-minute tutoring sessions per week. As shown in Table 3.2, analysis of the MIS data reveals that, on average, students received approximately 1.5 sessions per week for 28 weeks (about three sessions every two weeks), which is slightly less than the model specifies. The MIS data indicate that students attended approximately 79 percent of the sessions that were available to them, after accounting for school closures and vacations. There was, however, variation in participation levels by school, with students in some sites maintaining an average of 1.8 sessions per week while those from others averaged just 1.1 sessions per week. Some site coordinators (4 of 17) noted that the students who did not receive tutoring twice a week were usually those who were absent from school. School attendance and the dosage of Reading Partners services that were received are correlated with one another, but the correlation is relatively low (around 0.18). Thus, lack of consistent attendance among volunteers also likely contributed to the problem of low frequency of participation in some instances.[1]

While one-on-one support and frequency of tutoring are explicit goals of the model, one of the implicit goals of Reading Partners is that a student will benefit from a supportive relationship with a caring adult as a result of working consistently with the same tutor. However, since tutor consistency is an *implicit* goal of the model, it was not factored into the fidelity index and is thus discussed only descriptively in this section.

Tutor consistency can be explored along three different dimensions — whether students were typically assigned to work with one or two tutors each week, the duration of the tutoring relationship, and how consistently the assigned tutors appeared for their regularly scheduled sessions. The MIS data indicate that students did not typically work with the same tutor for both of their weekly sessions. As shown in Table 3.2, about three-fourths of primary tutors (76

[1]The research team could not assess the correlation between tutor attendance and dosage because of limitations of the data.

Reading Partners Evaluation

Table 3.2

Average Student's Experience in Reading Partners

Average Student Experience	Program Group	School-Level Averages Minimum	School-Level Averages Maximum
Number of sessions per week	1.55	1.11	1.76
Length of participation in program (weeks)	28.13	24.24	32.01
Student attendance rate[a] (%)	78.76	55.75	88.98
Number of tutors assigned	2.52	1.67	3.60
Duration of each tutoring relationship (weeks)	19.81	11.20	26.01
Scheduled sessions per week with primary tutor[b] (%)			
Scheduled once per week	76.38	39.58	91.24
Scheduled twice per week	23.62	8.76	60.42
Sample size	594		

SOURCE: Reading Partners management information system data.

NOTES: Calculations for this table used data for all program group students in the respondent sample. Sample sizes for individual outcomes may fall short of the report sample size because of missing or unusable data.

[a]Student attendance is calculated as the number of sessions attended divided by the number of possible sessions, assuming two sessions every week that school was open after the student entered Reading Partners.

[b]Among students' assigned tutors, primary tutors were those who had the longest assigned relationship with the student.

percent) worked with their students only once a week, and the remaining one-fourth (24 percent) worked with their students twice a week.[2] One of the factors that made maintaining consistency with the same tutor difficult is that many tutors were available to volunteer only once a week, meaning that it was often not possible for a student to have the same tutor for both sessions each week. In the study schools, tutors generally came once a week — some only for one session, others for two sessions or more, working with a different student in each one.[3]

[2]Primary tutors were those who had the longest assigned relationship with a student, among that student's assigned tutors.

[3]The exception to this scenario was work-study students who were recruited from local colleges and universities and a few paid tutors who worked in centers for more significant periods of time and on multiple days.

Although students were typically assigned to work with two different tutors each week, trust and relationship-building could still occur if tutors worked with the student for an extended period of time and appeared regularly and consistently for their sessions with students. As shown in Table 3.2, the typical duration of the tutor-student relationship was 19.8 weeks, or a little less than five months — a little longer than the one-semester commitment that Reading Partners asks tutors to make. Data regarding tutor attendance were not available from the MIS, so the study team conducted a review of randomly selected student folders (10 at each site) to explore the number of tutoring sessions and the number of unique tutors a student had over a two-week instructional period. During this time, students ideally would have received four tutoring sessions by either one or two individuals.

The student folder review revealed that among students who received at least the full dosage of tutoring sessions (meaning four over the course of two weeks), more than half (56 percent) worked with three tutors or more over the two-week period of time. Among students who received three sessions over the two weeks, approximately one-fourth (27 percent) worked with a different tutor on each occasion. These snapshot data suggest that tutor consistency was somewhat limited.

As a result of tutor absences, both program managers and site coordinators did a fair amount of tutoring themselves. On average, site coordinators reported tutoring four or five times a week (about once a day), but at the high end, site coordinators reported tutoring three or four times a day. This is still a relatively small percentage of the total number of tutoring sessions offered during a given week (sites can accommodate up to 40 tutoring sessions in a given day), but it is still probably more than is ideal. While Reading Partners expects that site coordinators and program managers will do some tutoring, too much takes away from their ability to coach and provide guidance and support to the regular volunteer tutors.

Dedicated School Space and Use of Materials

All tutoring is designed to take place in a dedicated reading center within a school. Visits to each study site revealed that all but one of the sites had dedicated space. The one site that did not have dedicated space was operating in a library. The reading center was partly walled off from the larger part of the library by bookshelves, but the space included computer work stations for general school use. Despite this set-up, Reading Partners staff appeared to be making the best of the limited space and doing what they could to ensure that the environment was conducive to tutoring. All other sites had dedicated classrooms for the Reading Partners reading center, which were used by up to eight tutor-student pairs at a time.

Within the dedicated classroom space, Reading Partners also has a set of materials (such as literacy-themed posters, signs, and other decorations) and required classroom components (for example, a “take-home reading” area) that each reading center should have in place.

During their site visits, the study team reviewed the space and materials against a checklist of 36 items provided by Reading Partners. Box 3.1 presents a full list of the items in the Reading Center Materials Checklist. Of those 36 items, only 20 items were mandatory and incorporated into the fidelity index scoring. Of the 20 items that Reading Partners expects sites to have in place, only two sites had fewer than 19 items in place. Taken together, analysis of the space and materials at each site suggests that this component of the Reading Partners model displayed a high level of implementation fidelity.

Box 3.1

Reading Center Materials

- 8 work stations
  - Chairs and tables
  - Pencils and erasers
  - Post-it® notes
  - Bookmarks
- Alphabet strip
- Additional supplies
- Bins and boxes for "Read Aloud"
- Box for completed work
- Bulletin boards for student work
- Clock
- Curricula crates
- "Read Aloud" library
- Resource table for volunteers
  - Calendar
  - Shadow session packets
  - Tutor information binder
  - Tutor resources
- Site coordinator desk
- Student boxes
  - Sight word ring
  - Student folder
  - Tutor folder
  - Word journal or reading/writing journal
  - Worksheets
- "Take-Home Reading" area
  - Book crates
  - Chart and stickers
  - Reflection forms
  - "Take-Home Reading" sign
- Tutoring schedule
- United States map
- Wall resources
- Whiteboards
- Word wall
- World map

Structured and Individualized Curriculum

As described in Chapter 2, each lesson begins with a tutor reading aloud to the student from a literary or informational text that the child has selected. While reading, the tutor pauses to discuss the book's content and vocabulary. The tutor read-aloud and vocabulary review is followed by the introduction of a new skill or concept, which the student is then asked to apply. Brief observations with students and interviews with tutors revealed that this approach is very closely aligned with the way in which the curriculum is implemented in practice. However, the study team did not conduct the tutor observations with the intention of monitoring the curriculum implementation in a detailed and fine-grained way. Observations were designed to provide

the research team with a "broad strokes" understanding of how the curriculum was operationalized during a tutoring session. As such, this component of the model is not included in the fidelity index score.

Overall, interviews with site coordinators and tutors, as well as brief, unstructured observations of the tutoring sessions, suggest that the Reading Partners curriculum was implemented with a moderate to high level of fidelity across all sites. Tutors generally followed the steps outlined above. Some of the lesson components include scripted language that tutors can read verbatim. However, this is not a requirement; the scripts and outlines are available as guidelines. Tutors who are new sometimes rely on the scripts more heavily until they feel more comfortable with the curriculum.

Tutors and site coordinators describe the beginning of a session as starting when a tutor picks up a student from the classroom, well before the actual tutoring begins. This suggests that relationship- and rapport-building is an important, implicit feature of the model. One site coordinator described the conversation and rapport being built during that time as a way "to prepare them [the students] to come to Reading Partners." Often tutors ask students about their weekend or their day so far, which lays the groundwork for the one-on-one relationship that helps to facilitate the session.

In observations, some variation was observed in the quality of delivery of tutoring. For example, occasionally a tutor did not pause for comprehension or vocabulary checks or did not do a good job of modeling fluent reading during the tutor read-aloud portion of the session. However, these observations were largely anecdotal. Site coordinators were also asked to comment on the quality of their tutors, but for the most part, site coordinators equated tutor quality with consistency and commitment. Tutors who came when they were supposed to and called or e-mailed if they were unable to make their scheduled time were generally considered high quality. Assessing the quality of the tutor-student interaction may be an area for future exploration within Reading Partners.

Data-Driven Instruction

Nearly all Reading Partners program staff and volunteer tutors are aware that data are integral to the Reading Partners instructional model. As described in Chapter 2, at the center of this data-driven instructional model is the use of the Rigby PM Benchmark assessment, which determines placement within the Reading Partners curriculum and assesses students' progress by testing their performance at baseline before they begin the Reading Partners curriculum, their growth midway through the school year, and their status at the end of the school year. Analysis of the MIS data revealed that 95 percent of eligible students were in fact assessed using the Rigby all three times. Also, Reading Partners staff appeared to be doing a consistent job of shar-

ing these data with schools; the study team found that only one site failed to share data with the school principal.

However, there was somewhat less evidence regarding the use of the Rigby data to inform, customize, and update individual students' Individualized Reading Plans. Although a majority of the site coordinators mentioned that they used the midyear Rigby assessment to either create an action plan or advance students, program managers and site coordinators provided more limited information about the specifics of how individual student progress was monitored and what was done with students who were not making progress. The use of student folders to document each tutoring session was another source of data that Reading Partners used to monitor student progress as well as particular successes and challenges that the students faced. While most of the student folders that were included in the folder review contained detailed documentation about student work during the tutoring sessions, student work was not documented in at least one instance in 10 sites over the course of the two-week review period.

Rigorous and Ongoing Training

The Reading Partners model requires that all Reading Partners school-based staff members undergo formal, instructional training before they are placed at a school site. Interviews with Reading Partners staff revealed that there was a high level of participation in the initial training provided to Reading Partners staff. Virtually all had completed a carefully designed training regimen. The only exceptions were two program managers who did not complete the initial, formal training because they were brought on mid-year to replace departing program managers. However, these program managers were able to briefly overlap with their predecessors and were able to receive on-the-job training and ongoing support from colleagues.

Interviews with site coordinators also revealed that there was a high level of participation in the ongoing training sessions, which occurred monthly. With hardly any exceptions, staff at all levels found the training to be comprehensive, useful, and successful in preparing them to carry out their roles effectively.

For tutors, the key — and really sole — training they received before beginning their first tutoring session with a student was through "shadow sessions," a combination of orientation and tutoring observation led by the site coordinator at the school where the tutor was assigned. Analysis of interviews with tutors revealed that the majority of tutors participated in a shadow session; only three volunteers did not participate in any shadow session before beginning to tutor. Those who did attend reported that these shadow sessions were adequate for orienting the volunteers to the Reading Partners reading center and curriculum, and equipped them to tutor students successfully. In fact, at least 80 percent of tutors who were interviewed indicated that they felt adequately trained for the role of tutor.

Ongoing training opportunities for tutors appear to have been plentiful, but few volunteers availed themselves of those opportunities. Site coordinators and tutors alike reported that additional training sessions were offered, often twice monthly, and tutors reported often that they were aware of the training. These training sessions covered topics that site coordinators thought would be helpful to tutors, such as how to motivate students or how to improve tutoring skills. Still, almost half of the tutors (23 of 51) reported that they never attended any of the training sessions. By far the most frequent reasons given for not attending were scheduling conflicts and other commitments.

Instructional Supervision and Support

For ongoing support, tutors relied almost exclusively on site coordinators and in general felt well supported by them. (Forty-two of 50 tutors who were interviewed indicated that they felt adequately or well supported.) Each Reading Partners center in the study sites had a regular site coordinator present and managing the classroom. Tutors received support from site coordinators in several different forms. First, there was ongoing monitoring and occasional direct involvement by the site coordinators during tutoring sessions. In addition, site coordinators held "check-outs" with tutors following a session, during which they reviewed how a session had gone. Third, site coordinators annotated student folders: Four tutors reported finding sticky notes regarding individual students, giving advice on how to proceed (for example, specific topics to emphasize or ways to address problems that students seemed to be having). By far the most common kind of support was student-specific. Tutors brought issues or problems they were having with specific students to site coordinators for a consult. These issues might be as simple as how to pronounce a certain word, a more complex problem (such as how to get across certain consonant or vowel sounds, or how to define a word or concept), or motivational challenges.

Site coordinators' descriptions of their own jobs suggest that there was some variability in the amount and quality of coaching and support they provided to tutors. Some site coordinators described their role as more of a monitoring role — ensuring that tutors knew their schedules and were following the curriculum, while others discussed providing advice and guidance to tutors on a broader range of issues.

Broadly speaking, site coordinators, program managers, and outreach coordinators all indicated that they had adequate ongoing support and clear lines of accountability that worked for them. One challenge, however, was the lack of a program manager for two sites, which reduced the level of supervision and support available to the site coordinators in those programs.

Factors That Facilitated Implementation

A number of factors stand out as helping schools maintain high levels of overall implementation fidelity. First, the structured and scripted nature of the curriculum enables volunteers with a variety of backgrounds to easily integrate into the program and deliver instruction without a lot of formal training. Second, the overall quality of the Reading Partners staff and AmeriCorps members is quite high, particularly at the school level (program managers and site coordinators): Interviews with program managers and site coordinators revealed that they were dedicated and effective in their work on the whole. Most Reading Partners staff at the program manager or regional executive director levels have come to the organization with classroom teaching experience and a passion for the organization's mission — a clear strength of the organization. The support of an effective organizational structure also helps ensure that a high level of quality is maintained among staff.

In addition, the training provided to Reading Partners staff is strong and helps ensure that staff members know what is expected of them and that they have the appropriate skills and tools to carry out their jobs effectively.

Certain contextual factors, such as Reading Partners' relationship with teachers and administrators, have also helped maintain high levels of implementation fidelity. Through its school-level staff (program managers and site coordinators), Reading Partners maintains strong working relationships with principals and teachers. As a result, principals and teachers in the study schools reported generally being very supportive of the program, citing the one-on-one relationships that are fostered between students and tutors as one of its most helpful features.

Barriers to Implementation

While several factors facilitated effective program implementation, a number of other contextual factors posed barriers. The pull-out nature of the program was one such barrier. Although a majority of teachers and principals were very supportive of the Reading Partners program, in some schools, particularly those with many pull-out services in addition to Reading Partners, some teachers were resistant to having students pulled out from their classrooms for Reading Partners, particularly during instructional time. In such cases, site coordinators had to work harder to schedule tutoring sessions and had less flexibility in providing make-up sessions for students who missed a tutoring session because they were absent or a tutor was unavailable. Schools also varied in the space they were able to provide for the reading center to operate. While most were able to provide dedicated space, some classrooms were small, which meant that tutor-student pairs were spaced close together and the setting was noisier as a result. Smaller spaces also meant that fewer students could easily be tutored at one time.

Student attendance also played a role in program implementation. Student absences made it difficult to ensure that they received two 45-minute sessions per week. A small number of tutors also mentioned some difficulties working with a student population that had greater needs than average students, particularly English language learners or students with behavioral issues, but generally did not believe that these difficulties defined their overall tutoring experience.

With respect to volunteer tutor recruitment, school location and characteristics of a region were important factors that affected implementation of the program. Schools that were not close to public transportation or were located in neighborhoods that were perceived as unsafe had the hardest time with tutor recruitment. In addition, some regions had fewer opportunities for fundraising and less potential for community partnerships that lead to volunteerism.

The biggest barrier that Reading Partners faced in implementing the program was maintaining consistent tutor attendance and retention. As described in Chapter 2, tutors are asked to make a one-semester commitment, but several site coordinators reported that many volunteers, particularly high school and college students, did not stay beyond that period of time, making it more difficult to establish a strong one-on-one relationship with the student. As already noted, the duration of the average tutoring relationship was 19.8 weeks — a little less than five months, or just over a semester. In one school, the average duration of the tutoring relationship was only 11 weeks.

Furthermore, volunteers varied in their consistency and commitment. Site coordinators reported that tutors sometimes failed to report at their scheduled time and at times did not notify the site coordinator beforehand. This situation made it challenging to ensure that students received two sessions each week. However, there were structures in place to address these problems. As noted earlier, a full-time employee was charged with recruitment on an ongoing basis, which helped to ensure an adequate supply of tutors to respond to the relatively high level of turnover. Reading Partners sometimes used substitute tutors if tutor absences could be anticipated, and site coordinators or other tutors often provided make-up sessions on Friday to students who had missed a session earlier in the week. These two tactics helped ensure that tutor inconsistency did not mean that a student necessarily missed sessions because a tutor was absent. Additionally, tutors are required to leave notes in students' folders indicating what they worked on together and any problems that were encountered; because it is expected that many students will see two or more tutors regularly, this documentation is necessary to provide continuity of instruction. Site coordinators also stay well informed about the progress of the students in their centers and serve as a point of continuity for students who participate in the program. Chapter 4 explores the impact of tutor consistency on student outcomes.

While these factors made implementation more complicated, the obstacles were not insurmountable and did not significantly reduce Reading Partners' ability to implement the program with fidelity. In fact, overall, Reading Partners maintained an impressively high level of fidelity and its staff members were clearly able to overcome many of these challenges. These factors, however, may become more significant barriers for Reading Partners programs that may not be as mature or established as the program sites that participated in this study. As such, these programmatic and contextual factors should be examined more closely when implementing the Reading Partners model at newer, less established school sites and at sites that are working to further strengthen existing programs.

Summary

The Reading Partners program was implemented with a moderate to high level of fidelity across each of the key dimensions of the program: (1) regular, one-on-one tutoring; (2) dedicated school space and use of materials; (3) structured and individualized curriculum; (4) data-driven instruction; (5) rigorous and ongoing training; and (6) instructional supervision and support.

- On average, students received approximately 1.5 tutoring sessions per week for 28 weeks in a dedicated space with appropriate materials.
- Ninety-five percent of eligible students were assessed three times using the Rigby assessment, and Reading Partners staff consistently shared student data with schools.
- Site coordinators, program managers, and outreach coordinators all indicated that they had adequate training for their roles as well as ongoing support in their work and clear lines of accountability.
- Despite the limited initial training that tutors received, they generally reported that they felt adequately trained and supported in their role, though individuals relied on support from the site coordinator to deal effectively with more challenging students.
- The biggest barrier that Reading Partners faced in implementing the program was maintaining tutor attendance and retention. However, there were structures in place to address these challenges and, as a result, most students were tutored on a regular basis throughout the year, even if the same person did not consistently deliver that tutoring.

Chapter 4

The Impact of Reading Partners

Because Reading Partners was not able to serve all students who would have qualified for the program, MDRC was able to employ a rigorous evaluation design, called a randomized controlled trial, to determine the magnitude of the effect — or impact — of Reading Partners. Randomly assigning students into a program group and a control group helps ensure that there are no systematic differences between the two groups of students when the study begins and that any positive effects can be causally attributed to the program with a high degree of confidence. The analysis of impacts was designed to answer the following key research question:

- Do students who have been randomly assigned the opportunity to participate in the Reading Partners program attain different reading proficiency levels from those of a similar group of students who were not offered this opportunity?

The study also explored a set of secondary questions that were not considered key outcomes because they were more distal to the intervention, but that the study team was interested in exploring:

- Do students in the program group exhibit different attention levels and different behaviors in the classroom from the control group?
- Do students in the program group complete their in-class assignments and homework at a different rate from students in the control group?

The analyses also explored the effects of the program among different subgroups of students. The subgroups that were examined reflect five characteristics that are both theoretically relevant and policy-relevant to reading instruction:

- Do impacts differ for students entering the program with higher levels of pre-intervention reading achievement versus those with lower achievement levels?
- Are impacts different for younger students (in grades 2 and 3) compared with older students (in grades 4 and 5)?
- Do impacts differ for male versus female students?
- Do impacts differ for students identified as English language learners compared with students who are fluent in English?

- Do impacts differ for students with prior exposure to the Reading Partners program compared with students who were exposed to Reading Partners tutoring for the first time during this study?

To put the impact findings in context, the study team also explored questions related to service contrast, or the differences in the services received by students who were assigned to the program group versus students who were assigned to the control group:

- What is the difference in academic support offered to students in the program and control groups? What was the resulting service difference in the amount of reading instruction on average between the program and control groups?

If participating in the Reading Partners program did not increase the quality or frequency of the overall supplemental reading services that the program group received, either because the program group did not fully participate in the program or because the control group received other services of equal quality or intensity, then it is unlikely that an impact of the program would be observed, even if the Reading Partners program were of high quality.

Finally, for exploratory purposes, this chapter includes an investigation of the ways in which the program impacts vary based on measures of fidelity and context.

Methods

Student Sample

The study team used a systematic process to obtain and randomly assign the student sample at each school. At the start of the school year, schools and Reading Partners staff provided the study team with a list of students they wished to refer to the Reading Partners program, who had parental permission to participate in the program and the study. These lists were developed by individual schools and were based on a combination of test score review and recommendations by teachers or school staff (or both). Within two days of receiving the list, the study team randomly assigned students within schools (using a random number generator) to the program group that was eligible to participate in the Reading Partners program or to an "as is" control group that would not participate in Reading Partners but was eligible to receive any other supplemental reading services. A total of 1,265 students in the 19 participating schools were randomly assigned. Students were randomized within grade groups (grades 2 through 3 and grades 4 through 5) to ensure that equal numbers of upper and lower elementary school students were represented in the sample, since one of the research questions examines the differential impact of Reading Partners by grade level. Schools often approach reading instruction differently in these two sets of grades. In grades 2 and 3, reading instruction generally focuses on

learning to read, with more attention given to basic reading skills such as decoding, or the use of phonics to read written words correctly. In grades 4 and 5, the focus is on reading to learn, with greater emphasis on vocabulary and comprehension.[1] Equal grade-group sizes maximize the study's ability to detect potential differential impacts between these groups.

The final respondent sample (those who took at least one follow-up assessment) includes 1,166 students (594 students in the program group and 572 in the control group). These totals represent response rates of 92.0 percent for the program group and 92.4 percent for the control group, which were not statistically significantly different from one another. Descriptive statistics for the final sample at baseline (that is, at the start of the study) are shown in Table 4.1. More than half of the sample was Hispanic (65 percent) and one-fifth of the students were black (19 percent). About half were officially designated as English language learners (55 percent) and over 90 percent of the students were eligible for free or reduced-price lunch. Aside from a slightly larger number of students in the program group who had previously participated in the program (32 percent compared with 26 percent of the control group), there were no statistically significant differences between the program and control groups on these variables. When the team performed a correction to account for the multiple characteristics that were analyzed at the same time, even this difference is not statistically significant.[2]

During the course of the study, 589 students across the 19 participating schools received over 25,000 tutoring sessions and over 19,000 hours of tutoring, administered by 901 community volunteers.

Data Collection

Following random assignment in the fall of 2012, reading assessments (one group assessment and two individually administered assessments) were given to all students in the study. Assessments were administered by independent assessors hired by the study team. Assessors attended a two-day training program before beginning assessments. Baseline testing occurred as soon as possible after random assignment. Follow-up testing, using the same three assessments, was conducted in the spring of 2013, as close to the end of the school year as possible. In addition, in the spring of 2013, teachers were asked to complete a survey about the academic behavior and performance of each student in their classrooms who was part of the study sample (in both the program and control groups) and to report on the full range of supplemental reading services that each student had received during the school year. A copy of the teacher survey is

[1]Chall (1983).

[2]Corrections for multiple hypothesis testing were made using the Benjamini-Hochberg procedure (Benjamini and Hochberg, 1995). Regardless, a full set of covariates was included in all analyses to control for any unobserved differences between the two groups at baseline and to improve the precision of the estimates.

Reading Partners Evaluation

Table 4.1

Baseline Characteristics of Program and Control Group Students

Characteristic	Program Group	Control Group	Difference	P-Value
Male (%)	54.88	54.50	0.38	0.899
Ethnicity (%)				
Black	19.39	19.03	0.37	0.864
Hispanic	65.09	65.27	-0.18	0.944
Asian	8.43	9.09	-0.66	0.691
White	5.90	5.40	0.50	0.709
Other	1.18	1.02	0.16	0.856
Special education (%)	11.62	10.49	1.13	0.550
English language learner (%)	55.21	55.50	-0.29	0.916
Eligible for free/reduced-price lunch (%)	91.35	90.22	1.13	0.540
Prior Reading Partners participation (%)	31.82	25.75	6.07 *	0.074
Average age (years)	8.79	8.76	0.03	0.413
Overage for grade[a] (%)	9.83	8.40	1.43	0.408
Average baseline achievement scores[b]				
Comprehension	574.74	573.49	1.26	0.544
Sight word efficiency	91.15	90.38	0.77	0.328
Fluency	0.03	0.00	0.03	0.573
Students by grade level (%)				
Grade 2	23.06	25.29	-2.23	0.256
Grade 3	29.46	27.23	2.23	0.256
Grade 4	24.58	25.72	-1.14	0.572
Grade 5	22.90	21.76	1.14	0.572
Sample size	594	572		

SOURCES: MDRC calculations using study team-administered baseline SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

The model allows estimates to vary randomly across schools and controls for the random assignment block.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

[a]Students are classified as "overage" for a certain grade if they were the following specified ages on September 1, 2012: 8 or older for 2nd grade, 9 or older for 3rd grade, 10 or older for 4th grade, and 11 or older for 5th grade.

[b]The analyses for student reading achievement were conducted using scaled scores for the SAT-10 (comprehension) and the TOWRE-2 (sight word efficiency) and sample-normed scores for the AIMSweb (fluency). Sample-normed AIMSweb scores range between 0 and 1.

Reading Partners Evaluation

Table 4.2

Summary of Data Collection for Impact Analysis, by Source

Data Source	Number Randomly Assigned		Number Collected		Percentage Collected	
	Program Group	Control Group	Program Group	Control Group	Program Group	Control Group
Baseline reading assessments						
Comprehension	646	619	617	591	96	95
Sight word efficiency	646	619	616	592	95	96
Fluency	646	619	619	592	96	96
Follow-up reading assessments						
Comprehension	646	619	579	567	90	92
Sight word efficiency	646	619	585	562	91	91
Fluency	646	619	589	562	91	91
Teacher survey	646	619	593	565	92	91
Study year attendance	646	619	615	599	95	97
Study year state test scores	646	619	567	550	88	89

SOURCES: MDRC calculations from study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; study team-administered teacher survey; district-provided attendance and state achievement data.

NOTE: Reading comprehension was assessed using the SAT-10; sight word efficiency was assessed using the TOWRE-2; fluency was assessed using the AIMSweb.

included in Appendix B. A summary of the data collected on students is provided in Table 4.2. In addition, participating districts supplied the research team with state test score data, attendance information, and the demographic characteristics of the individuals in the sample. General demographic information about the schools (school size, racial/ethnic composition, number of students receiving free or reduced-price lunch, and so forth) was extracted from the publicly available Common Core of Data (CCD), published by the National Center for Education Statistics.[3]

[3]See http://nces.ed.gov/ccd.

Primary Outcomes

The primary outcome of interest in this study is student reading proficiency, as measured by test scores. The research team wanted to select a set of assessments that would measure proficiency in multiple domains of reading (described below) and were reliable, valid, well aligned with the curricular emphasis of Reading Partners, able to detect small improvements among lower-scoring students, and feasible to administer in a relatively short amount of time. After reviewing a range of possible reading assessments and talking with reading experts, the following assessments were selected: a group-administered reading comprehension test (the Stanford Achievement Test, 10th Edition, or SAT-10), an individually administered sight word efficiency assessment (the Test of Word Reading Efficiency, 2nd Edition, or TOWRE-2), and an individually administered oral reading fluency assessment (the AIMSweb).

- The **SAT-10** reading comprehension subtest is a 30-minute assessment that measures students' comprehension across four different modes: initial understanding, interpretation, critical analysis, and awareness and usage of reading strategies. Students read short passages and then answer questions about them.[4]
- The **TOWRE-2** sight word efficiency subtest took approximately five minutes to administer. The sight word efficiency subtest is a measure of an individual's ability to pronounce printed words accurately and fluently. It assesses the number of real words printed in vertical lists that an individual can accurately identify within 45 seconds.[5]
- The **AIMSweb** is an individually administered one-minute assessment of oral reading fluency, conducted by measuring accuracy and speed of reading. Students read a passage aloud for one minute and the assessor records omissions of words, misreading, and substitution of words. The count of the number of words read correctly is used as the outcome.[6]

Secondary Outcomes

Based on the Reading Partners program model, the study team also identified several secondary outcomes that were more distal to the intervention but still of interest.

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[4]NCS Pearson, Inc. (2004). Kuder-Richardson 20 reliability on this measure ranged from 0.84 to 0.93.

[5]Torgensen, Wagner, and Roshotte (2012). Alternate-form reliability on this measure ranged from 0.90 to 0.92.

[6]Pearson Education, Inc. (2012). Alternate-form reliability on this measure ranged from 0.93 to 0.95. Split-half reliability also ranged from 0.93 to 0.95 and inter-rater reliabilities on this measure were 0.99.

- **Academic behavior.** One secondary outcome of interest was the impact of Reading Partners on students' academic behavior (for example, attentiveness, assignment and homework completion, and disruptiveness). Four individual items were included on the teacher survey (reproduced in Appendix B) to assess each of these aspects of student behavior and were combined to create a single composite measure.[7] The possible score ranged from a low of 4 to a high of 16.

- **Teacher-rated academic performance.** Teachers were also asked to assess each student's performance in reading, performance in math, and academic performance overall, relative to other students in the same school. The impact of the Reading Partners program on teachers' ratings of student academic performance was explored separately for these three items.

- **Attendance.** Finally, attendance data obtained from individual school districts were used to explore the impact of Reading Partners on student attendance.

The difference between the outcomes of the program and control group students is related to the service contrast, or the difference in reading services received by students in the program and control groups. Service contrast was measured using additional data provided through the teacher survey.[8] Teacher surveys asked teachers to identify how much time each student spent receiving in-class instruction in reading and how much of that total time was one-on-one instruction in class. Teachers were also asked to indicate any supplemental reading services, such as participating in pull-out reading instruction with a reading specialist that the student had received over the course of the school year and the amount of time spent in those supplemental activities. Reading Partners was included among the list of possible supplemental services.

Analytic Approach

The analysis pools together the sample of students across schools and compares outcomes for students who were assigned to participate in Reading Partners (the program group) with those who were assigned to the control group and thus did not receive Reading Partners'

[7]The composite score was created by reverse-coding each of the items (except disruptiveness) and then summing the scores to obtain a single measure of academic behavior, with higher scores representing better composite behavior. Cronbach's alpha for this composite measure, which assesses the coherence of the items within the measure, was 0.82.

[8]School-specific teacher surveys included questions about supplemental services offered to students at that school. These services were identified during the site visits that took place earlier in the school year.

services.[9] The model includes information about each student's school and grade level to account for the study design.[10] The model also controls for several baseline covariates to improve precision. These covariates include an individual-level pretest measure and the time lapse between baseline testing and follow-up testing, student's gender, race/ethnicity, free or reduced-price lunch status, age, English language learner status, special education status, and whether the student is overage for grade. The complete model used in the analysis can be found in Appendix B.

The same basic model is used to estimate the impact of the program on service contrast; however, in this case the outcome of interest was participation in all supplemental services (including Reading Partners) or time spent in reading instruction.

As noted above, the analyses also explore the effects of the program among subgroups of students defined by characteristics depicting a student's pre-random assignment condition, including grade level, baseline academic performance, gender, prior exposure to Reading Partners tutoring, and English language learner status, and the ways in which the program impacts vary based on measures of fidelity and context. Subgroup and other exploratory impacts — those that cannot be causally attributed — were estimated using only the members of a student- or school-level subgroup.

The remainder of this chapter includes a description of the findings from the random assignment study. It begins by assessing whether or not the program had a statistically significant impact on the amount of instructional time in reading that the program group received and on their receipt of all supplemental reading services (including Reading Partners). Next, there is a description of the impact of the program on reading proficiency (measured by primary outcomes) and on the secondary outcomes of interest. Finally, this chapter presents an exploration of whether the program was more effective for some subgroups of students than for others and the contextual and implementation factors that may have contributed to any variation in impacts.

[9]"Intent-to-treat" impact estimates are used to characterize the program's impact, meaning that students are grouped based on whether they were assigned to participate in Reading Partners or not as opposed to whether they actually received Reading Partners services.

[10]The impact estimate is allowed to vary randomly across schools — this is considered a "random-effect" estimate of the program's impact and can be generalized to the broader population of schools and students served by Reading Partners.

Understanding the Contrast Between the Program and Control Groups

The design of this study compared students who were offered the opportunity to participate in the Reading Partners program with equally reading-challenged students who were not offered that same opportunity. However, since reading is such an important component of elementary education, it is unlikely that schools allowed struggling readers who were not assigned to the Reading Partners program to continue to struggle without providing some additional support. Moreover, given the limited resources available to schools, it is possible that once students were involved with Reading Partners, the school determined that they did not need other types of reading services as much. Thus, it is important to assess how different the program group's services were compared with the services that the control group received.

To assess this difference, teachers were invited to respond to a short survey about their students who were participating in the study. The survey, which was administered in the spring of the study year, asked teachers to report the amount of time students spent in classroom reading instruction each week and the supplemental reading services, including Reading Partners, that students who participated in the study received over the course of the school year. The findings from this survey are shown in Table 4.3.

Time Spent in Reading Instruction

The top panel of the table shows the amount of time that students in the program and control groups spent in classroom reading instruction each week, as well as the difference in the amount of instructional time between the two groups. On average, students in both the program and control groups spent around six hours each week on reading instruction in the classroom. Of that time, though not shown in the table, approximately 35 minutes was spent working with an instructor one-on-one. There was no statistically significant difference between the two groups in the total amount of in-class instructional time spent on reading instruction or in the time students spent working in class with an instructor one-on-one.

However, the program group did spend more time receiving supplemental reading instruction than did the control group. The Reading Partners group received about one more hour (57 minutes) of supplemental reading instruction per week than did the control group. This amount is less than would have been expected given the planned intensity of the Reading Partners program, which is designed to provide services to students for an hour and a half each week. The next section explores the source of this difference: whether students did not receive the intended dosage (frequency and intensity) of Reading Partners services, whether the students in the control group were also spending a substantial amount of time in other supplemental services, or both.

Reading Partners Evaluation

Table 4.3

Reading Instruction Received

Outcome	Program Group	Control Group	Difference	P-Value
Average reading instruction time (weekly minutes)				
In class	352.39	360.29	-7.89	0.446
In supplemental services	177.66	120.48	57.18 ***	<0.001
Students receiving any supplemental service (%)	97.24	64.75	32.49 ***	<0.001
Homework help	11.21	10.86	0.35	0.844
One-on-one tutoring[a]	95.17	20.81	74.36 ***	<0.001
Small-group intervention support	22.59	31.53	-8.94 **	0.014
Technology-based programs	8.28	9.95	-1.68	0.279
Other programs	7.24	7.48	-0.23	0.647
Sample size	580	554		

SOURCES: MDRC calculations using study team-administered teacher survey; district-provided demographic data; study team-administered baseline SAT-10 scores; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respondent sample with teacher survey data. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

The analysis model allows estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

[a]One-on-one tutoring includes the receipt of Reading Partners and other one-on-one supplemental services.

Receipt of Supplemental Services

To explore the difference between the program and control groups' receipt of supplemental services more closely, teachers' survey responses on this subject were categorized into five types:

1. **Homework help:** unstructured before- or after-school assistance and support focused on completion of teacher-assigned work

2. **One-on-one tutoring:** Reading Partners and programs similar to Reading Partners, where the student worked one-on-one with an adult on reading-related activities

3. **Small-group intervention support:** usually a group-administered pull-out program for struggling readers, conducted by a school reading specialist or other educator

4. **Technology-based programs:** those in which the student worked on improving literacy skills using a computer- or tablet-based application

5. **Other programs:** reading services provided to students that did not fall into one of the above categories

The bottom panel of Table 4.3 shows the impact of the Reading Partners program on the percentage of students receiving each type of supplemental service. The program had a positive impact on receipt of total supplemental reading services overall. Ninety-seven percent of the program group students received some sort of supplemental reading instruction (including Reading Partners). However, 65 percent of the control group also received some type of supplemental reading instruction. Not surprisingly, the biggest difference was in the percentage of students receiving supplemental one-on-one tutoring, the category that included Reading Partners. Teachers reported that 95 percent of students in the program group were receiving supplemental one-on-one tutoring compared with 21 percent of the students in the control group. This table also shows that, in addition to Reading Partners, many students in the program group also received other supplemental services, though not always to the same extent as the control group students. Students in the program group were less likely to receive small-group intervention support than were students in the control group; 23 percent of program group students received this type of support as opposed to 32 percent of the control group.

As shown in Figure 4.1, these findings suggest that through their participation in Reading Partners, program group students received around 50 minutes of additional instruction in reading each week relative to the control group, in large part because the control group also spent a substantial amount of time in supplemental instruction, particularly in small-group intervention support. As such, the impacts reported below should be interpreted as the impact of Reading Partners relative to other supplemental service receipt, not the impact of Reading Partners compared with no intervention.

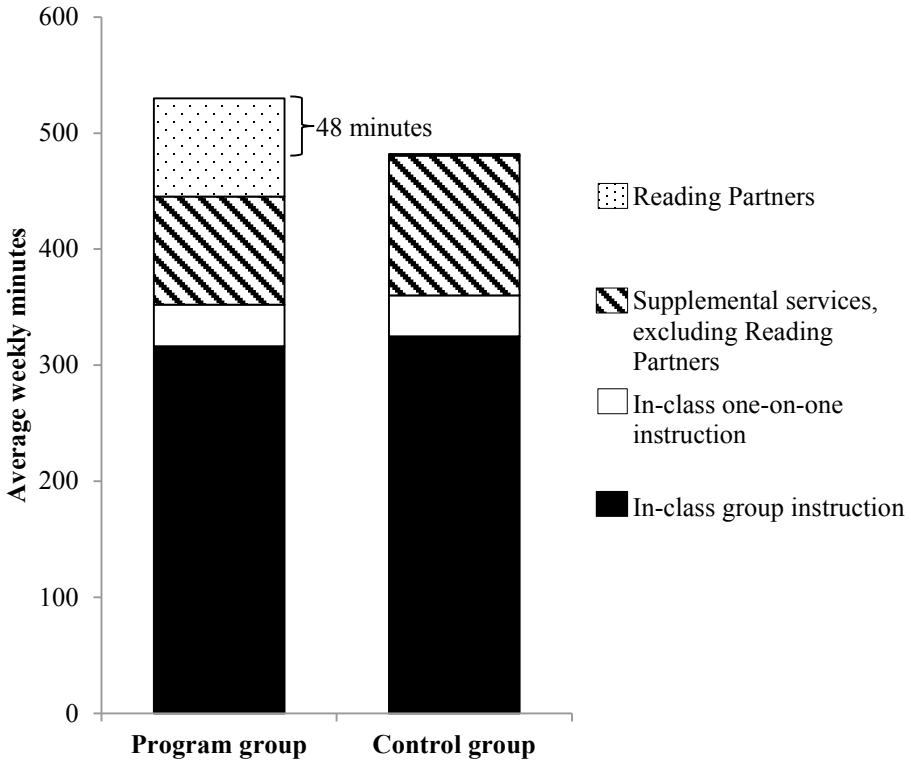
Impact of Reading Partners on Measures of Reading Proficiency

The results shown in Table 4.4 represent the primary outcomes of interest in this study — namely, the impact of the program on reading comprehension, sight word efficiency, and fluency. They show that overall the program had a positive and statistically significant impact on all three measures of students' reading proficiency, with effect sizes equal to 0.10 for reading

Reading Partners Evaluation

Figure 4.1

Time Spent in Reading Instruction and Supplemental Services



SOURCES: MDRC calculations using study team-administered teacher survey; district-provided demographic data; study team-administered baseline SAT-10 scores; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respondent sample with teacher survey data. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

The analysis model allows estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

The sample size for the program group is 580; the sample size for the control group is 554.

Rounding may cause slight discrepancies between the numbers shown here and those shown in Table 4.1.

Reading Partners Evaluation

Table 4.4

Primary Impacts of Reading Partners on Reading Proficiency

Outcome	Program Group	Control Group	Difference	Standard Error	Impact Effect Size	P-Value
Comprehension	592.42	588.94	3.48 **	1.71	0.10	0.043
Sight word efficiency	92.78	91.37	1.42 ***	0.50	0.11	0.004
Fluency	0.06	-0.03	0.09 **	0.04	0.09	0.031
Sample size	594	572				

SOURCES: MDRC calculations using study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

The impact analyses for student reading achievement were conducted using scaled scores for the SAT-10 (comprehension) and the TOWRE-2 (sight word efficiency) and sample-normed scores for the AIMSweb (fluency). Sample-normed AIMSweb scores range between 0 and 1. The model allows estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

comprehension (measured by the SAT-10), 0.11 for sight word efficiency (measured by the TOWRE-2), and 0.09 for fluency (measured by the AIMSweb).[11] An explanation of effect sizes can be found in Box 4.1, but these impacts mean that at the end of the school year, students in the Reading Partners group were scoring, on average, two to three percentile points higher than were students in the control group on these assessments. For example, on the sight word reading assessment, the average student in the program group scored at the 36th percentile compared with the average student in the control group, who scored at the 33rd percentile. This difference is equivalent to approximately one and a half to two months of additional progress in reading relative to the control group. When looking at growth between the beginning and end of the

[11]All three impacts remain statistically significant after controlling for multiple hypothesis testing using the Benjamini-Hochberg procedure (Benjamini and Hochberg, 1995).

Box 4.1

What Is an Effect Size?

An effect size is a way of quantifying the size of the difference in outcomes between two groups (for example, a program group and a control group, or two different subgroups), or the "impact estimate." Calculating an effect size, which is done by dividing the impact estimate by the standard deviation of the outcome measure, allows researchers to compare impacts across variables that are measured in different units. For example, increasing a test score by two points on a test that is scored on a scale of 1 to 5 points is much more meaningful than increasing a score by two points on a test that is scored on a scale of 1 to 100. One way to interpret the magnitude of the impact estimates is to use the following rule of thumb: Effect sizes of about 0.20 or less are considered "small"; effect sizes of about 0.50 to 0.80 are considered "moderate"; and effect sizes of about 0.80 or more are considered "large."[*]

[*]Cohen (1988).

school year on these three assessments, the evaluation finds that both groups scored higher at the end of the year than they did at the beginning of the year, but growth was greater for the program group than for the control group. (See Appendix Figure C.1.)

To put these findings in context, it is helpful to think about the total amount of additional instruction students in the program group received. The typical Reading Partners student received around an hour of additional supplemental instruction each week for approximately 28 weeks, or a total of 28 additional hours of supplemental instruction.[12] The typical student receives approximately 30 hours of classroom-based instruction in reading each month (assuming a 90-minute reading block each day).[13] Thus, Reading Partners provided students with about a month's worth of reading instruction. Yet, as noted earlier, the program's impact on reading achievement is equivalent to about one and a half to two months of learning. This means that students in the program group progressed a bit more than might have been expected given the amount of additional instruction time they received.

[12]The 48-minute incremental difference presented in Figure 4.1 takes into account the total difference in instructional time, including the small and non-statistically significant difference in the amount of whole-class instruction. As indicated in Table 4.3, the additional supplemental instruction is closer to one hour per week.

[13]This is consistent with the amount of time teachers in this study reported that students spent in reading instruction. As shown in Table 4.3, teachers in this study reported that students in the control group received approximately 480 minutes of reading instruction each week (in-class plus supplemental), or 96 minutes a day.

Appendix C also presents exploratory analyses of the impact of Reading Partners on state assessment scores. No statistically significant impacts were found.

Impact of Reading Partners on Academic Behavior, Performance, and Attendance

The research team was also interested in understanding whether or not the program improved students' academic behavior (for example, attentiveness in class) and overall academic performance in the classroom, which were secondary outcomes. Table 4.5 shows the impacts of the program on attendance and teacher ratings of school performance and academic behavior. The impacts were generally positive (with the exception of attendance) but not statistically significant. For example, teachers indicated that 73 percent of the students who were assigned to the program group completed their homework "usually" or "always" (shown as "Satisfactory homework completion" in the table), while only 70 percent of the control group students completed their homework "usually" or "always," but the difference was not statistically significant. Teachers also rated the academic performance of the students who participated in the Reading Partners program somewhat, though not significantly, higher than they did the control students' performance. For example, teachers indicated that 51 percent of the students in the program group were above average relative to their peers in overall academic performance ("Satisfactory performance overall" in the table) as opposed to 47 percent of the control group.

Subgroup Analyses

To explore whether or not Reading Partners was more effective for some groups of students than for others, the study team conducted subgroup analyses based on five prespecified characteristics of interest: baseline achievement (based on the fall reading comprehension assessment),[14] prior receipt of Reading Partners services, gender, English language learner status, and grade level. The results are shown in Table 4.6. These analyses suggest that the Reading Partners program is effective for a wide variety of students: Impacts did not differ significantly for students from different grade levels or baseline achievement levels, for male or female students, for those who were still learning English, or for those who had previously been served by the Reading Partners program.

There are, however, a few patterns in these findings that are worth mentioning, although these patterns should be interpreted with caution since the subgroups are not statistically

[14]The SAT-10 was chosen as the basis for determining the baseline reading performance of the students because it is a more comprehensive assessment of reading proficiency than the TOWRE-2 or the AIMSweb.

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Table 4.5

Secondary Impacts of Reading Partners on Students' Attendance and Teacher-Reported Achievement and Behavior

Outcome[a]	Program Group	Control Group	Difference	Standard Error	Impact Effect Size	P-Value
Attendance (%)	95.65	95.83	-0.18	0.24	-0.04	0.466
Academic outcomes (%)						
Satisfactory performance in reading	43.55	40.59	2.97	2.76	0.06	0.283
Satisfactory performance in math	55.40	53.84	1.56	3.26	0.03	0.632
Satisfactory performance overall	51.40	47.40	4.00	2.81	0.08	0.155
Behavioral outcomes (%)						
Satisfactory homework completion	72.96	70.11	2.85	2.59	0.06	0.271
Satisfactory assignment completion	78.16	76.59	1.57	2.41	0.04	0.515
Satisfactory level of attentiveness	65.16 65.16	64.82 64.82	0.34 0.34	2.78 2.78	0.01 0.01	0.901 0.901
Unsatisfactory level of disruptiveness	9.71	9.67	0.03	1.79	0.00	0.986
Composite behavior	12.49	12.37	0.12	0.15	0.04	0.412
Sample size	594	572				

SOURCES: MDRC calculations using study team-administered baseline SAT-10 scores; study team-administered teacher survey; district-provided demographic and attendance data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

The analysis model allows program impact estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

[a]For academic outcomes, satisfactory performance corresponds to ratings of "Average," "Above Average," or "Far Above Average." For behavioral outcomes, satisfactory corresponds to "Usually" or "Always," except for disruptiveness, which is reverse-coded.

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Table 4.6

Subgroup Analysis of Primary Impacts

		Comprehension		Sight Word Efficiency		Fluency	
Subgroup	Sample Size	Impact Effect Size	P-Value	Impact Effect Size	P-Value	Impact Effect Size	P-Value
Prior achievement							
1st quartile	310	0.02	0.839	0.22 **	0.030	0.19 *	0.080
2nd quartile	305	0.16 *	0.056	0.08	0.295	0.05	0.538
3rd quartile	291	0.12	0.258	0.11	0.276	0.08	0.348
4th quartile	260	0.00	0.975	0.14	0.106	0.10	0.300
Bottom 3 quartiles	906	0.11 **	0.043	0.10 **	0.022	0.09 **	0.040
Prior receipt of Reading Partners							
Prior receipt	316	0.11	0.178	0.05	0.629	0.03	0.722
No prior receipt	812	0.07	0.142	0.12 ***	0.010	0.11 *	0.060
Gender							
Male	633	0.08	0.179	0.13 **	0.014	0.07	0.212
Female	522	0.11 *	0.070	0.09	0.137	0.14 **	0.023
English language learner (ELL) status							
ELL	634	0.11 **	0.048	0.11 **	0.041	0.14 **	0.015
Non-ELL	503	0.01	0.845	0.11 *	0.061	0.04	0.577
Grade level							
Grades 2 and 3	605	0.09	0.132	0.17 ***	0.002	0.09	0.182
Grades 4 and 5	561	0.13 *	0.096	0.05	0.479	0.10	0.101

SOURCES: MDRC calculations using study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respective subgroups of the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

The impact analyses for student reading achievement were conducted using scaled scores for the SAT-10 (comprehension) and the TOWRE-2 (sight word efficiency) and sample-normed scores for the AIMSweb (fluency). The model allows program impact estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels between the program and control groups are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent. Differences between subgroups are not statistically significant.

significantly different from one another. First, the subgroup analyses based on the incoming reading achievement of the students in the study sample indicate that the sight word efficiency and oral reading fluency impact effect sizes were largest for students who performed in the lowest quartile of the study sample on the baseline reading comprehension test, with effect sizes equal to 0.22 and 0.19, respectively. In other words, the program group students who were lowest-performing at the beginning of the year performed the best on the sight word efficiency and fluency measures compared with their counterparts in the control group. Reading comprehension impacts were largest for those in the second-lowest quartile, with an effect size equal to 0.16. Although the impacts for these subgroups (that is, by reading achievement at baseline) were not statistically significantly different from one another, they do suggest that the program may have been more effective for the students who were lowest-performing at baseline. Furthermore, the impacts on reading comprehension are the largest for the middle two quartiles, suggesting that the program may have been more effective in improving the reading comprehension skills of students after they had mastered the basic mechanics of decoding.

To further investigate these findings, the study team explored the impact of the program on the percentage of students whose performance on the reading comprehension assessment (SAT-10) at baseline placed them in the lowest quartile of reading achievement nationally. These students (who represent approximately 60 percent of the study sample) performed less well on the SAT-10 at the beginning of the study than 75 percent of their peers nationwide. The Reading Partners program had a statistically significant positive impact on the percentage of these students who had moved out of this category by the end of the study year. As shown in Table 4.7, at the end of the year, 19 percent of the program group students who scored in the bottom quartile nationally at baseline had moved out of the lowest quartile by the end of the year, as opposed to 12 percent of the control group. The team also explored the impact of the program on the percentage of students who moved up a national quartile on the SAT-10 (including students from the lowest three quartiles who would thus be able to move up quartiles over the course of the year). There was no statistically significant impact on this outcome measure.

Second, the program appears to be particularly effective for English language learners, with positive and statistically significant effects on all three reading assessments for this subgroup. Third, Reading Partners appears to have made a greater impact on reading comprehension scores for students who had previously participated in Reading Partners, while it appears to have made a greater impact on sight word efficiency and fluency for those in their first year.

Finally, in the study sample, Reading Partners appears to have had a greater impact on sight word efficiency among students in grades 2 and 3, while there was a greater impact on

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Table 4.7

Impacts of Reading Partners on Students' Reading Comprehension Relative to National Norms

Outcome	Sample Size	Program Group	Control Group	Difference	Standard Error	Impact Effect Size	P-Value
Moved out of lowest national quartile on SAT-10 reading assessment (%)	675	19.16	11.61	7.55 **	3.07	0.22	0.014
Moved up a national quartile on SAT-10 reading assessment (%)	1,094	14.10	10.71	3.39	2.50	0.11	0.175

SOURCES: MDRC calculations using study-administered baseline SAT-10 scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respondent sample. The sample size for the first outcome includes only students who started the study year in the lowest national quartile, while the second outcome includes students who started the study year in the lowest 3 national quartiles.

The impact analyses for student reading achievement were conducted using percentile scores for the SAT-10 (comprehension). The model allows estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

reading comprehension for students in grades 4 and 5. This finding is consistent with the developmental progression of reading proficiency and with the focus of reading in these grades.[15] Again, these subgroup differences are not statistically significant and thus should be interpreted with caution.

Exploring Variation in Outcomes Based on Fidelity and Context

In an effort to understand the factors that influenced program outcomes, the study team also explored several potential sources of variation in program impacts: tutor consistency, tutor background, school-level fidelity, the number of years that Reading Partners had been in operation in the school, and the average number of sessions per week and per year in the school.

[15]Chall (1983).

All these factors were identified in the literature as potential sources of variability in the effectiveness of tutoring programs or were identified by Reading Partners as factors that were worthy of exploration. The research team hypothesized that tutor consistency, school-level fidelity, the number of years the Reading Partners program had been in operation at the site, and the dosage of services that students received would all be positively associated with outcomes. Previous literature also indicated that college students might be more effective than tutors with other backgrounds.[16]

These analyses are nonexperimental and are intended to be used for generating hypotheses but not for confirming proposed theories. Unlike the student subgroups discussed earlier, factors like tutor consistency can be influenced by the intervention and, as a result, they cannot be interpreted as causal. The findings from these exploratory analyses are shown in Table 4.8.

Tutor Consistency

First, to ascertain whether tutor consistency was related to outcomes, schools were categorized into three equal groups of "fewest," "moderate," and "most" consistency based on the average number of tutors assigned to each student over the course of the school year, with fewer tutors per student reflecting higher consistency. The average number of tutors assigned per student in each school ranged from a high of 3.6 to a low of 1.7. There are no discernible patterns in the results.

However, the average number of tutors assigned per student at the school level may not be the most appropriate measure of consistency. First, this is a measure of school-level consistency, and does not represent the experience that an individual student may have had. There was considerable variation within schools in the number of tutors to whom individual students were assigned. In fact, the variation among students within each of the study schools accounted for 84 percent of the total variation in the number of tutors assigned per student in the study sample, while the variation between school-level averages accounted for only 16 percent. Thus, most of the variation occurred within schools, not across schools. This means that a school-level categorization is likely a poor predictor of a student's experience.

Therefore, another analysis explored whether growth in reading proficiency varied based on the number of tutors to whom an individual student was assigned. (See Appendix Table C.3.) These analyses are correlational because there is no control group to use as a comparison. As an example, tutors who were working with difficult-to-teach students may have been more likely to stop volunteering. Nonetheless, there is no statistically significant relationship

[16]Elbaum, Vaughn, Hughes, and Moody (2000).

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Table 4.8

Subgroup Analysis of Primary Outcomes Based on Fidelity and Context Measures

School-Level Subgroup	Sample Size	Comprehension Impact Effect Size	Comprehension P-Value	Sight Word Efficiency Impact Effect Size	Sight Word Efficiency P-Value	Fluency Impact Effect Size	Fluency P-Value
Average number of tutors assigned[a]							
Fewest	311	0.17	0.302	0.10	0.281	0.09	0.254
Moderate	500	0.08	0.167	0.11 **	0.045	0.08	0.332
Most	355	0.10	0.217	0.12 *	0.099	0.09	0.249
Fidelity of implementation[b]							
Low	137	-0.07	0.546	0.10	0.620	0.14	0.472
Moderate	469	0.13	0.129	0.15 ***	0.008	0.01	0.883
High	560	0.10	0.138	0.07	0.211	0.12 **	0.034
Years of Reading Partners operations							
Less than 2 years	493	0.17	0.129	0.08	0.185	0.01	0.873
2 years or more	673	0.07	0.164	0.12 **	0.018	0.15 **	0.011
Dosage in sessions per week[c]							
Low	347	0.09	0.440	0.11	0.149	0.02	0.760
Moderate	442	0.16 **	0.039	0.12 *	0.088	0.07	0.313
High	377	0.03	0.732	0.08	0.234	0.16	0.138
Dosage in total sessions[c]							
Low	354	0.04	0.688	0.12	0.162	-0.02	0.774
Moderate	464	0.21 ***	0.001	0.15 **	0.015	0.17 ***	0.008
High	348	0.01	0.893	0.02	0.778	0.06	0.448

SOURCES: MDRC calculations using study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

(continued)

Table 4.8 (continued)

The impact analyses for student reading achievement were conducted using scaled scores for the SAT-10 (comprehension) and the TOWRE-2 (sight word efficiency) and sample-normed scores for the AIMSweb (fluency). The model allows estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels between program and control groups are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent. Differences between subgroups are not statistically significant.

[a]"Fewest" reflects the lowest tercile of average number of tutors assigned per student; "moderate" reflects the second tercile of average number of tutors assigned per student; "most" reflects the third tercile of average number of tutors assigned per student.

[b]Low-fidelity schools are those with a fidelity score of 15.0 or lower; moderate-fidelity schools are those with a fidelity score between 15.5 and 18.5; high-fidelity schools are those with a fidelity score of 19.0 or greater.

[c]Low-dosage schools are those in the lowest tercile of average sessions attended per student; moderate-dosage schools are in the second tercile of average sessions attended per student; and high-dosage schools are in the third tercile of average sessions attended per student.

between the number of tutors assigned to a student over the course of the school year and growth in reading proficiency on any of the three measures.

The number of tutors assigned to a particular student also does not provide any indication of how consistently the assigned tutor attended the tutoring sessions. If a student were assigned to only one tutor over the course of the year, but that tutor was consistently absent, that might be a less effective tutoring arrangement than a student who was assigned to two tutors who each came on a regular basis. Unfortunately, Reading Partners does not collect data on tutor absences, so this possibility cannot be explored directly. However, data from the student folders that were reviewed as part of the implementation site visits can provide a measure of the number of tutors an individual student saw over a two-week period of time. To explore this question, the team calculated the average number of sessions per tutor for a random sample of students over the two-week period. This number was then averaged to the school level and an analysis explored whether impacts varied across schools based on this calculated measure of tutor reliability. The results are shown in Appendix Table C.4. Again, there is no consistent pattern in the data.

Tutor Background

The background of students' primary tutors and the associated student gains on the three reading assessments used in this study are shown in Appendix Table C.5. The primary tutor is defined as the tutor with whom the student was officially paired over the longest period of time. Although these analyses are only exploratory, among the sample there is no clear indi-

cation that the background of a student's primary tutor has any effect on that student's increased reading abilities. In contrast with prior research, student reading gains for individuals who are tutored by college or graduate students are not noticeably larger than those for volunteers with different backgrounds.[17] While these students had relatively high gains on the SAT-10 (reading comprehension), their gains on the TOWRE-2 (sight word efficiency) and AIMSweb (fluency) are lower than the gains for many other groups. Additionally, the differences in test score growth across the background characteristics are not statistically significantly different from one another, for either reading comprehension or fluency. There is a statistically significant difference in the sight word efficiency scores, suggesting that high school students, working adults, and retired individuals may have been more effective than college or graduate students in improving students' sight word efficiency.

Fidelity of Implementation

The next analyses explored whether impacts varied based on the fidelity scores of the schools in the study. As described in Chapter 3, the study team created a fidelity index based on the core components of the Reading Partners model, to assess how well the program was being implemented across sites. The scores on this fidelity index were used to categorize sites. Low-fidelity schools were those receiving a score of 15.0 or lower on the fidelity index; moderate-fidelity schools received a score of 15.5 to 18.5; and high-fidelity schools received a score of 19.0 or greater. Again, there is no consistent pattern in student outcomes based on the fidelity scores of the various sites. This may be because the program was implemented with relatively high fidelity across all the sites.

Years of Operation

There were also no consistent patterns based on the number of years that Reading Partners had been operating in a school. Sites that had been in operation for two years or more had larger effect sizes on both the sight word efficiency and fluency assessments than did schools that had been operating for less than two years, but the effect sizes were larger for reading comprehension for the newer sites. Again, these differences are not statistically significantly different from one another. Since the pattern of results varies across outcomes and in some cases the differences are relatively small, this pattern of results likely occurred by chance.

[17] Elbaum, Vaughn, Hughes, and Moody (2000).

Dosage

Finally, schools were categorized based on the average number of tutoring sessions that students received each week, which ranged from a low of 1.1 to a high of 1.8 across the 19 schools. Schools were divided into three equal groups, low, moderate, and high. No consistent patterns were found and the differences across the subgroups were not statistically significant. Similarly, looking at the average number of tutoring sessions offered over the entire year, which combines both the duration and frequency of the tutoring that students received, there is no evidence that high-dosage schools are more effective. In fact, the schools with moderate dosage appear to be somewhat more effective than the schools with the highest levels of dosage, though the difference is not statistically significant. It is not clear why moderate-dosage schools would be more effective than high-dosage schools. To put this finding in context, however, it should be noted that overall the dosage of Reading Partners was quite high. As noted in Chapter 3, on average, students in the program group attended 79 percent of the tutoring sessions that were available to them (once school closures and holidays were accounted for).

Summary

In summary, in this evaluation the Reading Partners program had a positive and statistically significant impact on the reading proficiency of the students who participated in the program.

- Reading Partners had a positive and statistically significant impact on all three measures of student reading proficiency, with effect sizes of 0.10 on reading comprehension scores, 0.09 on reading fluency scores, and 0.11 on sight word efficiency scores. This is equivalent to approximately one and a half to two months of additional progress in reading relative to the control group.
- Since students in the control group were also receiving supplemental reading services, these impacts should be interpreted as the impact of Reading Partners relative to other supplemental services receipt, not the impact of Reading Partners compared with no intervention.
- The impacts were equivalent to what a student learns in approximately one and a half to two months of additional school and are therefore somewhat larger than might have been expected given the amount of additional instructional time that students in the program received — 28 hours, or approximately one month.

- Impacts did not differ significantly for students from different grade levels, for male or female students, for those who were still learning English, or for those who had previously been served by the Reading Partners program.
- Reading Partners had a positive and statistically significant impact on the percentage of students who moved out of the lowest quartile nationally in terms of reading comprehension. At the end of the year, 19 percent of the program group students who had scored in the bottom quartile nationally at the start of the study had moved out of the lowest quartile, as opposed to only 12 percent of the control group.

These findings all suggest that the Reading Partners model "works" — that is, it produces measurable impacts in reading skills among participants. The findings indicate that the impacts may have been largest for those readers who struggled the most; however, the findings also indicate that the program was effective in helping students with a fairly broad range of reading abilities and from a variety of grade levels and backgrounds. Reading Partners produced these measurable and consistent impacts despite the lack of prior experience among tutors, the somewhat limited training they received, and the relatively short duration of the tutor-student relationships. Chapter 6 includes a discussion of the components of the Reading Partners model and which components may have contributed to the impact findings presented in this chapter.

Chapter 5

The Cost of Reading Partners

Cost studies in education provide important information to aid the policymaking process.[1] They often take one of three forms: (1) a benefit-cost analysis in which the outcomes of a program are expressed as monetary benefits and related to the costs to determine whether the benefits of the program outweigh the costs; (2) a cost-effectiveness study that compares the relative costs and effects of two or more programs that target equivalent outcomes; and (3) a cost study that describes the costs of a program, based on a comprehensive list of the resources (or "ingredients") used to implement the program, and analyzes which entities bear the burden of financing those costs.[2] Since reading achievement is not easily expressed in dollars, a benefit-cost analysis could not be easily undertaken for this study. Similarly, a cost-effectiveness analysis could not be conducted because the evaluation did not include an alternative program with which Reading Partners could be directly compared. Therefore, this evaluation takes the third approach and provides a rich description of the costs of Reading Partners, as well as the costs of the other supplemental services available in a sample of the evaluation schools.

Two types of "costs" are examined in this chapter. The first is the value of all goods and services used to implement the Reading Partners program, including in-kind (such as the classroom space and the time school staff spend selecting students for the program) or donated resources. This is what is often referred to as the "total cost" of the program.[3] The total cost is useful for thinking about the resource richness of the program and when comparing the resources used to implement various programs. The second type of cost discussed is the direct cost of the program borne by the school (that is, the portion of the total costs financed by the school or school district). Since principals, superintendents, or school boards are the agents making the decision to bring Reading Partners into a school, the cost the school bears is relevant. To calculate cost, the ingredients method is used. This method is a rigorous approach to conducting cost studies that accounts for all resources that are used to achieve educational gains.[4] The full resource cost, or the "total cost" to society, includes the value of all the ingredients, regardless of who paid for or contributed them.[5] The cost borne by schools includes the value of the ingredients that the schools provided — both in-kind and financial. (Not all analyses of costs include the cost of in-kind contributions. Therefore, comparisons of the costs

[1]Hummel-Rossi and Ashdown (2002); Levin and Belfield (2013); Levin and McEwan (2001); Ross, Barkaoui, and Scott (2007).

[2]Levin (1975); Levin and McEwan (2001).

[3]Levin and McEwan (2001)

[4]Dhaliwal, Duflo, Glennerster, and Tulloch (2012); Harris (2008); McEwan (2002); Rice (1997).

[5]Levin (1975).

presented in this chapter with those in other reports will not be meaningful unless the ingredients covered by the cost estimates are similar.)

This chapter provides information about the resources needed to replicate the Reading Partners program at the level it was implemented in the study sites, and documents both the financial and in-kind resources that a school typically must provide to implement Reading Partners. In addition to presenting overall costs averaged across sites, the chapter covers how and why resources varied across sites. Studies have shown the importance of examining site-level variability in costs because understanding the pattern of resource use across sites may be important for evaluating a particular replication plan or for achieving a particular effect.[6]

As discussed in Chapter 4, an evaluation of Reading Partners is incomplete without also examining the other supplemental reading services provided in the schools, because the impacts presented in Chapter 4 are the impacts of Reading Partners relative to an environment that already has other such programs. Thus, in addition to assessing the total resources needed to implement the Reading Partners program, this cost study was designed to provide site-level estimates of the average cost of the other supplemental services provided at each school in the cost study sample. Each site had between one and four other supplemental reading services included in the study. The services included tutoring, read-aloud programs, reading specialists, and computer-based programs. Some of these programs also used volunteers. The cost estimates for these other supplemental reading programs provide valuable information about the resource richness of Reading Partners in relation to the menu of other services that are typically provided for struggling readers.

Specifically, this chapter addresses the following research questions:

1. What resources are needed to implement the Reading Partners program as described in this evaluation and what proportion of the costs of implementing the program are borne by the school?

2. What resources are needed to implement the other supplemental services available to struggling readers at a sample of sites that were included in the impact evaluation?

[6]Bowden (2014); Hollands et al. (2014); Levin, Catlin, and Elson (2007).

Methods

The costs of Reading Partners and of the other supplemental reading services were estimated in six schools using the ingredients method, described below.[7]

Cost Study Sample

Six school sites were selected from the larger evaluation for inclusion in the cost study. The team selected sites that had strongly implemented programs, that were geographically representative of the other sites in the study, and where reliable data could be collected on the resources used in Reading Partners and other supplemental reading services offered during the 2012-2013 school year. The sites were all elementary schools that varied in the size of the school (that is, the number of students enrolled) and in the number of students served by Reading Partners. Table 5.1 shows the characteristics of the cost study sample compared with the other Reading Partners schools included in the evaluation. The schools in the cost study had more students enrolled and were composed of slightly more white students than the rest of the evaluation sample but were otherwise comparable.[8] In addition, the average impact on reading proficiency among these six sites was comparable with the full sample impacts, with effect sizes equal to 0.09 on each of the three reading proficiency measures.

Data Collection

All of the resources that were used to implement Reading Partners were identified from discussions with program administrators, interviews with and surveys of program and school staff, and data collected during the observational school site visits. The resources included all in-kind or donated ingredients such as the time contributed by the principal or the time contributed by community volunteer tutors. Even though Reading Partners enlists tutors who volunteer at no cost to the school, the volunteers are a necessary and important ingredient for the program to work. To properly document the full resource richness of the program, a value is given to these donated hours. They are valued at the price that their services would cost if they had to be purchased. This full-cost valuation allows an appropriate comparison of the resource richness of programs that receive donated time with those that do not.

Site by site, the study team compiled the full set of ingredients needed to replicate the program as it was implemented at the site. Because the focus of the study is on the cost of

[7]Additional information on the ingredients method can be found in Appendix D (Levin and McEwan, 2001).

[8]This report does not reveal the total number of students served at each school or the number of students in the program group at each site to protect the identity of each site.

Reading Partners Evaluation

Table 5.1

Characteristics of Cost Study Schools and Other Reading Partners Study Schools (2011-2012)

Characteristic	Cost Study Schools	Other Reading Partners Study Schools	Difference	P-Value
Eligible for Title I program (%)	83.33	91.67	-8.33	0.621
Students eligible for free/reduced-price lunch[a] (%)	77.96	83.43	-5.47	0.331
Race/ethnicity (%)				
Black	28.14	17.32	10.82	0.337
Hispanic	49.67	67.32	-17.66	0.120
Asian	10.34	9.25	1.08	0.831
White	9.43	3.98	5.45 *	0.072
Other	2.43	2.12	0.31	0.798
Male (%)	51.93	51.88	0.05	0.971
Average number of students	612.33	439.62	172.72 **	0.049
Grade 2	97.33	70.15	27.18	0.158
Grade 3	93.00	67.08	25.92	0.156
Grade 4	87.00	68.08	18.92	0.276
Grade 5	88.83	69.17	19.67	0.281
School setting[b] (%)				
Urban	66.67	76.92	-10.26	0.659
Suburban	33.33	23.08	10.26	0.659
Town	0.00	0.00	0.00	NA
Rural area	0.00	0.00	0.00	NA
Sample size	6	13		

(continued)

replication, or incremental costs, the costs of general program administration and development were not included. By separating cost by site, the study team was able to examine the range of resources that contributed to the operation of Reading Partners.

Analytic Methods

After a comprehensive list of ingredients was compiled, each ingredient was matched with its national price, or cost in 2012 dollars. National prices were obtained from publicly

Table 5.1 (continued)

SOURCES: MDRC calculations from 2011 and 2012 National Center for Education Statistics Common Core of Data (CCD).

NOTES: Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

[a]The value given for students eligible for free/reduced-price lunch is calculated from the 2011 CCD because data are missing in the 2012 CCD. Data for all other variables are from the 2012 CCD.

[b]"Urban" is defined as territory inside an urbanized area and inside a principal city having a population greater than 100,000. "Suburban" is defined as territory outside of a principal city and inside an urbanized area with a population of less than 250,000. "Town" is defined as territory inside an urban cluster that is (1) less than or equal to 10 miles from an urbanized area ("fringe"), or (2) more than 10 miles and less than or equal to 35 miles from an urbanized area ("distant"), or (3) more than 35 miles from an urbanized area ("remote"). "Rural" is defined as territory that is (1) less than or equal to 5 miles from an urbanized area and less than or equal to 2.5 miles from an urban cluster ("fringe"), or (2) more than 5 miles but less than or equal to 25 miles from an urbanized area and more than 2.5 miles but less than nor equal to 10 miles from an urban cluster ("distant"), or (3) more than 25 miles from an urbanized area and more than 10 miles from an urban cluster ("remote").

available sources such as the Bureau of Labor Statistics, the Department of Labor, the National Center for Education Statistics, and AmeriCorps. (More details are provided in Appendix D.)

As already noted, volunteer time is a critical ingredient for Reading Partners, but it does not have a clear market rate. The price used must therefore be an approximate value of the ingredient based on similar resources with market prices.[9] The price reported here is the hourly rate for a paraeducator or teacher's aide.[10] The role of the paraeducator and the role of the volunteer tutors (for both Reading Partners and the other supplemental reading programs that used volunteers) seemed most similar with regard to expectations and responsibilities. Thus, the full cost that is reported below represents the cost of the program including the costs reflected by the volunteers. This estimate could also be interpreted as the cost of these services if the tutors had to be paid.

Each Reading Partners program site served up to 80 students. However, only a portion of those students served were included in the evaluation, either because eligible students were identified after randomization occurred or because the school served students in lower grade levels that were not included in the evaluation. The data collected reflect the services provided

[9]Levin and McEwan (2001).

[10]However, as described in Appendix D, sensitivity tests using minimum wage and tutor education levels provide lower and upper bounds for the price of the volunteers.

to all students who participated in Reading Partners and not just those in the evaluation sample. Therefore, the calculation of the cost per student must be adjusted to account for the additional students who were accommodated; otherwise, the cost per student would be overstated. The term "per program group student" is used throughout the report to refer to the students who were randomly assigned to participate in the Reading Partners program as part of the evaluation (the "program group") and to distinguish them from the total pool of students served.

To calculate the cost per program group student, first the total cost (or the total resource value) of the program at each site was divided by the total number of sessions provided to all students who received Reading Partners' services during the year (not just the sessions provided to the study's program group students) to obtain the cost per session. Then, to determine the average per-student cost of serving the program group, the average cost per session was multiplied by the average number of sessions that program group students attended.

The resources needed to run the Reading Partners program come from many different sources, including schools or school districts, volunteers from the community, the AmeriCorps program, and the Reading Partners organization. Therefore, the costs borne by each constituent are described below, with a special emphasis on the costs borne by the schools. When the costs to the school are reported, the estimate is based on the resources contributed by the school in-kind as well as the fee-for-service paid by the school to Reading Partners for the program.

These Reading Partners costs are examined relative to the cost of the other supplemental reading services provided in the school. This analysis shows the relative "richness," or resource intensity, of Reading Partners, as well as the relative cost of Reading Partners to the school. The costs of the other supplemental reading services provided at each school were calculated in the same detailed way and followed the same pricing approach using national prices. The costs of the other supplemental programs were aggregated by averaging them at the site level to protect confidentiality.

Findings

The total resource value, or cost, of Reading Partners is approximately $3,610 per program group student, of which $1,910 reflects in-kind resource contributions made by schools and the community volunteers and the remaining $1,700 reflects the financial costs borne by the Reading Partners program, the AmeriCorps program, and the schools. (See Table 5.2.) As discussed in Chapter 6, other effective early literacy interventions that have been evaluated at scale are at least as costly as Reading Partners.[11] However, unlike many other resource-rich programs, a

[11]Hollands et al. (2013); Simon (2011).

Reading Partners Evaluation

Table 5.2

Cost of Reading Partners per Program Group Student

Cost	Cost per Student	Distribution of Cost per Student: Cost to School	Cost to Volunteers	Cost to Reading Partners	Cost to AmeriCorps
Ingredients ($)					
Reading Partners staff	690			690	
AmeriCorps members	930			930	
School staff	90	90			
Volunteer time and transportation	1,520		1,520		
Facilities	300	300			
Materials and equipment	80			80	
Total ingredients	**3,610**	**390**	**1,520**	**1,700**	**0**
Fee for service[a] ($)		320		-320	
AmeriCorps grant[b] ($)				-270	270
Net cost per student (total ingredients + fee for service + AmeriCorps grant) ($)		**710**	**1,520**	**1,110**	**270**
Portion of net cost per student (%)		20	42	31	7

SOURCES: MDRC calculations from cost data.

NOTES: Costs are measured in 2012 U.S. dollars and are rounded to the nearest 10 in the tables and text.

Averages are weighted to account for the size of the program group at each site.

All costs are those for the respondents in the program group and are adjusted for the larger dosage they received.

Rounding may cause slight discrepancies in sums and differences.

[a]Each school pays a fee to Reading Partners to finance a portion of resources provided by the organization, such as staff and materials. The fee presented here is the national average fee per student.

[b]AmeriCorps provides a grant to Reading Partners to finance approximately 30 percent of the costs of the AmeriCorps members employed by the program. Reading Partners pays the remainder of the costs.

majority of the costs of Reading Partners is covered by in-kind contributions. Furthermore, Reading Partners schools bear only a small portion of the total costs of the program. Because the program relies heavily on volunteers, on average schools bear only 20 percent ($710 per program group student) of the cost of the total resources required to implement the program, and over half of these costs are covered by in-kind contributions. The cost findings for Reading Partners are discussed in more detail below, along with the costs of the other supplemental reading services provided at the schools.

The School's Portion of the Total Cost of Reading Partners

While the total resource value of the Reading Partners program is $3,610, the schools themselves paid only a small proportion of these costs. As shown in Table 5.2, the schools in the study contributed both in-kind resources and a fee to finance the program. The in-kind resources included a classroom for the reading center, space for program events, and time from the principal, teachers, administrative staff, and the reading specialist or coordinator. The value of these in-kind resources is approximately $390 per program group student, of which $300 is the cost of the space. In addition to space and time, the schools also covered a portion of the resources provided by the Reading Partners sponsor by paying a fee of $320 per program group student to Reading Partners. Thus, the school's commitment of $710 per student leveraged almost $3,000 of additional resources, a majority of which is provided by the volunteer tutors.

Volunteers' Contribution to the Cost of Reading Partners

In addition to the costs financed by the school, the remaining costs of the program were borne by three agents: the Reading Partners organization, the AmeriCorps program, and the volunteers themselves.

As shown in Table 5.2, the largest proportion of the resources used in implementing the program (42 percent of the total) was financed through in-kind donations from the community volunteers. Volunteers contributed, on average, the equivalent of $1,520 per program group student, which included both their time and transportation costs, for which they were not reimbursed.[12] The Reading Partners organization financed about 31 percent of the required resources ($1,110 per program group student), which included both staff and materials. The site coordinator and outreach coordinator positions are partially financed by the AmeriCorps program. AmeriCorps provided a grant to Reading Partners to finance approximately 30 percent of the costs of the AmeriCorps members. Thus, AmeriCorps funding finances about 7 percent of the total cost of Reading Partners.

In addition to considering the costs borne by each of the entities and the volunteers, it is also important to consider what proportion of the total costs were in-kind contributions. In the Reading Partners program, the resources contributed in-kind by the schools and community volunteer tutors totaled over 50 percent of the total cost, or $1,910 per program group student. The remaining $1,700 per program group student was financed by the Reading Partners organization and the AmeriCorps program, with some financial assistance from the schools themselves.

[12]Time and costs for travel are considered to be part of the in-kind donation made by the volunteers. The same approach was used for other programs that relied on volunteers.

Costs of Other Supplemental Reading Services

In addition to Reading Partners, the six school sites that were included in the cost study offered other supplemental services that provided reading instruction beyond what students received during regular classroom teaching. In many cases, services were provided to students in need of additional support, irrespective of whether they had been assigned to the Reading Partners evaluation program group or control group. The costs of these other supplemental reading services are included here to provide a context for understanding the estimated level of resource richness (as measured by total cost) for Reading Partners.

The other supplemental reading services included small-group support from reading specialists, tutoring programs, homework help, and computer-based programs. Table 5.3 shows the average cost per student for the other supplemental reading services at each school site. The costs of the other supplemental reading services are averaged at the site level to protect confidentiality, so that the cost per student represents the average cost per student of all supplemental programs at each school, weighted by the number of students served by each program. The number of services offered in each school ranged from one to four services in addition to Reading Partners. Some of these averages combine relatively resource-rich interventions (for example, a learning specialist who works intensively with small groups of children) and with interventions that require fewer resources (such as computer-based programs overseen by reading specialists or teachers on special assignment to supplement reading instruction).

The cost per student for the average of the other supplemental reading services offered at the six sites was $1,780 and ranged from $1,050 to $4,890 per student. The range in the total resources provided by the supplemental services across the six sites depended on the type of supplemental services that were offered, which varied considerably in the resources they required. For example, computer-based programs serve groups of students on computers that the school also uses for other purposes, the costs of such programs tended to be relatively low (on average, around $940 per student in the study sites) when compared with more intensive programs. Reading specialists or other full-time school support staff who worked with small groups of students several times each week in a dedicated classroom tended to be more expensive (around $3,200 per student, on average, in the study sites).

Table 5.3 also shows that although Reading Partners provides a rich set of resources to schools, the portion of costs borne by the school is substantially lower than for the other supplemental reading services provided. As already explained, the average cost to the school for Reading Partners was $710 ($480 to $1,270) per program group student, while the average cost of the other supplemental reading services borne by the school or school district was $1,700 ($1,040 to $4,890) per student. Most of the other supplemental reading services were funded solely by the school or school district. The few that were not fully funded by the schools relied on in-kind donations from volunteers or were subsidized by the program itself.

Table 5.3

Site-Level Costs of Reading Partners and Other Supplemental Services

	School Contribution per Student[b] ($)		Total Resources per Student ($)		Contribution Provided by School (%)	
Site[a]	Reading Partners	Other Supplemental Services[c]	Reading Partners	Other Supplemental Services[c]	Reading Partners	Other Supplemental Services[c]
Site A	690	1,840	3,450	1,840	20	100
Site B	520	1,850	3,420	2,230	15	83
Site C	940	2,680	3,570	2,680	26	100
Site D	1,270	1,040	5,190	1,050	25	99
Site E	660	1,310	4,210	1,980	16	66
Site F	480	4,890	2,740	4,890	17	100
Pooled	710	1,700	3,610	1,780	20	96

SOURCES: MDRC calculations from cost data.

NOTES: Costs are measured in 2012 U.S. dollars and are rounded to the nearest 10 in the tables and text.

Averages have been weighted to account for the size of the program group (for Reading Partners) and students served at each site (for other supplemental services).

All the Reading Partners costs in this table are those for the respondents in the program group and are adjusted for the larger dosage they received. The costs for supplemental services are those for all the students served at each site.

[a]To prevent identification of individual schools or programs, site letter identifiers are not consistent across analyses.

[b]Costs borne by school include the fee for services paid by schools.

[c]Other supplemental reading services include small-group support from reading specialists, tutoring programs, homework help, and supplemental curricula.

Thus, the portion of the costs borne by the school is greater for the other supplemental reading services than for Reading Partners, where most of the costs were covered by in-kind contributions from the volunteers and by funds from the Reading Partners organization itself. The portion of the costs borne by the school for Reading Partners was 20 percent on average (15 percent to 26 percent), whereas the average portion of the costs of the other supplemental reading programs financed by the school was 96 percent (66 percent to 100 percent). Some of the other supplemental reading services offered at these schools may not be direct substitutes for Reading Partners because they serve students of differing levels of need, or a school may be required to provide a particular service (such as a Tier III reading specialist) where the principal is not able to select between the service and a program such as Reading Partners.

Overall, schools provided students with a menu of supplemental reading services worth about $5,400 on average ($3,610 of Reading Partners services and $1,780 of other supplemental services). The average school was able to contribute around $2,400 worth of supplemental reading services per student for the students in their schools ($710 for Reading Partners plus $1,700 in additional supplemental programs). The Reading Partners program, in part because it uses a volunteer-based model, provided schools with almost $3,000 worth of additional resources per program group student ($3,610 less the $710 contributed by the school) that the schools would otherwise not have been able to provide.

Variability in Costs

Table 5.3 also highlights the variation in the total resources devoted to Reading Partners across the six sites in the sample. The total resources used to provide Reading Partners ranged from a low of $2,740 to a high of $5,190 per program group student. The costs borne by the school ranged considerably, from a low of $480 per program group student to a high of $1,270 per program group student. There were a number of sources of variation. First, there was variation in the amount of time devoted by Reading Partners staff and AmeriCorps members, which was, in part, dependent on the number of students served in the school. Second, there was variability in volunteer costs across schools, also depending on the number of students served, as well as differences in commuting time and transportation costs. At the school level, variation in costs depended on the amount of time school principals and teachers spent in coordination with the Reading Partners program, as well as some variation in space assigned to the program. The time devoted to referrals and formal or informal check-ins by the principal, for example, ranged from 30 minutes per year to over 10 hours per year across the sites. Teachers in all schools tended to spend some time on referrals or communicating with the site coordinator (or both). This time varied widely from 11 hours in total per year to over 3 hours per student per year. The space the schools were able to make available for the program also varied. As discussed in Chapter 2, most schools provided a dedicated classroom for the program, but some schools used space in the library or other available space rather than a standard classroom.

Variation in costs was also due to variation in the amount of services provided. Some sites offered more tutoring sessions per program group student than did others over the course of the school year. Sites that offered fewer sessions used fewer resources. The difference in the number of sessions provided per program group student between the sites with the highest cost and the lowest cost was about 10 sessions over the course of the year.

However, for the most part the variability observed among schools was largely tied to scale — or the number of students served by the program. This is because serving more students allows the program to amortize its fixed costs (such as space and the site coordinator) over more students. The school sites with the lowest cost per student were those that served the highest number of students and provided the highest number of sessions per student.

Scale Test

A sensitivity test was included to adjust for scale by using the operational maximum number of students based on the space and equipment recommended by Reading Partners for each reading center. The program recommends eight distinct spaces for tutor-student pairs to read and work together during each session. The reading centers tended to serve students for five class periods each day, four days a week. Accordingly, each site's costs were adjusted to ascertain the costs if 80 students were served. This analysis is discussed in detail in Appendix D. The results, presented in Appendix Table E.1, show that the total cost per student drops to $2,390 on average ($2,230 to $2,700). Because the total costs borne by the school were assumed to be fixed (up to 80 students), the portion of the total resources used to implement Reading Partners borne by the school dropped from about 20 percent to 14 percent. This drop suggests that some schools could reduce cost per student substantially by serving more students.

Thus, if a school has eligible students who are not served by the program, the site could improve the efficiency of the program by increasing the number of students served. However, the space available at a school may not be large enough to support 80 students or, alternatively, the community may not have sufficient volunteers to support expanded services. Additionally, it could be the case that a school would increase the time invested by staff when more students are involved, increasing the cost to the school. Yet, even a small increase in the number of students served may reduce variability in costs among sites and improve efficiency substantially.

Conclusions

Schools pay $320 per student out of pocket for Reading Partners and provide $390 of in-kind resources, such as space, to support the program. For this outlay, the school receives a program worth, on average, $3,610 per student ($2,740 to $5,190) to supplement reading instruction for students who need support.

The cost borne by the school to implement Reading Partners is about $1,000 lower per student than the average cost for other supplemental reading services being provided. The other supplemental reading services provided to the study sample varied in intensity and purpose, but all were financed almost solely by the schools or school districts. Reading Partners provided schools with a twice-weekly tutoring program for students who were half a year to two and a half years behind, in which most of the costs are borne by outside entities (that is, Reading Partners, AmeriCorps, and in particular, the volunteers).

One caution should be noted. When comparing the cost numbers presented in this chapter with those in other reports, readers should make sure that the resources covered by the cost estimate are similar. In this cost analysis, all ingredients, including those contributed in-kind such as space, school staff time for collaboration, volunteer transportation, and volunteer time, were included in the total cost estimate. Many cost studies rely on budgetary data, ignoring in-kind resources, and thus might not be comparable with the numbers reported here.

Overall, the findings of the cost study illustrate the high value of the Reading Partners program. The program used many resources (on average $3,610 per program group student), of which over half ($1,910) is contributed in-kind. Furthermore, the school bore only 20 percent of the costs of the program. Because Reading Partners relies largely on volunteers and is provided by an external organization, schools can capitalize on substantial resources without incurring a large burden.

Chapter 6

Conclusions

This evaluation finds a positive impact of the Reading Partners program on three different measures of reading proficiency, and the impacts appear to accrue to a wide range of students with differing incoming abilities, genders, and grades, including English language learners. Exploratory analyses also suggest that the impact of the program was largest for those students beginning the program with the lowest skills. Moreover, while the Reading Partners program is resource-intensive (as would be expected of a one-on-one tutoring program), a majority of the resources are in-kind contributions and schools and school staff bear a small portion of the financial burden of implementing the program.

The findings from this evaluation are important because very few programs that have been rigorously evaluated at scale (using a randomized trial with a sample of more than 300 students from multiple schools) have been shown to improve reading outcomes for elementary school children. As shown in Table 6.1, the study team was able to identify only five programs that met these criteria, and they are divided into two groups — four one-on-one tutoring programs (Reading Partners, Experience Corps, Minnesota Reading Corps, and Reading Recovery) and one whole-school reform program (Success for All). The tutoring programs are similar in that they all provide one-on-one instruction and have a staff member who is fully committed to managing the tutoring program.[1] Success for All, on the other hand, includes a classroom-based curriculum, and coordinators must manage the many components of the program model.[2] However, the Reading Partners model is different, along a number of dimensions, from each of these.

First, Reading Partners is unique among rigorously tested tutoring programs in that service delivery relies almost exclusively on community volunteers who devote relatively short amounts of time each week to tutoring. The Reading Recovery program uses highly trained, certified teachers to provide reading instruction to struggling elementary school students. Not surprisingly, the program has been very successful in improving the reading proficiency of very low-achieving first-graders. Minnesota Reading Corps relies on AmeriCorps members who commit to participate in the program either half time or full time and are provided with uniform and comprehensive training.[3] Similarly, Experience Corps volunteer members affiliated with the

[1]Lee, Morrow-Howell, Jonson-Reid, and McCrary (2010); Markovitz, Hernandez, Hedberg, and Silberglitt (2014); May et al. (2013).

[2]Quint et al. (2013); Quint et al. (2014).

[3]Markovitz, Hernandez, Hedberg, and Silberglitt (2014).

Table 6.1

Reading Programs with Rigorous Evidence Base

Reading Program	Program Description	Population Served	Service Providers	Time	Impacts for Students in Kindergarten or Grade 1 (Effect Size)	Impacts for Students in Grade 2 or 3 (Effect Size)[a]
ONE-ON-ONE TUTORING PROGRAMS						
Reading Partners	Community volunteers work with students using a structured curriculum	Elementary students 6-30 months below grade level in reading	Volunteers of varying backgrounds and ages	45 minutes twice a week	—	0.11 – Sight-word efficiency 0.09 – Fluency 0.10 – Comprehension
Experience Corps	Older adult volunteers tutor elementary school students	Elementary students (grades 1-3) at risk of academic failure	Volunteers age 55+	60 to 160 minutes per week	0.10 – Decoding 0.13 – Comprehension	0.10 – Decoding 0.13 – Comprehension
Minnesota Reading Corps	AmeriCorps members tutor elementary school students using scripted interventions	Elementary students (K-3) at risk of academic failure	AmeriCorps members	20 minutes daily	1.06 – Letter sounds 0.37 – Decoding	0.10 – Fluency
Reading Recovery	Teachers provide supplemental, individualized instruction to students	Lowest-achieving 15%-20% of 1st-grade readers	Specially trained and supervised teachers	30 minutes daily	0.68 – Overall reading	—

(continued)

Table 6.1 (continued)

Reading Program	Program Description	Population Served	Service Providers	Time	Impacts for Students in Kindergarten or Grade 1 (Effect Size)	Impacts for Students in Grade 2 or 3 (Effect Size)[a]
			WHOLE-SCHOOL REFORM PROGRAM			
Success for All[b]	Classroom-based literacy instruction that includes 1:1 tutoring in the context of a whole-school reform model	All students in the school; lowest-achieving students in grades 1-3 who are eligible for tutoring	Elementary school teachers	1.5 hours instruction and 20 minutes tutoring daily	0.09 – Word identification 0.18-0.35 – Decoding	0.22 – Word identification 0.33 – Decoding 0.21 – Comprehension

SOURCES: Borman et al. (2007); Lee, Morrow-Howell, Jonson-Reid, and McCrary (2011); Markovitz, Hernandez, Hedberg, and Bilberglitt (2014); May et al. (2013); Quint et al. (2013); Quint et al. (2014).

NOTES: Programs in this table had to be serving at least 300 students across multiple schools and evaluated using a randomized controlled trial. Only impacts on standardized student assessments significant at $p < 0.1$ have been included.

[a]The sample for the Reading Partners impacts provided in this column includes 2nd- through 5th-graders. The other evaluation samples in this column include 2nd- and 3rd-graders only.

[b]Success For All findings come from three different reports (May et al., 2013; Quint et al., 2013; Quint et al., 2014). Findings for grades 2-5 come from the randomized field trial, and those for kindergarten and grade 1 come from the ongoing i3 scale-up evaluation.

AmeriCorps program commit varying amounts of time (between 4 and 15 hours a week depending on their location) to tutoring and receive between 15 and 32 hours of training.[4]

Reading Partners, on the other hand, empowers its school-based AmeriCorps members to run reading centers and manage and support a corps of adult volunteers, who, with minimal background or training, then provide services to students for up to a few hours each week. The reliance on community volunteers means that the Reading Partners program has the capacity to serve large numbers of students within a school (up to 80 in a given week) with the support of only one AmeriCorps member (the site coordinator), because several tutors can engage in tutoring at the same time. Despite the limited training and the relatively low level of commitment required of the Reading Partners volunteers, this study still found that the program had a positive impact on students' reading proficiency scores.

Second, Reading Partners serves a wider range of students, particularly with respect to age and ability, than do the other tutoring programs that have been rigorously evaluated. Most elementary school reading interventions that involve tutoring focus almost exclusively on students in kindergarten through grade 3, and tend to find large impacts in kindergarten and 1st grade. Fewer have demonstrated impacts on students in upper elementary school grades (4 and 5). Reading Partners, however, serves students through grade 5, and this evaluation finds a positive impact of the program on the reading comprehension skills of students in the upper elementary grades. Similarly, some programs, like Reading Recovery, target only the very lowest-achieving students. Reading Partners, on the other hand, serves students across a wider range of incoming reading abilities — six months to two and a half years below grade level. This means that students who are struggling but might not otherwise be served by the school are able to receive additional support. As shown in Chapter 4, Reading Partners is broadly effective across the various student subgroups explored by the research team. Impacts did not differ significantly between the lower elementary cohort (students in grades 2 and 3) and students in the upper elementary cohort (students in grades 4 and 5), and although the impacts were largest for those students who were lowest-achieving when the study began, the impacts did not differ significantly between the various achievement quartiles. Finally, the program was also effective with English language learners, a group who face additional challenges in learning to read English.

The low cost to schools of Reading Partners, especially relative to the costs of other types of supplemental reading programs, makes these findings particularly relevant for school administrators who are looking for practical ways to help the large numbers of elementary school students who are reading below grade level. For example, reports on Reading Recovery indicate that the total resource value of that program is about $4,400 to $7,300 per student,

[4]AARP Experience Corps (2014); Lee, Morrow-Howell, Jonson-Reid, and McCrary (2010).

depending on the implementation.[5] Similarly, the total resource value of Success for All is estimated to be around $13,000 per student.[6] Almost all the costs of these programs are borne by the schools.[7] Thus, volunteer tutoring programs like Reading Partners are able to channel resources to schools that otherwise might not have been available.

There have been no cost studies of the Minnesota Reading Corps or Experience Corps programs, although they rely on a similar cost structure to that of Reading Partners. For example, the Minnesota Reading Corps program does not require schools to pay a fee for service and most of the resources are provided by the Reading Corps program, but schools are required to devote a percentage of time for a staff person who serves as the "internal coach" for the program. The internal coach is based at the school and provides ongoing literacy support and oversight to the AmeriCorps tutors.[8]

Factors Contributing to the Observed Outcomes

Given the findings described above, what factors in particular helped contribute to the program's success? Previous research has indicated that a number of different program characteristics may lead to the success of tutoring programs in general and volunteer programs in particular. Although the findings are somewhat mixed, six factors have been cited in the literature as instrumental to the success of volunteer tutoring programs: a structured curriculum, the alignment between the classroom and tutoring curricula, tutor background, tutor training, the consistency of the tutoring and the tutoring relationship, and one-on-one instruction.[9] Reading Partners has some, but not all, of these components.

A Structured Curriculum

Previous research has found that programs with either a structured curriculum or a structured division of time and activities had a larger impact on global reading outcomes than unstructured tutoring programs.[10] Other studies also note the importance of having structure in volunteer programs.[11] The structured use of time and materials is helpful because it ensures that consistent and uniform instruction is given on a regular basis and because it allows tutors with limited backgrounds or training to implement the program successfully. Reading Partners has a

[5]Costs are adjusted to 2012 dollars. Hollands et al. (2013); Simon (2011).
[6]Costs are adjusted to 2012 dollars. Simon (2011).
[7]Simon (2011).
[8]Minnesota Reading Corps (2014).
[9]Elbaum, Vaughn, Hughes, and Moody (2000); Ritter, Barnett, Denny, and Albin (2009); Slavin, Lake, Davis, and Madden (2011); Wasik (1998).
[10]Ritter, Barnett, Denny, and Albin (2009).
[11]Slavin, Lake, Davis, and Madden (2011); Wasik (1998).

very structured curriculum covering a wide range of reading skills — and each skill is broken into a specific lesson with accompanying text, materials, and activities that are specific to that skill. Tutors widely said that the structure of the lessons allowed them to jump right in, even with minimal training. On the other hand, the Experience Corps program, which has a somewhat similar model to Reading Partners and found similar impacts, includes no curriculum at all — volunteers use whichever curriculum is in place at the school where they are tutoring — and that program has been shown to be effective as well.[12] It is possible that this model works for Experience Corps because its members receive more training and spend more time tutoring than do Reading Partners' volunteers.

Alignment with Classroom Reading Curricula

Some have argued that coordination between the curriculum used in the classroom and that used in the tutoring intervention is important because it provides children with continuity in their approach to learning and prevents any confusion or discrepant approaches to instruction.[13] For example, the Experience Corps program closely integrates tutoring with classroom instruction.[14] Reading Partners, on the other hand, does not. The Reading Partners curriculum in use at the time of this study was aligned with California state standards (and Reading Partners is working to ensure that the program is well aligned with Common Core State Standards), but it is not tailored to the specific approaches or curricula used by individual schools. Instead, Reading Partners encourages staff members to communicate regularly with teachers and schools about individual student progress. However, the program managers and site coordinators who were interviewed for this study indicated that there was some variation in the types of communication that occurs and the coordination that results when knowledge is shared. In many cases, Reading Partners staff members merely provide progress updates to teachers or discuss troubling behavior; in other cases, the site coordinator might work with tutors in an attempt to align the students' Reading Partners lessons with content being covered in the classroom. Thus, coordination with the school curriculum does not appear to be a critical factor leading to the effects found in this evaluation.

Selection and Background of Tutors

Previous research suggests that tutor background and experience may have an impact on effectiveness. For example, one meta-analysis found that programs using college-going tutors produced especially large gains for students.[15] The tutors involved in Reading Partners have

[12]Lee, Morrow-Howell, Jonson-Reid, and McCrary (2010).
[13]Wasik (1998).
[14]Lee, Morrow-Howell, Jonson-Reid, and McCrary (2010).
[15]Elbaum, Vaughn, Hughes, and Moody (2000).

a wide range of backgrounds and experience, especially with regard to the amount of prior exposure they had to formal tutoring or working with struggling readers. However, the study team found no association between student test score gains and the tutor's background. Thus, tutor background does not appear to be a key factor driving the results of this evaluation.

Tutor Training

Literature on volunteer tutoring indicates that tutor training is key to the success of a tutoring program, and training for the direct service providers is extensive in the Experience Corps, Minnesota Reading Corps, and Reading Recovery programs.[16] Experience Corps tutors receive between 15 and 32 hours of training; Minnesota Reading Corps members receive four days of training; and Reading Recovery teachers complete university-level coursework as part of their training.[17] While the training for Reading Partners full-time staff is comprehensive and ongoing, the amount of initial training that volunteers receive is minimal. As described in Chapter 4, most tutors receive only an orientation to the reading center and participate in a single shadow session before beginning to tutor students. The total time required for this up-front training is about an hour. Reading Partners does provide regular, ongoing training opportunities for tutors focused on particular challenges and student skills, but across the board Reading Partners staff reported that attendance at these training sessions was low. It seems unlikely that this single hour, during which the volunteer is not actively engaging with the curriculum or practicing techniques, is what is allowing these tutors to successfully help their tutees. On the other hand, site coordinators consider it one of their primary responsibilities to monitor and support tutors as necessary, and many tutors described their site coordinators as being particularly helpful and responsive to issues that they encountered with students. A meta-analysis of mentoring literature found that ongoing support was associated with bigger impacts than initial training.[18] Perhaps, while formal training is not the key, structured and accessible support infrastructures can partially explain how tutors with minimal training are successful, at least within the context of the Reading Partners program.

Consistency of the Tutor-Student Relationship

Research also suggests that the consistency of the tutor's relationship with the student may be an important factor in improving academic outcomes.[19] Wasik cites the importance of this relationship as creating trust in the student, an understanding of student needs for the tutor,

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[16]Elbaum, Vaughn, Hughes, and Moody (2000); Wasik (1998).

[17]Lee, Morrow-Howell, Jonson-Reid, and McCrary (2010); Markovitz, Hernandez, Hedberg, and Silberglitt (2014); May et al. (2013).

[18]DuBois, Holloway, Valentine, and Cooper (2002).

[19]Elbaum, Vaughn, Hughes, and Moody (2000).

and a sense of stability to both.[20] Research on mentoring also found that a mentoring pair with a strong relationship led to improved academic outcomes, whereas mentoring absent a close relationship did not significantly affect academic performance.[21] A snapshot of tutor consistency over a two-week period as pulled from a random sample of Reading Partners student folders indicates that individual tutor consistency was not particularly high in this study. Among students who were tutored four times or more over a two-week period, almost 60 percent saw more than two tutors, suggesting that tutor consistency was somewhat limited. Moreover, at the school level, the average session-to-tutor ratio varied from 1.25 sessions per tutor to almost 2.25 sessions. The average number of assigned tutors and the average number of tutors seen over a two-week period was not related to outcomes at the site level.

One-on-One Instruction

Even if Reading Partners students are not consistently tutored by the same volunteer, they still receive consistent individualized tutoring. On average, students participated in about 1.5 sessions per week, and all tutoring sessions were individual. Research on mentoring suggests that individualized attention can be key to helping students succeed in that it allows for relationship development.[22] As it relates specifically to reading instruction, evidence suggests that one-on-one tutoring is more effective than small-group instruction.[23] To that end, all of the tutoring-specific programs included in Table 6.1 involve one-on-one work with students. The one-on-one nature of these programs is likely part of the key to their success, but what makes Reading Partners unique is that this model is implemented with volunteers who devote relatively short amounts of time to tutoring. Not only does the program staff have to recruit and retain a large cohort of volunteers for each site, they also must have in place the infrastructure to ensure that one-on-one tutoring can happen during anticipated or unexpected tutor absences. Their ability to consistently and reliably provide individualized tutoring in spite of volunteer turnover ensures that Reading Partners services are delivered with fidelity to their model and likely helps explain some of the impacts found in this evaluation. The use of volunteers to provide one-on-one tutoring and the resulting minimal cost to schools also makes Reading Partners financially viable in communities with limited resources for supplemental programs.

In summary, several of the characteristics that are cited as contributors to the success of tutoring programs are not a part of the Reading Partners model. The program does not require any prior tutoring or teaching experience, and volunteers come from a variety of backgrounds and experiences. Tutors participate in only limited formal training and tutor consistency is vari-

[20]Wasik (1998).
[21]Bayer, Grossman, and DuBois (2013).
[22]Bayer, Grossman, and DuBois (2013).
[23]Slavin, Lake, Davis, and Madden (2011).

able. Yet, the Reading Partners model appears to work because there are structures in place to help ensure that the primary goal of the program — to provide consistent, individualized tutoring to students — is not compromised by tutor characteristics or inconsistency and because the structured curriculum allows tutors to begin without much preparation. Site coordinators provide ongoing support and guidance to tutors in lieu of formal training. Communication structures are in place to help ensure that student learning is not interrupted simply because a different individual is conducting the tutoring, and backup systems are in place so that if a tutor is absent the session can often still be held, or if a student is absent the session can be rescheduled. While Reading Partners increases students' reading skills by about a month and a half to two months using its current structure, it is possible that incorporating some of the characteristics of other tutoring programs that research has shown to be effective could result in larger impacts. For example, increasing the amount of formal training provided to volunteer tutors or increasing the amount of communication and coordination between Reading Partners and school staff might translate into a stronger tutoring program for students.

Study Limitations

While this evaluation was a rigorous one, there are some limitations to the conclusions that can be drawn from the findings and some questions that remain about the quality and importance of particular components of the Reading Partners program. First of all, the implementation data that were collected during the study emphasized a structural understanding of fidelity and how closely Reading Partners sites adhered to the national model. Tutors were observed to gain a more thorough understanding of the structural components of a tutoring session. While the research team noticed differences in how tutors explained concepts and modeled reading practices, no attempt was made to evaluate the quality of particular tutoring approaches or styles. Therefore, the question remains as to whether higher-quality tutors and tutoring would result in larger impacts and what changes would need to be implemented in order to see higher-quality tutoring. Similarly, assessing the quality of the Reading Partners curriculum was beyond the scope of this project. Aside from knowing that the curriculum is highly structured and (according to Reading Partners) increasingly aligned with the Common Core State Standards, the evaluation did not assess whether the individual lessons are effective at teaching students specific literacy skills and concepts. The only conclusion to be drawn is that it is designed in a way that allows tutors with minimal experience or training to successfully complete progressive sessions.

Because data on program activities were collected directly from Reading Partners' management information system, the study team was limited to the types of data that Reading Partners had already collected. One key question of interest is the role of tutor consistency in improving reading achievement, but the exploratory analyses conducted in this evaluation were

only able to use a school-level snapshot of tutor consistency over a two-week period. More detailed data on the number of different tutors seen over the course of the year or information on the frequency of tutor absences is key to exploring the relationship between tutor consistency and program impacts. In particular, given the study team's hypothesis that the one-on-one tutoring is the driving force behind the impacts found in this study, understanding whether simple one-on-one attention is sufficient or whether that attention needs to consistently come from one (or two) specific individuals would allow Reading Partners staff and other, similar practitioners to better serve students.

It is also possible that the evaluation affected the implementation of Reading Partners. First, Reading Partners usually enrolls students on an ongoing, rolling basis as they are referred by teachers or other school staff, who prioritize the students who they think most need Reading Partners services. As a result of the study, however, schools identified and referred the whole pool of eligible students at the beginning of the school year; these students were then randomly assigned into the program or control group, and program group students were matched with tutors as quickly as possible. Absent random assignment, Reading Partners usually has a very targeted approach to identifying students for its program, a process that was disrupted by the needs of the study's randomization and enrollment processes. At least one Reading Partners staff member indicated that some of the program group students were somewhat higher-achieving students than usually participate in Reading Partners at the study schools, likely a result of this change in procedure. If the observations of Reading Partners staff were true, given that exploratory analyses indicated the lowest-achieving students experienced the largest impacts, it is possible that impacts on the typical Reading Partners student would be larger than those found for the overall sample.

Another way in which the evaluation could have affected these findings is by changing the equilibrium of services being provided to struggling readers in the study schools. In the absence of Reading Partners, which brings additional resources to the school in the form of volunteer tutors, supplemental services would have had a different distribution across the student population. That is, teachers in the study may have been allocating more supplemental services (not including Reading Partners) to the control group students than they would have done normally. Small-group intervention services or other one-on-one tutoring programs represent the most common types of supplemental service provided to students in the control group. These services are typically costly with regard to staff time and place a large burden on school resources. (The cost study indicates that, on average, they cost schools $3,200 per student.) On the other hand, the cost of Reading Partners to schools is relatively low ($710 per student), meaning that more students can be served for the same amount of money. Thus, it is possible that absent Reading Partners, the "as is" condition at study schools would not have been able to serve as many students, thus decreasing the overall number of students receiving supplemental instruction at those schools.

A final limitation of this study is that student results and achievement are only measured at the end of one year of services. Reading skills are important for students of all ages and grade levels, so programs with long-lasting effects are poised to be more useful to schools that are trying to improve reading skills among their students. Follow-up studies on these students in subsequent grades would indicate whether Reading Partners is one such program.

Recommendations for Future Research

The discussion above suggests several areas for future research and consideration by the Reading Partners program.

First, more information regarding tutor consistency and absences would help the program providers evaluate whether or not the lack of consistency reported by site coordinators is impeding student progress. To the extent that it is problematic, the Reading Partners program could consider putting structures in place to help mitigate this problem.

Second, more information about the quality of the tutor-student relationship would help Reading Partners staff identify program strengths and weaknesses and might surface specific areas in which more training is warranted. Relatedly, research on factors that increase attendance at tutor training might help Reading Partners devise more creative ways to deliver training to their community volunteers. Gathering more information about tutor background and its relationship to student outcomes could also help Reading Partners target its recruitment activities more effectively.

In addition, more information about the quality and effectiveness of the curricular materials themselves is warranted, since the curriculum may be related to observed outcomes. Finally, future studies should examine whether or not impacts are sustained beyond a single year.

Conclusions

The Reading Partners program successfully improved students' reading comprehension, sight word efficiency, and fluency by about 0.10 standard deviations, or one and a half to two months of growth, over the course of the school year. While the program is relatively resource-intensive, a majority of the resources are in-kind contributions, and the portion of the resources financed by the schools is relatively low — only 20 percent of the total cost of the program. Moreover, among sites that were included in the cost study, the cost of Reading Partners borne by the schools was substantially less per student than the cost of other supplemental reading services offered to students. Thus, this study provides additional evidence that volunteer programs can work and that one-on-one tutoring is effective in improving academic outcomes. The results also suggest that effective volunteer tutoring programs may be a cost-effective option for

underresourced schools, because they bring additional resources to the school through community volunteers. Reading Partners manages to be effective even in the absence of oft-cited key components to successful tutoring, including, in particular, extensive tutor training and tutor consistency. Further research is required to understand whether improving these components of the model would affect the magnitude of the impacts and whether the impacts of Reading Partners are sustained for more than one year.

Appendix A

Implementation Study Methods

The qualitative data analysis coding scheme that was developed for the evaluation of Reading Partners was designed to align with the overall framework of the implementation study. The fidelity index is described in detail in Table A.1. A team-based approach was used to code all qualitative data (interview transcripts, notes, and observation write-ups). Each team member was assigned a set of codes to apply across all the qualitative data. The codes covered the following broad topics: instruction and delivery, Reading Partners staff roles and responsibilities, staff and tutor training, data-driven instruction, dedicated school space, program eligibility, treatment contrast and crossover, implementation context, volunteer tutor background and recruitment, Reading Partner staff background, school/district environment and characteristics, impact of the study on the program, Reading Partners history, and other contextual factors.

After the systematic coding process, all team members developed analysis memos for each code they were assigned, which provided a summary of emerging themes, a school-by-school analysis of data that would be applied to the fidelity index (where applicable), and overall reflections and findings gleaned from the systematic review of the data. All qualitative data were analyzed using web-based, qualitative data analysis software. All analysis memos were discussed by several members of the study team and were revised based on feedback and discussion. The specific data used for the fidelity index were reviewed by at least two team members and the study's principal investigator.

Reading Partners Evaluation

Appendix Table A.1

Fidelity Index Codebook

Components and Indicators	Possible Scores[a]	Criteria	Data Sources
Regular, one-on-one tutoring administered by volunteers			
Average number of tutoring sessions each week	0,1,2	> 1.7 sessions/week = 2 1.5-1.7 sessions/week = 1 < 1.5 sessions/week = 0	MIS data
One-on-one: students are seeing tutors on an individual basis	0,1	SC indicated that all tutoring was one-on-one = 1 Otherwise = 0	SC interview
Dedicated school space and use of materials			
Required materials that were present in reading center during observation	0,1	All materials = 1 Missing any = 0	Materials checklist
Dedicated vs. shared school space	0,2	"Space that is enclosed and unshared during RP time" = 2 Otherwise = 0	Site observations
Data-driven instruction			
Whether or not Rigby is administered three times, at beginning, middle, and end of school year	0,1	> 90% of eligible students took Rigby on 3 occasions = 1 ≤ 90% of eligible students took Rigby on 3 occasions = 0	MIS data
Whether or not Rigby is used to inform, customize, and update student's Individualized Reading Plan (IRP) (including student's progress in the curriculum)	0,2	Reports that midyear Rigby was used to either create action plan or advance students, with the assumption that IRP was updated = 2 No mention of how midyear Rigby was used, or of updating IRP = 0	SC, PM interviews

(continued)

Appendix Table A.1 (continued)

Components and Indicators	Possible Scores[a]	Criteria	Data Sources
Data-driven instruction (continued)			
Whether or not student work is documented after each tutoring session	0,0.5,1	All "yes" = 1 1 "no" = 0.5 More than 1 "no" = 0	Folder review
Whether or not student data were shared with school principal	0,1	PM indicated sharing data with PR = 1 PM did not indicate sharing data with PR = 0	PM interview
Rigorous and ongoing training			
Reading Partners staff participated in initial training	0,1	PM and SC reported participating in initial training = 1 Either or both PM, SC reported no initial training = 0	PM, SC interviews
Do tutors receive in-service training?	0,1,2	Ratio of reported trainings to tutors: Training > tutors = 2; Training = Tutors = 1; Training < Tutors = 0	Tutor interview
Reading Partners SCs participated in ongoing, biweekly; or monthly training	0,1	SC reported participating in ongoing training = 1 SC didn't participate = 0	SC interview
Tutors participating in shadow session	0,1	All tutors at the site reported participating in shadow session = 1 Any tutor indicated no shadow session = 0	Tutor interview
Instructional supervision and support			
Presence of PM who oversees a specific area of schools and SCs	0,1	Present PM = 1 Missing PM = 0	PM interview
Presence of full-time SC who oversees operations at each school	0,1	Present SC = 1 Missing SC = 0	SC interview

(continued)

Appendix Table A.1 (continued)

Components and Indicators	Possible Scores[a]	Criteria	Data Sources
Instructional supervision and support (continued)			
Qualitative indicators of SC serving as liaison between program and partner schools	0,0.5,1	SC lists this as key part of job = 1 SC talks regularly with tutors, but does not describe as key aspect of job = 0.5 SC does not list this as key part of job and has infrequent contact with tutors = 0	SC interview
Qualitative indicators of SC providing coaching and support to tutors and students	0,1,2	SC discusses key roles as providing support/coaching (as opposed to monitoring) tutors = 2 SC talks about training and monitoring tutors, but not really coaching, or SC says it's hard to coach because doing a lot of tutoring, or mentions coaching/supporting tutors but at the end of list of responsibilities = 1 No mention of coaching or monitoring = 0	SC interview
Qualitative indicators of PM providing coaching and support to SC	0,1,2	PM lists this as key part of job = 2 PM describes monitoring SCs but not supporting them in other ways = 1 No mention of coaching or supporting = 0	PM interview

NOTES: MIS is management information system. SC is site coordinator. PM is program manager. PR is principal. RP is Reading Partners.
[a]Indicators with a maximum possible score of 2 are those indicators deemed most important for a faithful implementation of Reading Partners.

Appendix B

Impact Study Methods and Teacher Survey

Obtaining, Cleaning, and Merging Administrative Data Sets

All students had parental consent to participate in the study and for their records data to be collected. Demographic data, student attendance data, and state test score data were obtained directly from the participating districts for individual students. Data on student participation rates and tutor-student matches were obtained directly from Reading Partners. Raw data with student identifiers were kept on secure servers, and only key project staff had access to these data. In order to protect respondent confidentiality, student names and ID numbers were only stored together in one crosswalk file, which contained some or all of the following variables for each student: the student's name, a district-assigned ID number, a Reading Partners-assigned ID number, an internal study-assigned ID number, and an encrypted unidentifiable ID number used for data processing and analysis. All data were cleaned in a multistep process that included (1) removing any student identifiers and replacing them with the encrypted ID, (2) identifying and resolving inconsistencies in each data source, (3) merging data across cleaned data sets, and (4) creating analytic variables to use in analyses. All data-cleaning programs were reviewed by at least two analysts.

Standardization of Outcome Variables

In order to compare students of different ages, grades, and states in the pooled impact analysis, steps were taken to standardize outcome variables. Documentation provided by the SAT-10, TOWRE-2, and AIMSweb include various types of conversion tables from raw scores, as shown in Appendix Table B.1.

For the SAT-10 and TOWRE-2, the provided conversions were sufficient for analysis. However, the AIMSweb percentile conversions do not take into account the differing levels of difficulty across the different forms of the test. To standardize this outcome, a z-score was calculated for each student's baseline and outcome scores using the baseline mean and standard deviation of scores for that grade-level and test form.

District-provided state testing outcomes required additional standardization because scaled score ranges and proficiency level categories vary by state. Student proficiency scores were recoded into an indicator variable, representing whether or not students met the proficiency criteria established by their state. Scaled scores were converted to z-scores using a similar approach to that used with the AIMSweb scores. The 2013 control group mean and standard deviation for the student's state and grade level were used for this standardization.

Appendix Table B.1

Availability of Standardized Scores for Primary Outcomes

Assessment	Scaled Score	Percentile Score	Grade Equivalence	Age Equivalence
SAT-10	Available	Available	Available	Available
TOWRE-2	Available	Available	Available	Available
AIMSweb		Available		

Imputation of Covariates and Baseline Reading Skills

Consistent with the analysis plan, in the case of covariate missing values, imputation was conducted using the mean of the school and grade level to which the student belonged. The overall rate of missing data was quite small and thus multiple imputations were not used. If more than 5 percent of observations are missing data for a given covariate, the model includes a dummy to indicate whether a student's data were imputed for this covariate. No outcome variables were imputed.

Analytic Model

For each outcome, the basic model used in the analysis to estimate impacts was as follows:

$$Y_{ijk} = \gamma_0 Y_{-1,ijk} + \beta_0 T_{ijk} + \sum_k \sum_j \gamma_{1kj} B_{ijk} + \sum_S \gamma_{2s} X_{sijk} + u_k T_{ijk} + \varepsilon_{ijk} \quad (1)$$

where:

T_{ijk} = 1 if student i from grade j in school k is assigned to Reading Partners and 0 otherwise

$Y_{-1,ijk}$ = the pretest score for student i from grade j in school k before random assignment

B_{ijk} = block dummy, 1 if student i from grade j is in a particular random assignment block, defined by grade block (2/3 or 4/5) and school k, and 0 otherwise

X_{sijk} = the *Sth* other student-level covariates for student i from grade j in school k; these variables include the time lapse between baseline and follow-up testing as well as the demographic characteristics of age, gender, race, poverty status, special education status, and English language learner status

$u_k T_{ijk}$ = a random error term for the treatment group in school k, assumed to be independently and identically distributed; this term is included in the model to allow for variation in the impact of the program across schools

ε_{ijk} = a student-level random error for student i from grade j in school k, assumed to be independently and identically distributed

Correction for Multiple Hypotheses

Multiple hypothesis testing was accounted for in the three primary outcomes of interest (reading comprehension, fluency, and sight word efficiency) using a procedure developed by Benjamini and Hochberg.[1] The adjustment is as follows:

1. Conduct N separate t-tests, each at the common significance level α.
2. Order the p-values of the N tests from smallest to largest, where $p(1) <= p(2) <= \ldots <= p(N)$ are the ordered p-values.
3. Define k as the maximum j for which $p(j) <= j/N*\alpha$.
4. Reject all null hypotheses $H_{o(j)} j = 1, 2, \ldots, k$. If no such k exists, then no hypotheses are rejected.

[1]Benjamini and Hochberg (1995).

Appendix Figure B.1
Example of Teacher Survey

Reading Partners Teacher Survey

Student Information Form

[place student ID sticker here]

1. Has this student been assigned to your classroom for the past four weeks?

1 ◯ YES *(continue to the next question)* 2 ◯ NO → STOP ***If this student has not been assigned to your classroom for the past four weeks please stop here and go to the next student.***

For questions 2 and 3, please think about the amount of reading instruction that this student received in your classroom. By reading instruction we mean decoding, comprehension, vocabulary, and fluency. Do not include instruction that took place outside of your classroom (i.e., after school or via pull out).

2. What was the total amount of time (in minutes) that this student received instruction in reading each week?
Print the number of minutes using all three boxes. For example, write 015 if you taught for 15 minutes.

☐☐☐ Total minutes per week spent on reading instruction in your classroom.

3. Of that time, how much time in minutes did you or an aide provide one-on-one help to this student in reading?
Print the number of minutes using all three boxes. For example, write 015 if you taught for 15 minutes.

☐☐☐ Total minutes per week the student receives one-on-one reading help in your classroom.

4. School personnel have indicated that the following supplemental reading programs or activities are available outside of your classroom (i.e. after school or via pull out) at your school. Please mark all programs this student participated in this academic year and indicate the amount of time that they participated outside of your classroom.

		Total Number of Weeks Attended		Average Minutes Per Week	
☐	**Alternate Program #1**	☐☐	weeks	☐☐☐	min/wk
☐	**Reading Partners**	☐☐	weeks	☐☐☐	min/wk
☐	**Alternate Program #2**	☐☐	weeks	☐☐☐	min/wk
☐	**Alternate Program #3**	☐☐	weeks	☐☐☐	min/wk
☐	**Another reading program or activity** *(please specify)* ☐	☐☐	weeks	☐☐☐	min/wk

5. Please report on this student's behavior over the past month.

	Always	Usually	Sometimes	Never
This student completed homework assignments	1 ◯	2 ◯	3 ◯	4 ◯
This student completed in-class assignments	1 ◯	2 ◯	3 ◯	4 ◯
This student was attentive in class	1 ◯	2 ◯	3 ◯	4 ◯
This student was disruptive in class	1 ◯	2 ◯	3 ◯	4 ◯

6. Compared to other students in your school, please rate this child's current academic performance in:

	Far Above Average	Above Average	Average	Below Average	Far Below Average
Reading	1 ◯	2 ◯	3 ◯	4 ◯	5 ◯
Math	1 ◯	2 ◯	3 ◯	4 ◯	5 ◯
Overall	1 ◯	2 ◯	3 ◯	4 ◯	5 ◯

Thank you for your help! Please place this form in the envelope provided and store it securely in your classroom. It will be collected by the research team.

Appendix C

Tutor Background Characteristics and Additional Impact Findings

Tutor Background Characteristics, by Site

Appendix Table C.1 shows the background characteristics of the tutors at each of the 19 schools included in the study.

Impact of Reading Partners on State Assessment Scores

An exploratory analysis also examined the impact of Reading Partners on state assessment scores. This analysis has a number of limitations. First, the schools in the evaluation were located in three different states, each of which gave different assessments, measuring somewhat different skills. To combine assessments across states, scaled scores were converted to z-scores using the 2012-2013 control group mean and standard deviation for the students' states and grade levels. However, even with these standardization efforts, assessments from different states may not actually be comparable with one another, limiting the conclusions that can be drawn from these analyses.

Second, student proficiency scores were recoded into an indicator variable, representing whether or not students met the proficiency criteria established by their states. However, each state had its own criteria for determining proficiency; thus, this metric may not be measuring the same variables across states. Furthermore, because students who were referred to Reading Partners were half a year to two and a half years below grade level, it is not likely that a large percentage of students would obtain proficiency after 28 weeks of participating in the intervention.

The findings from these analyses are shown in Appendix Table C.2. The program had no statistically significant impacts on the standardized state assessment scores in English language arts (ELA) or math, although the impact on ELA was positive, with an effect size of 0.06. There was also no impact on the percentage of students reaching proficiency in either ELA or math.

Additional Analyses Exploring Variation in Outcomes

One way to explore the relative contribution of tutor consistency to student outcomes is to examine the relationship between a student's reading growth and the number of tutors assigned to that student over the course of the year. It is important to note that the number of assigned tutors per student is not a true measure of tutor consistency because it does not take into account whether or not the assigned tutor was actually present for a student's Reading Partners sessions. Additionally, any associations are correlational only, and are not evidence of causality, since the

Reading Partners Evaluation

Appendix Table C.1

Tutor Background Characteristics, by Site

Site[a]	High School Students (%)	College or Graduate Students (%)	Working Adults (%)	Retired Adults (%)	Other[b] (%)	Missing (%)
Site A	13.21	30.19	39.62	7.55	9.43	-
Site B	7.04	66.20	11.27	2.82	11.27	1.41
Site C	20.59	50.00	17.65	-	8.82	2.94
Site D	23.33	35.00	13.33	10.00	15.00	3.33
Site E	20.41	32.65	20.41	10.20	10.20	6.12
Site F	31.25	34.38	21.88	6.25	-	6.25
Site G	7.14	42.86	21.43	7.14	14.29	7.14
Site H	14.29	35.71	21.43	7.14	14.29	7.14
Site I	-	83.33	-	-	8.33	8.33
Site J	19.74	26.32	28.95	2.63	13.16	9.21
Site K	28.13	20.31	15.63	15.63	10.94	9.38
Site L	-	30.00	22.50	10.00	27.50	10.00
Site M	16.18	47.06	7.35	8.82	10.29	10.29
Site N	5.56	70.37	1.85	3.70	3.70	14.81
Site O	22.22	23.61	22.22	11.11	5.56	15.28
Site P	12.50	10.00	22.50	15.00	22.50	17.50
Site Q	28.00	10.00	10.00	16.00	10.00	26.00
Site R	20.55	26.03	16.44	6.85	2.74	27.40
Site S	15.38	15.38	30.77	7.69	-	30.77
All sites	17.20	35.63	17.65	8.10	10.32	11.10

SOURCE: MDRC calculations from Reading Partners management information system data.

NOTES: Rounding may cause discrepancies in sums.

[a]To prevent identification of individual schools or programs, site letter identifiers are not consistent across analyses.

[b]Tutors characterized as "Other" include, but are not limited to, caregivers, nonworking individuals, and those who describe themselves as "transitioning."

Reading Partners Evaluation

Appendix Table C.2

Impact of Reading Partners on State Achievement Testing Outcomes

Outcome	Sample Size	Program Group	Control Group	Difference	Standard Error	Impact Effect Size	P-Value
State reading achievement scaled score[a]	1,079	0.08	0.02	0.06	0.05	0.06	0.234
State math achievement scaled score[a]	1,078	0.01	0.00	0.01	0.06	0.01	0.907
Likelihood of achieving proficiency on state reading achievement test (%)	1,079	15.38	14.54	0.85	2.01	0.02	0.674
Likelihood of achieving proficiency on state math achievement test (%)	1,078	28.99	31.75	-2.76	2.94	-0.06	0.348

SOURCES: MDRC calculations using study team-administered baseline SAT-10 scores; district-provided demographic and achievement data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respondent sample with state testing outcomes.

The model allows estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

[a]To account for differences across states, scaled scores have been normed to have a mean of 0. A full description of the the standardization of state testing variables can be found in Appendix B.

number of tutors assigned was not determined randomly and there is no control group with which to compare the findings (that is, *x* number of tutors assigned to a program group compared with *x* number of tutors assigned to a control group). Appendix Table C.3 presents findings from an analysis looking at the relationship between the number of tutors assigned and student reading proficiency growth.

As discussed in Chapter 4, Appendix Table C.4 shows how impacts on the three measures of reading proficiency varied by the school-level consistency of the tutors, based on folder review data. No consistent patterns between tutor consistency and outcomes were found in this analysis.

Appendix Table C.3

Students' Reading Growth Based on Their Number of Assigned Tutors

Number of Tutors Assigned to Student	Sample Size	Comprehension Mean Growth	Comprehension Standard Deviation	Sight Word Efficiency Mean Growth	Sight Word Efficiency Standard Deviation	Fluency Mean Growth	Fluency Standard Deviation
1	143	18.96	30.87	0.84	8.63	18.17	19.44
2	161	16.57	32.83	2.60	8.22	21.82	21.17
3	167	17.37	27.29	1.00	8.38	20.93	19.54
4	82	20.47	30.43	3.06	8.92	22.62	20.72
5 to 8	34	21.94	19.62	0.73	6.35	15.82	30.44

SOURCES: MDRC calculations using study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respective subgroups of the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

Mean growth reflects the average increase in scores from pretest to posttest. Analyses used scaled scores for the SAT-10 (comprehension) and TOWRE-2 (sight word efficiency) and raw scores for the AIMSweb (fluency).

Finally, as discussed in Chapter 4, Appendix Table C.5 shows how growth in reading proficiency on the three outcome measures was related to the background characteristics of the student's primary tutor. Again, no consistent patterns were found.

Subgroup Analysis of Primary Impacts Based on Reading Partners Target Status

While Reading Partners serves a wide variety of students, it identifies "target students" as those who are 6 to 30 months below grade level in reading (as measured by the Rigby PM Benchmark assessment), who are at least conversationally fluent in English, and who do not have an Individual Education Program (IEP). At each of its reading centers, Reading Partners aims for target students to make up at least 80 percent of all students served, and in the sample for this study, approximately 75 percent of respondents met those criteria. One exploratory question of

Reading Partners Evaluation

Appendix Table C.4

Program Impacts, by School Level of Tutor Consistency

		Comprehension		Sight Word Efficiency		Fluency	
School Level of Tutor Consistency[a]	Sample Size	Impact Effect Size	P-Value	Impact Effect Size	P-Value	Impact Effect Size	P-Value
Low	385	0.03	0.736	0.12 *	0.080	0.14 **	0.048
Moderate	424	0.03	0.643	0.08	0.236	-0.03	0.692
High	357	0.30 **	0.017	0.14 **	0.045	0.15 *	0.089

SOURCES: MDRC calculations using study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data; review of Reading Partners folders.

NOTES: Calculations for this table used data for all students in the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

The impact analyses for student reading achievement were conducted using scaled scores for the SAT-10 (comprehension) and the TOWRE-2 (sight word efficiency) and sample-normed scores for the AIMSweb (fluency). The model allows estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent. Differences between subgroups are not statistically significant.

[a]Schools with low tutor consistency are those in the lowest tercile of average sessions per tutor from the review of Reading Partners folders; schools with moderate tutor consistency are those in the second tercile of average sessions per tutor; schools with high tutor consistency are those in the third tercile of average sessions per tutor.

this evaluation is whether or not Reading Partners has a different impact on those students who are designated as target students. Appendix Table C.6 shows the results of this subgroup analysis:

- For the SAT-10 (which measures reading comprehension) and the AIMSweb (which measures oral fluency), the impacts for both target and nontarget students are similar in magnitude to the main impacts, though most are not statistically significant.

Appendix Table C.5

Students' Reading Growth Based on Background Characteristics of Their Reading Partners Tutors

		Comprehension		Sight Word Efficiency		Fluency	
Background of Primary Tutor[a]	Sample Size	Mean Growth	Standard Deviation	Mean Growth	Standard Deviation	Mean Growth	Standard Deviation
High school student	70	16.36	29.72	3.37	6.81	18.54	25.43
College or graduate student	207	19.27	30.48	0.43	8.80	19.12	19.51
Working adult	105	19.81	30.18	2.07	8.64	20.12	21.20
Retired	79	19.16	31.07	2.81	8.67	24.49	22.62
Other[b]	75	15.17	26.67	1.60	8.63	22.63	20.07
Missing	58	17.81	29.41	1.68	6.75	18.83	19.86

SOURCES: MDRC calculations using study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respective subgroups of the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

Mean growth reflects the average increase in scores from pretest to posttest. Analyses used scaled scores for the SAT-10 (comprehension) and TOWRE-2 (sight word efficiency) and raw scores for the AIMSweb (fluency).

[a]Among students' assigned tutors, primary tutors are those who had the longest assigned relationship with the student.

[b]Tutors characterized as "Other" include, but are not limited to, caregivers, nonworking individuals, and those who describe themselves as "transitioning."

- For the TOWRE-2 (which measures sight word efficiency), the impact on target students is slightly smaller (though not statistically significant) than for the full sample, but the impacts for the nontarget students are slightly larger.
- Differences between these subgroups are not statistically significant.

Reading Partners Evaluation

Appendix Table C.6

Subgroup Analysis of Primary Impacts Based on Reading Partners Target Status

		Comprehension		Sight Word Efficiency		Fluency	
Reading Partners Target Status	Sample Size	Impact Effect Size	P-Value	Impact Effect Size	P-Value	Impact Effect Size	P-Value
Target student	853	0.09	0.102	0.06	0.136	0.11 **	0.020
Not a target student	313	0.12	0.285	0.26 ***	0.003	0.10	0.309

SOURCES: MDRC calculations using study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Calculations for this table used data for all students in the respective subgroups of the respondent sample. Sample sizes for individual outcomes may fall short of the reported sample sizes because of missing or unusable data.

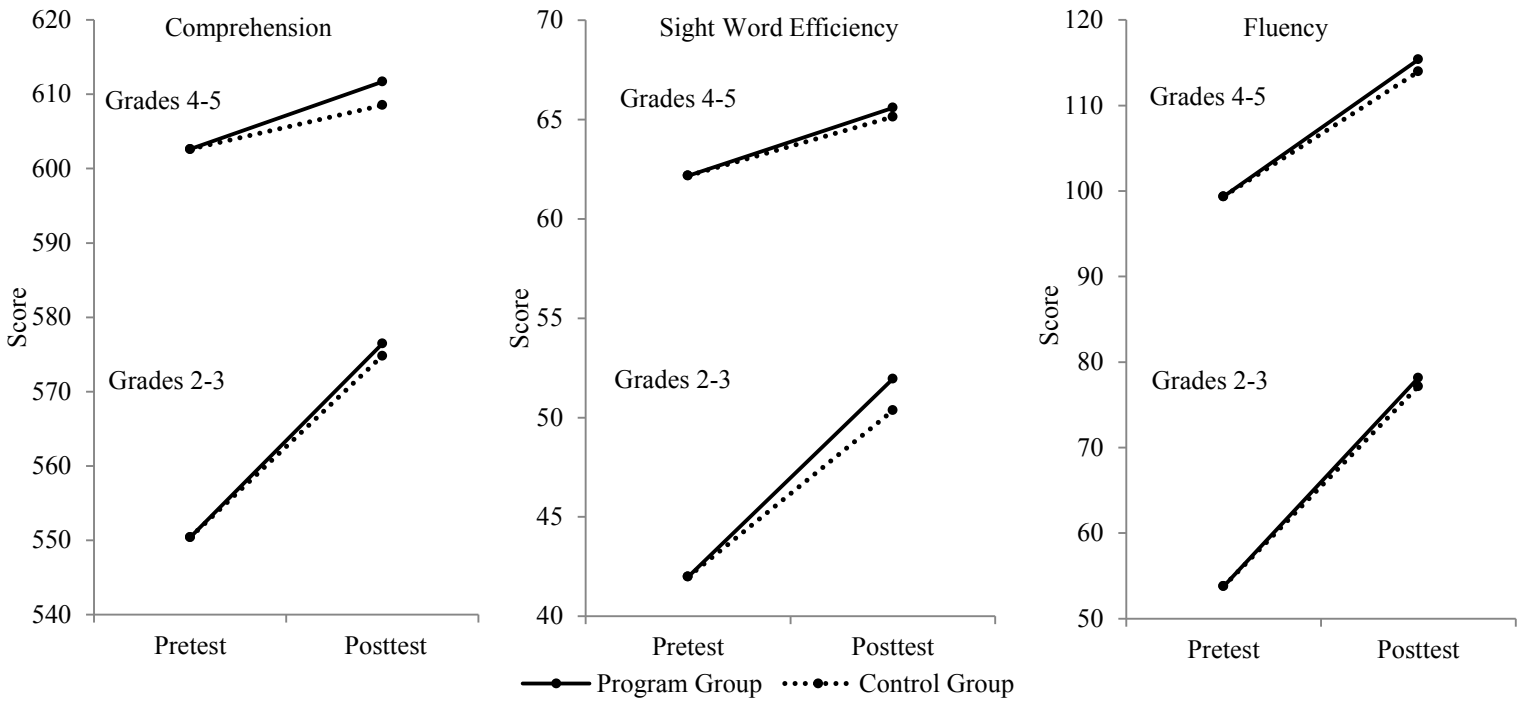
The impact analyses for student reading achievement were conducted using scaled scores for the SAT-10 (comprehension) and the TOWRE-2 (sight word efficiency) and sample-normed scores for the AIMSweb (fluency). The model allows program impact estimates to vary randomly across schools and controls for the random assignment block, the student-level pretest measure, the time lapse between baseline and follow-up testing, and student-level demographic covariates.

A two-tailed t-test is used for all statistical tests presented in this table. Statistical significance levels between the program and control groups are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent. Differences between subgroups are not statistically significant.

Reading Partners Evaluation

Appendix Figure C.1

Student Reading Growth



SOURCES: MDRC calculations using study team-administered baseline and follow-up SAT-10, TOWRE-2, and AIMSweb scores; district-provided demographic data; Reading Partners management information system data.

NOTES: Growth analyses were conducted using scaled scores for the SAT-10 (comprehension) and raw scores for the TOWRE-2 (sight word efficiency) and AIMSweb (fluency). Since the equivalence of baseline test scores of the two groups has been established, a common pre-test score is assumed for both.

Appendix D

Cost Study Methods

The cost study conducted for this evaluation used the ingredients method to calculate costs. The ingredients method consists of three main steps. First, all ingredients that are used in implementing a program are identified, described qualitatively, and specified by quantities. All ingredients are specified based on the requirements for replication. To replicate the particular implementation that produced a specific result, personnel and the amount of time they devoted to providing services must be identified, as well as training requirements, facilities that were used to provide services or training, materials used, and any transportation or food or other services that were provided. All ingredients are included regardless of who paid for or contributed them.[1]

Identification of Other Supplemental Reading Services

At all six sites that were included in the cost study, schools had other supplemental services or programs (in addition to the Reading Partners program) to provide additional reading instruction beyond the regular classroom teaching. Services were provided to all students in need of additional support, irrespective of whether they had been included in the Reading Partners study or whether they were assigned to the study's program group or the control group. These supplemental reading services varied from reading specialists to tutoring programs to homework help. Some of the supplemental reading services offered at these schools may not be comparable with Reading Partners in terms of providing policy alternatives, because they serve students of differing levels of need (for example, more than two and a half years below grade level) or they may not be optional and so do not lend themselves to cost-effectiveness comparisons. Thus, the costs of other supplemental reading services are included here to provide a context for the cost of Reading Partners and the school environment in which the program is implemented.

Ingredients Data Collection

The cost study collected data on all ingredients that were used in the Reading Partners program, including the time contributed by volunteers to provide tutoring to students and to commute to the school. Before conducting interviews with Reading Partners staff, the research team collected data from publicly available sources such as websites and published reports to prepare a list of potential ingredients at each school site. Data from the implementation study helped the research team identify the materials used at each site. Data from the teacher surveys were used to identify the other supplemental reading services provided at each school. Program managers from Reading Partners at each site were then contacted for interviews. The interviews were held by phone and focused mostly on the numbers and types of personnel used to implement the

[1]Levin and McEwan (2001).

program. The program managers were also asked to describe the other supplemental reading services and to provide contact information for an individual involved in providing the other services. Often, a reading coordinator, reading specialist, or the school principal was interviewed regarding the school's other supplemental reading services.

Each ingredient was described in terms of the quantity and qualities of the ingredient needed to determine the value or price. For example, questions were included about the experience, education, and responsibilities of the program managers and site coordinators and other Reading Partners staff who were involved in providing the program services at the school. Descriptions were requested regarding the program's use of time from teachers and principals because the time invested by these school-based personnel may have been important to the success of the program. The roles, qualifications, and time devoted by the volunteers were included. Even though the tutors volunteer at no cost to the school, the volunteers are a necessary input for the program to work and their services have a value that is included in this analysis. In essence, the estimated cost of volunteer time is what they would need to be paid in the market if they were unavailable as volunteers. Descriptions of space used to provide the program and any materials used by the program were also collected.

Pricing the Ingredients

The second step in the ingredients method is to assign prices to each ingredient based on market prices (in this case, for 2012). National prices are often the best option to account for prices when the intervention is applied in different locations so that the results are not dependent upon local variation in prices among different locations. If market prices are not available for an ingredient, a "shadow" or underlying price is used from the most similar resource with a market price. For example, no market rental rate is available for classroom space because classrooms are not typically rented. Therefore, to approximate the annual rental value of the space, the construction cost plus the costs for furnishings and interiors are priced and amortized over the life span of the building.

In the cost study, each program ingredient was matched with its national price or cost in 2012 dollars. When necessary, prices that were available only for other years were adjusted to 2012 dollars using the Consumer Price Index. Ingredients that are used for longer than one year (such as initial training of tutors, facilities, books, and computers) were accounted for by their annualized costs, amortized with an interest rate of 3 percent. Tutor time for the initial training and the shadow session was amortized by the site-level average tutor participation if longer than one year; the ongoing training that occurred on a regular basis was viewed as an annual cost.

The estimated cost of the other supplemental reading services provided at each school followed the same pricing approach. Each ingredient for the supplemental services was matched

with a national price. In some cases, specific prices were obtained from the program developer, such as the price of the program license and the price of the training package. The total cost and the cost per student for each program or service identified were calculated at the six schools in the sample. Each site had between one and four other supplemental services included in the analysis, and in addition to the Reading Partners programs at each school, there are 12 supplemental reading programs in total. The costs were aggregated at the site level rather than reported individually in order to protect school confidentiality.

Personnel

The Reading Partners site coordinator and outreach coordinator positions were staffed by AmeriCorps members. These individuals were young, recent college graduates with little to no additional experience. To price these positions, the national average earnings amount for 18- to 24-year-olds with a bachelor's degree was obtained from the U.S. Census Bureau, Current Population Survey, 2012 Annual Social and Economic Supplement. Benefits were estimated at 31 percent based on the Bureau of Labor Statistics. Because this price may be higher than what the individuals received from AmeriCorps for their work, a sensitivity test was included that used the annual salaries and compensation information from the Reading Partners hiring postings that were available online. The hiring posts were specific to particular locations. Thus, the salaries were adjusted to national prices using the index of Regional Price Parities (2006-2010) and then the salaries were averaged for a national average salary rate.[2]

Based on the national statistics reported by the Bureau of Labor Statistics, the Department of Labor, and the National Center for Education Statistics, the hourly pay rate of school staff was transformed by dividing their annual salary and benefits by the number of hours in an academic year (that is, 1,440 hours from 180 days per year and 8 hours per day).

Volunteer tutor time was valued at the same rate as paraeducators or teacher's aids. This price was selected because the duties of the paraeducator best matched those of the volunteer tutor. Because Reading Partners relies on volunteers to serve students, upper and lower bounds were estimated for the value of volunteer time. The lower bound was estimated using the federal minimum wage. This wage was selected because the program advertises that its success is not dependent on the qualifications of the tutor. If all tutors were high school students, this price would represent the opportunity cost of the time contributed to the program. However, the program relies on tutors from various backgrounds.

The upper-bound estimate used the tutor background information provided in Chapter 2 (Figure 2.3). The time of any volunteer who was not enrolled in high school, college, or

[2]Aten, Figueroa, and Martin (2012).

graduate school was valued as the average hourly wage of an individual with a college degree using the average of median hourly wages for a person with a bachelor's degree across all age groups expressed in 2012 U.S. dollars.[3] The other tutors, who were students, were valued at the paraeducator wage (which is very similar to the hourly wage of a high school graduate). While this estimate captures some of the variation in tutor education levels, the findings from the impact analysis in Chapter 4 find no clear indication that the background of a student's primary tutor has any effect on reading abilities.

The cost of transportation was included using the federal reimbursement rate per mile for driving or the price for a round trip on public transportation.[4] The cost for public transportation is assumed to be $5 per round trip.

Facilities

In terms of school facilities, the construction cost of a new school building was adjusted to include the site, site development, furnishings, and interiors. The price per square foot was amortized over 30 years with an interest rate of 3 percent. This annual cost per square foot was further divided by the number of hours in an academic year (that is, 1,440 hours, or 180 days with 8 hours per day) to get the cost of school facilities per square foot per hour. The national median price for construction costs of elementary schools was collected from the *19th School Construction Report,*[5] and the adjustment index is based on national statistics provided by the National Clearinghouse of Educational Facilities (2012).[6]

Materials and Equipment

The prices for all materials and equipment (for example, desks, chairs, computers, printers) were collected from publicly available sources and expressed in 2012 dollars. The Consumer Price Index was used as needed to adjust the prices to 2012 dollars. To reduce the burden of interviews, materials that varied in quantity with the number of students served — such as pens, Post-it® notes, bookmarks, student boxes, student folders, and so forth — were priced at $50 per student. Books used in the Reading Partners reading center and distributed to students were priced at the national average price of a children's book used in public schools in 2012.[7]

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[3]U.S. Census Bureau (2012).
[4]Data on the federal reimbursement rate per mile came from the Internal Revenue Service (2011).
[5]Abramson (2014).
[6]See www.efc.gwu.edu.
[7]SLJ (2013).

As described in Chapter 2, an important component of Reading Partners is that data inform the services provided to students, which is known as being "data-driven" in practice. The site-level ingredients included the Rigby PM Benchmark test kit, which is used three times per year to assess students' reading levels and progress. The price of the Rigby PM Benchmark test kit in 2014 was transferred to 2012 dollars. During the interviews, the program managers reported that the Rigby kit was used for more than three years. The cost study assumes that the kit would require replacement after five years. The cost of the kit was amortized for five years using a discount rate of 3 percent.

Calculating Costs

The third step in applying the ingredients method is to estimate the total cost of the program and the cost per student. These costs can then be distributed across various entities or sponsors according to how they were financed. If an analysis includes cost-effectiveness, the fourth step is to calculate the cost-effectiveness ratios and examine the results comparatively. The cost study focused on estimating the cost of Reading Partners and the cost of the other supplemental reading services from the perspective of the school sites. A comparative cost-effectiveness analysis is not included because the study did not focus on the cost-effectiveness of other reading programs.

Categories of cost estimation in this analysis include the value of total resources for all students served, cost per session, cost per program group student, and the total cost for the program group for each site.

Limitations of the Cost Analysis

As described above, the costs are sensitive to the valuation of volunteer time. Some limitations to the analyses should be noted. The main analysis used the same price ($15.14 per hour) for tutor time based on the national average wage of a paraeducator. By using the same price for all tutors, it could be possible that the true cost to replicate each site is not accurately estimated because the variability in tutors' qualities, qualifications, experience, reason for tutoring, and so forth is not reflected. These qualitative characteristics of the tutors may be important for replication. However, as stated above, exploratory analysis did not find that tutor background was related to the students' reading growth. It may be valuable in future analyses to collect more data on the volunteer tutors.

Some sites used Federal Work-Study students from local colleges, in addition to community volunteers, to provide tutoring. The time spent tutoring by Federal Work-Study students was not easily distinguished from the time contributed by volunteers. Thus, the distribution analysis treated all tutors as volunteers. If data were available on the number of sessions

provided by each type of tutor, the distribution of the financial burden of the program costs could reflect the portion borne by the U.S. Department of Education. Additionally, the portion of the costs borne by the volunteers would drop slightly.

The upper-bound estimate of the volunteer time used the average wage of an individual with a bachelor's degree for all nonstudents and the average paraeducator wage for all student tutors. This analysis could be improved by using the national average wages for high school graduates, college enrollees, college graduates, and graduates with advanced degrees. These prices were not used because the data were not detailed enough to identify precisely which degree each tutor had obtained. Rather than introducing additional assumptions into the analysis, the paraeducator wage was used for all student tutors.

The cost study prices the time contributed by teachers and principals as the national average wages earned by all individuals in those positions. Given the minimal involvement of these individuals, the prices used were not differentiated to reflect differences in qualifications and experience of the teachers and principals at each school site. Additionally, the cost study sought to minimize data collection to reduce the burden of interviews. As a result, the cost study did not inquire about the qualifications and experience of each teacher and the principals in the six school sites in the sample.

Another potential source of data for the cost study was a biannual celebration of students' progress in each site. However, the cost study could not fully investigate these two celebrations to identify who attended them. The celebrations were not deemed central to the successful implementation of the program and, therefore, in order to minimize the burden of data collection, the time spent by volunteers and possibly parents to attend the events was not included.

The cost study team was able to collect observational data, which were very informative, for one site in the sample. However, this site visit occurred after many of the site interviews had been completed. Thus, some ingredients that may have been included in the implementation were not included in the cost study. For example, one site visit revealed that the reading center had a corner devoted to a book drive, from which students could take books home to build their own libraries. When the student returned a questionnaire about the book, the student received a star on a chart and another book. The books were donated to the program from community members and organizations. The cost study was not able to collect data on this aspect of the program.

Scale Test

Many of the ingredients that were used to implement the Reading Partners program were needed in order to provide the program services, even if there were fewer students than could be served. Thus, the cost per student for each site is closely tied to the number of students served, which then causes variability in the cost per student. Based on the space required for the reading center and the program's recommended furnishing of the space, the program is designed to serve a maximum of 80 students per reading center (eight students over five periods per day for two days each per week). The total number of students served at each site, including those who were not in the program group (for example, kindergarteners, first-graders, and students who enrolled at the school after study recruitment had been completed), varied from approximately 40 to 80 students. To estimate the lower bound of the cost per student at each site, an analysis was included in which each site's cost per student was calculated as though the site operated at full capacity serving 80 students.

Additional assumptions that were required for the analysis include:

- The workloads of the site coordinator, program manager, and regional executive director at each site do not change.
- The maximum capacity of an outreach coordinator is assumed to be 600 students.
- The number of sessions per student received at each site is constant.
- The volunteer body remains the same, but each tutor volunteers for additional sessions to meet the increased demand.
- The working time of the school staff (teachers, principals, vice principals, and reading coordinator) remains constant.
- The space required, which is designed to serve 80 students, remains constant.

Appendix E

Additional Cost Findings

Comparing Findings with Reading Partners Costs at Scale

To investigate the lower bound of the cost per program student at each site, additional analyses were conducted as though the site operated at a full capacity of 80 students.[1] As shown in Appendix Table E.1, under all of these assumptions the average cost per student drops considerably, from $3,610 to $2,390, with a range of $2,230 to $2,700 per student per site. These results equate to about a 34 percent reduction in costs, on average. As a school expands its scale to approach the maximum capacity, the fixed costs for the school, such as facilities and working time of Reading Partners staff and school staff, are shared by more students, leading to an increase in efficiency. However, it is unknown whether the expansion would affect the impact of the program. The total cost borne by the school is unchanged based on the assumptions; however, the portion of the total cost borne by the school drops dramatically as the increasing part of total cost is mainly borne by the volunteers and Reading Partners itself.

This sensitivity test illustrates the variability in resource use among sites regardless of scale. While scale and resource use are likely related, this test shows how much of the site-level variability is driven by scale rather than by implementation differences in resource allocation, such as volunteer travel time, principal or school staff time, and the size of the facilities devoted to the reading center. It is possible, though, that an increase in the number of students

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Appendix Table E.1

Reading Partners Cost per Student: Main Study Findings and at Scale

	Cost per Student ($)	
Site[a]	Main Findings	At Scale[b]
Site A	3,450	2,230
Site B	3,420	2,550
Site C	3,570	2,350
Site D	5,190	2,240
Site E	4,210	2,700
Site F	2,740	2,270
Pooled	3,610	2,390

SOURCES: MDRC calculations from cost data.

NOTES: Costs are measured in 2012 U.S. dollars and are rounded to the nearest 10 in the chapter tables and text.

Averages have been weighted to account for the size of the program group at each site.

All costs are those for the respondents in the program group and are adjusted for the larger dosage they received.

[a]To prevent identification of individual schools or programs, site letter identifiers are not consistent across analyses.

[b]"At scale" assumes Reading Partners serves 80 students per site. Additional assumptions are described in Appendix D.

[1]A full explanation of the assumptions used to estimate costs at scale appears in Appendix D.

would require an increase in school staff time to identify students and to collaborate with the program staff.

Sensitivity of Reading Partners Cost to Changes in Valuations of Volunteer and AmeriCorps Members' Time

The research team also explored the sensitivity of the cost findings to differences in the value of personnel based on different likely scenarios.[2] The results of this sensitivity test are provided in Appendix Table E.2. The average cost per program group student, as reported in Chapter 5, is $3,610 (with a range of $2,740 to $5,190). When volunteer time is valued at the rate of the federal minimum wage, a lower-bound estimate compared with the main analysis, the cost per student drops by about $600. The upper bound used a higher rate for volunteer time based on the assumption that all volunteers who were not students had bachelor's degrees. This high estimate is about $300 higher than the main findings.

An additional sensitivity test was included to test for uncertainty around the price used to value the AmeriCorps members who serve as Reading Partners site coordinators and outreach coordinators. The main analysis used the average earnings of recent college graduates as their annual salary. However, the actual salary and tuition benefits provided may have been lower than the national average wages. Thus, the sensitivity test used wage and tuition information that was available from the Reading Partners website to obtain an average salary. When this price is used, the cost per student drops by about $240, from $3,610 to $3,370.

The main analyses use prices that reflect the broader marketplace and are likely closer to replication costs than the lower AmeriCorps member wage or minimum wage for the volunteers. These sensitivity analyses provide an estimate of how the range of the costs might vary. Because these tests focused on the uncertainty of the value of volunteers' and AmeriCorps members' time, the costs borne by the school were not changed.

[2]A full description of the sensitivity check appears in Appendix D.

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Appendix Table E.2

Sensitivity Tests of Staff Prices for AmeriCorps Members and Volunteers

	Cost per Student ($)			
Site[a]	Main Findings	AmeriCorps[b]	Volunteer Low[c]	Volunteer High[d]
Site A	3,450	3,210	2,900	3,740
Site B	3,420	3,220	2,790	3,640
Site C	3,570	3,350	2,950	3,670
Site D	5,190	4,840	4,550	5,690
Site E	4,210	3,960	3,580	4,710
Site F	2,740	2,570	2,210	3,150
Pooled	3,610	3,370	3,010	3,930

SOURCES: MDRC calculations from cost data.

NOTES: Costs are measured in 2012 U.S. dollars and are rounded to the nearest 10 in the chapter tables and text.

Averages have been weighted to account for the size of the program group at each site.

All costs are those for the respondents in the program group and are adjusted for the larger dosage they received.

[a]To prevent identification of individual schools or programs, site letter identifiers are not consistent across analyses.

[b]The AmeriCorps sensitivity test uses the AmeriCorps stipend as the price of the site coordinators and outreach coordinator positions.

[c]The "Volunteer Low" sensitivity uses minimum wage as the price of volunteer time.

[d]The "Volunteer High" sensitivity uses U.S. census data on average earnings of individuals with bachelor's degrees as the cost of nonstudent volunteer time, and the cost of a paraeducator as the cost of student time.

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