EXECUTIVE SUMMARY

Impact Evaluation of the Minnesota Reading Corps K-3 Program (2017-18)

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Introduction

Reading Corps is a multi-state AmeriCorps literacy program that helps students become successful readers and meet reading proficiency targets by the end of the third grade. Begun in 2003 in Minnesota and currently operating in 12 states and Washington D.C., trained literacy tutors implement research-based literacy interventions in school-based settings for more than 36,000 at-risk students in Prekindergarten (PreK) through grade 3 each year. The Minnesota Reading Corps program served over 600 schools throughout the state, reaching more than 20,000 students, in the 2017-2018 school year.

As part of an Innovative Approaches to Literacy (IAL) Grant through the U.S. Department of Education (ED), NORC at the University of Chicago, in partnership with Reading & Math, Inc. (RMI) and ServeMinnesota, conducted a multi-site impact evaluation of the Reading Corps program in three states during the 2017-2018 school year. This evaluation builds on prior independent evaluations of the Minnesota Reading Corps Program, including a 2014 randomized controlled trial (RCT) *Impact Evaluation* of the Minnesota Reading Corps Kindergarten to third grade (K-3) program.[1] Given recent developments in the Reading Corps program, including enhancements made to Reading Corps programming,[2] this evaluation of 622 Kindergarten, first, second, and third grade students during the 2017-2018 school year assessed the impact of the enhanced Reading Corps K-3 program model on program participants compared to students who did not receive the Reading Corps K-3 program in Minnesota.

About Reading Corps

Since 2003, Reading Corps recruits, trains, places, and monitors AmeriCorps members that serve as tutors in school-based settings to implement research-based literacy activities and interventions for struggling readers in PreK through grade 3. The goal of Reading Corps is to ensure that students become successful readers and achieve grade-level reading proficiency by the end of third grade. Tutors are supported by a multi-level coaching model that includes site-based ("Internal") and external ("Master") Coaches.

Literacy Focused Response to Intervention Framework

Reading Corps uses a Response to Intervention (RtI) framework that employs a multi-tier approach to the early identification and provision of support to struggling readers. Key features of the Reading Corps RtI framework include:

- Clear literacy targets at each age level from PreK through grade 3
- Benchmark assessment data to identify students eligible for one-on-one interventions
- Evidence-based interventions
- Frequent progress monitoring during intervention delivery
- High-quality training, coaching, and observations to support fidelity of implementation

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[1] Markovitz, C.; Hernandez, M.; Hedberg, E.; Silberglitt, B. (2014). *Outcome Evaluation of the Minnesota Reading Corps K3 Program*. NORC at the University of Chicago: Chicago, IL.
[2] Enhancements to the Reading Corps programming include prescribed guidance on the selection of specific reading interventions for older students, revised intervention exit criteria, and a book distribution and family engagement component to support reading at home.

The Reading Corps K-3 program consists of one-on-one tutoring where tutors provide supplemental individualized literacy interventions focused on the National Reading Panel's "Big Five Ideas in Literacy" to struggling emergent readers. Reading Corps tutors work with approximately 15-18 K-3 students for 20 minutes each day, delivering supplemental literacy interventions consisting of a set of prescribed, research-validated activities.

Use of Data

Assessment data play a key role in the implementation of Reading Corps. The program uses two types of curriculum-based measures (CBM) to determine students' program eligibility and monitor progress once services are received.

- **Benchmark Assessments.** Tutors administer 1-minute benchmark assessments to students in the fall, winter, and spring. Benchmark standards (i.e., target scores) are built into the assessments to assist in determining which students are at-risk for academic failure versus those who are on track to be successful. Kindergarten through 3rd grade students scoring "below target" on benchmark assessment probes are eligible for Reading Corps services.
- **Progress Monitoring Assessments.** Once selected to receive Reading Corps services, tutors administer weekly 1-minute reading probes to students. Progress monitoring data allows tutors to chart student progress, assess effectiveness of current interventions, gauge if students require a change in interventions, or determine if they are ready to exit the program.

The Master Coach, Internal Coach, and Reading Corps tutor use each student's progress monitoring assessment results over time to inform instructional changes and whether the student can exit service. Students in grades 1-3 may be exited from the program once their progress monitoring data shows that they have achieved 3 to 5 consecutive data points above their projected growth trajectory and two scores at or above the upcoming season benchmark target. Similar criteria are used for Kindergarten students, although students must have two scores at or above the Spring target to exit from the program.

Coaching, Support, and Training

Reading Corps provides multiple layers of supervision, support, and training to ensure integrity of program implementation. Site-specific Internal Coaches, who are typically staff literacy specialists, teachers, or curriculum directors, serve as immediate on-site supervisors, mentors, and advocates for tutors. The Internal Coach's role is to monitor tutors and provide guidance in the implementation of Reading Corps' assessments and interventions. The external, or Master Coach, is a literacy expert who provides on-site staff (i.e., Internal Coaches and Reading Corps tutors) with expert consultation on literacy instruction. The Master Coach also ensures implementation integrity of Reading Corps program elements. In addition to these two coaching layers, a third layer consisting of program support staff provide administrative oversight for program implementation to sites participating in Reading Corps.

Prior to the start of each school year, Reading Corps hosts a three-day Institute to train returning and new Master Coaches, Internal Coaches, and Reading Corps tutors in the assessments and research-based literacy interventions employed by Reading Corps. During several sessions at the Institute, tutors learn the skills, knowledge, and tools needed to serve as literacy interventionists. Tutors are provided with detailed literacy manuals, as well as online resources that mirror and supplement the contents of the

manual (e.g., videos of model interventions and best practices). Additional training and coaching sessions are provided throughout the tutors' year of service.

Study Methodology

The goal of the Minnesota Reading Corps impact evaluation was to independently and experimentally assess the impact of the Minnesota Reading Corps program on Kindergarten, first grade, second grade, and third grade students' literacy proficiency scores. The current (2017-2018) evaluation replicated many design elements of the original 2014 evaluation, but included four key differences: 1) an extension of the duration of the evaluation for second and third grade students from one semester to a full school year (i.e., examining program impact through Spring benchmark rather than Winter); 2) inclusion of second and third grade students who scored farthest from benchmark in Fall 2017; 3) inclusion of only IAL grant recipient schools (i.e., rural and high-poverty urban), and 4) independent outcome assessment data collection.

The primary research questions for the current evaluation are:

1. For Kindergarten and first grade students, what is the impact of a single semester of the Minnesota Reading Corps on program participants compared to similar students who did not receive Reading Corps?
2. For second and third grade Tier 2 students who are farthest from the Fall reading proficiency benchmark, what is the impact of a full school year of Minnesota Reading Corps on program participants compared to similar students who did not receive Reading Corps?[3]
3. Does program impact vary by participant characteristics, such as demographics?

Random Assignment of Students within Schools

A randomized controlled trial (RCT) design was used to answer these research questions, which was largely informed by the 2014 Impact Evaluation of the Minnesota Reading Corps K-3 Program.[4] At the beginning of the school year (prior to program implementation), a select number of eligible students enrolled in Kindergarten through third grade at the 24 participating Minnesota Reading Corps schools were included in the study sample and randomly assigned to two groups: a program group and a control group. In Fall 2017, students at each participating school were assessed to determine program eligibility. Eligible students in each grade within a school were matched in pairs based on their Fall benchmark scores **(see Table i.1 below)**. Next, pairs of students within each grade were selected to participate in the evaluation. The Kindergarten and first grade study participants were randomly drawn from the pool of eligible students. The second and third grade study participants were purposively selected from the pool of eligible students so as to include those students with scores furthest from the Fall benchmark. After all pairs were selected, one student in each pair was randomized into the Reading Corps program group while the other was assigned to the control group. In total, 60 Kindergarten students, 160 first grade students, 190 second grade students, and 212 third grade students participated in the evaluation.

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[3] To maximize statistical power, the study was able to make use of the common outcome of *oral reading fluency* for second and third grade students and create a pooled sample with grade level controls in the model.

[4] Markovitz, C.; Hernandez, M.; Hedberg, E.; Silberglitt, B. (2014). *Impact Evaluation of the Minnesota Reading Corps K-3 Program.* NORC at the University of Chicago: Chicago, IL.

Table i.1. Expected Assessment Benchmarks by Grade and Season

Grade	Measure	Fall	Winter	Spring
Kindergarten	Test of Letter Sounds	8	27	48
Grade 1	Test of Nonsense Words (English)	36	63	N/A
Grade 1	CBMReading	N/A	52	82
Grade 2	CBMReading	63	97	116
Grade 3	CBMReading	100	122	135

Data Sources

Since the primary goal of the Minnesota Reading Corps impact evaluation was to assess the impact of the program on K-3 students' literacy proficiency scores, the main source of data for the evaluation was comprised of the grade-appropriate and semester-specific literacy assessment scores described above. The evaluation team requested access to the 2017 Fall benchmark data that Reading Corps tutors collected to identify program-eligible Kindergarten, first, second, and third grade students enrolled at the 24 participating schools.[5] Independent assessors from the NORC evaluation team collected the Winter (grades K-1) and Spring (grades 2-3) benchmark assessment data from students in both the program and control groups at each school to ensure independent measures of outcomes and mitigate any potential bias at posttest. Additionally, Minnesota Reading Corps program staff at the 24 participating schools provided the evaluation team with other administrative data, including students' AmeriCorps tutoring session attendance, average length and number of sessions, and student demographic characteristics.

Analysis

To estimate program effects, the average Winter (grades K-1) and Spring (combined grades 2-3) benchmark scores of students who participated in the Minnesota Reading Corps program were statistically compared with the average Winter (grades K-1) and Spring (combined grades 2-3) benchmark scores of the control group of students who did not. The calculated difference in group averages is the causal effect of program participation. The impact evaluation analyses were conducted using mixed-regression models, also known as hierarchical linear models. This type of model uses maximum likelihood to estimate differences in outcomes associated with predictor variables while also modeling the multi-level structure of the data, which in this case is students nested within schools. The analytic approach accounted for the effect of program status (i.e., assignment to program or control group) in isolation as well as when relevant control variables (i.e., demographic characteristics) were included.

Findings and Conclusions

Below, the evaluation team presents the study findings, followed by final thoughts on the implications of these findings for the future of the Minnesota Reading Corps program.

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[5] Fall benchmark data was collected prior to randomization, ensuring an unbiased assessment of student baseline proficiency.

What is the impact of Minnesota Reading Corps on Kindergarten students?

Kindergarten students who received Minnesota Reading Corps tutoring achieved significantly higher *letter sound fluency* scores by the end of the first semester (Winter 2018) than Kindergarten control students who did not receive the program (see **Figure i.1**). On average, program students correctly identified an average of 10.9 more letter sounds in a one minute period than control group students (p=0.01, N=60). This difference had a positive, meaningful effect size of 0.85, indicating that the average program student scored over three-fourths of a standard deviation unit higher than the average control group student in identifying letter sounds. Also by the end of the first semester, the program group achieved Winter benchmark expectations, whereas the control group did not reach the expected benchmark.
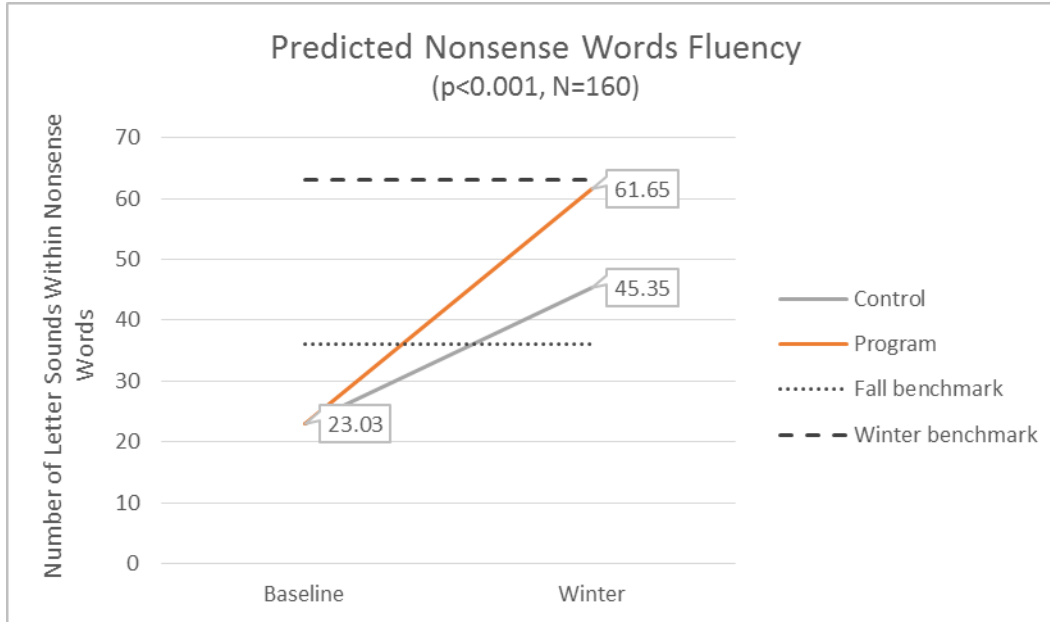
Figure i.1: Mean scores for Kindergarten program and control students
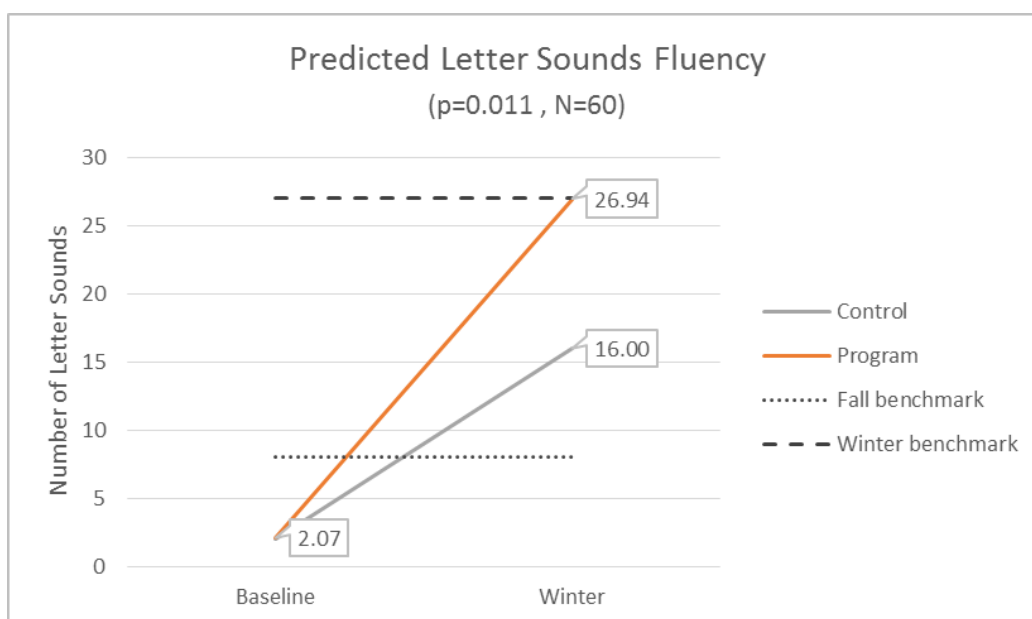
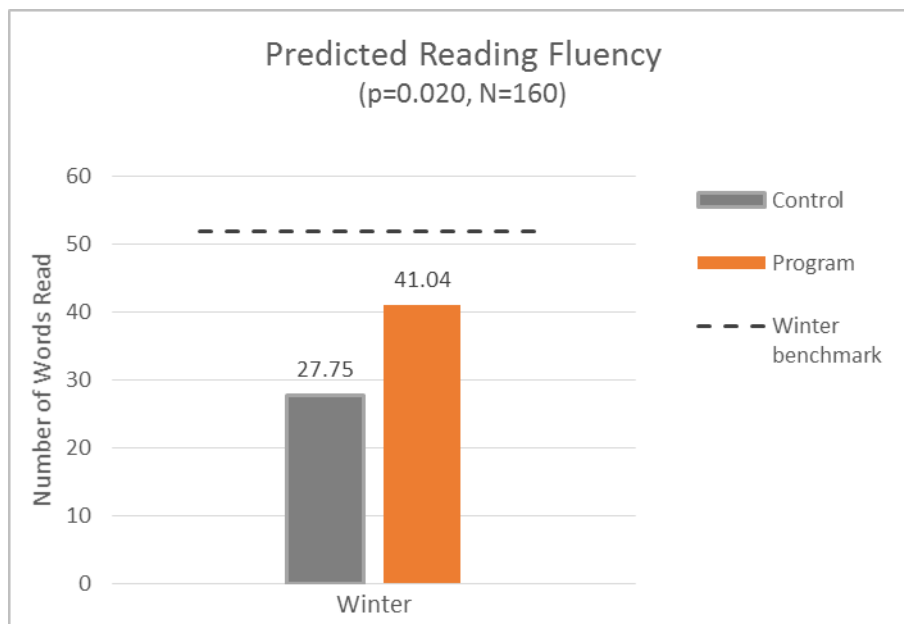**What is the impact of Minnesota Reading Corps on first grade students?**

First grade Minnesota Reading Corps students attained significantly higher *nonsense word fluency* scores by Winter benchmark than first grade students in the control group. On average, program students correctly identified in one minute 16.3 more letter sounds embedded within non-real words than first grade control group students (p< 0.001, N=160). This difference represents a large, positive effect size of 0.81, indicating that the average program student scored more than three-fourths of a standard deviation unit higher than the average control group student in identifying letter sounds within nonsense words **(see Figure i.2)**. Additionally, the first grade program students' average score nearly met the Winter benchmark.

Figure i.2: Mean scores for first grade program and control students

First grade students enrolled in the Minnesota Reading Corps program achieved substantially and significantly higher *oral reading fluency* scores at Winter benchmark than first grade control group students **(see Figure i.3)**. On average, program students correctly read aloud 13.3 more words than the control group (p=0.02, N=160). This represents a large, positive effect size of 0.61.

Figure i.3: Mean scores for first grade program and control students (Oral Reading Fluency)

What is the impact of Minnesota Reading Corps on second and third grade students?

The pooled group of Minnesota Reading Corps second and third grade students attained significantly higher *oral reading fluency* scores by Spring benchmark than control group students. By the end of the school year, second and third grade program students read aloud an average of 6.4 more words in a one minute period than second and third grade control group students (p< 0.005, N=402). This difference is meaningful, and represents a positive effect size of 0.28, indicating that the average program student scored more than one-quarter standard deviation unit higher than the average control group student in the number of words read aloud **(see Table i.2)**. In both grades, program students' average scores were substantially higher than control students' average scores, however, no group reached their respective Spring benchmark **(see Figure i.4)**.

Table i.2: Oral Reading Fluency Results, Pooled Sample

Grade and Outcome	Treatment effect[a,b] (β_1)	p-value[a]	Effect size[c] (α_1/σ)	Prog. Mean[d]	Control mean[d]	Total N
Second and Third Grades[e]						
Reading fluency	6.44	0.005	0.28	102.6	96.2	402
	(2.291)					

a: Reported statistics from model that includes the Fall assessment, gender, race, ELL status, and the school averages of the Fall assessment, gender, race, and ELL status; the treatment effect is allowed to vary
b: Standard errors in parentheses
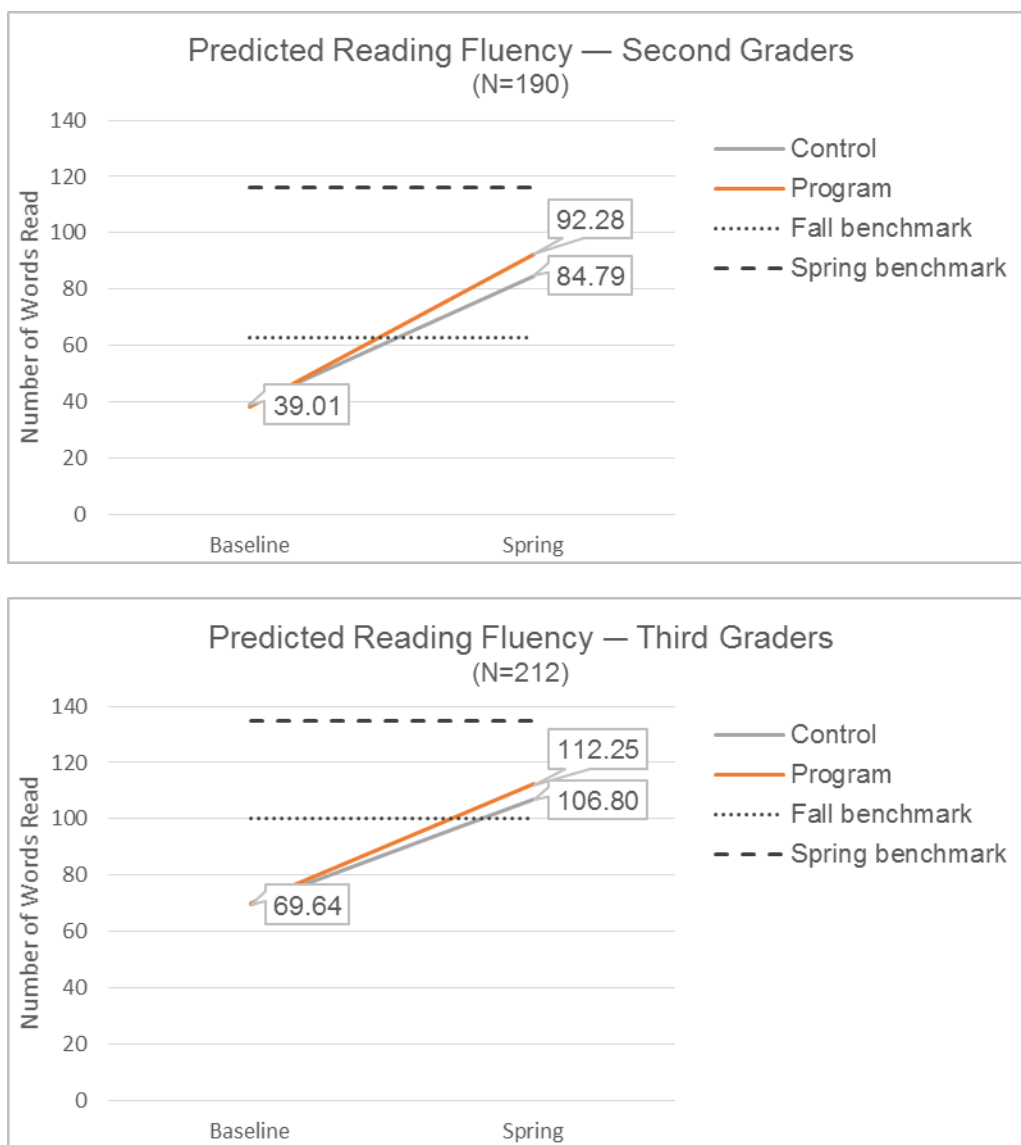c: Effect size reported from unconditional model without control variables
d: Reported statistics represent marginal predictions based on the model that controls for the Fall assessment, gender, race, ELL status, and the school averages of the Fall assessment, gender, race, and ELL status; all controls are held at their sample averages.
e: The Minnesota model includes sampling weights for generalizability

Figure i.4: Mean scores for second and third grade program and control students by grade

Predicted Reading Fluency — Second Graders
(N=190)

Number of Words Read

92.28
84.79
39.01

Control
Program
Fall benchmark
Spring benchmark

Baseline   Spring

Predicted Reading Fluency — Third Graders
(N=212)

Number of Words Read

112.25
106.80
69.64

Control
Program
Fall benchmark
Spring benchmark

Baseline   Spring

Does program impact vary by participant characteristics, such as demographics?

Below are the results by race, gender, and English Language Learner (ELL) status for the combined second and third grade sample[6] to address the study's research question on whether program impacts vary by participant demographics. **Table i.3** below provides the detailed results.

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[6] Sample sizes for demographic groups in Kindergarten and first grade lacked the statistical power to detect differences both within and between subgroups; therefore, we were unable to conduct analyses on subgroups for these grades.

Race/Ethnicity

For the analysis of second and third grade *oral reading fluency* by race, we found that Black/African-American students in the program group read aloud an average of 10.7 more words in a one minute testing period by the Spring benchmarking period compared to similar students in the control group (p=.03). This difference had a positive, meaningful effect size, indicating that the average African American program student scored one half standard deviation unit higher than the average African American control group student in reading fluency (effect size = 0.50).

Gender

The effect size in *oral reading fluency* between the program and control groups was descriptively larger for males than females. While all second and third grade students in the program group read aloud an average of 6.4 more words correctly in a one minute period (p=.005, N=402) by the Spring benchmarking period, among second and third grade males, the average difference between the program and control groups was 7.9 words (p=.013). This difference had a positive, medium effect size of 0.47, indicating that the average male program student scored nearly one half standard deviation unit higher than the average male control group student in reading fluency. For female students in second and third grade, the findings showed the average difference between treatment and control groups to be slightly lower (5.7 more words read correctly and effect size = 0.22).

English Language Learners

Some important differences also were detected in the patterns of findings for second and third grade ELL students. By the end of the Spring benchmarking period, second and third grade ELL students in the Minnesota Reading Corps program read aloud correctly an average of 16.3 more words in a one minute period than students in the control group (p=.001). This difference resulted in a positive, medium effect size, indicating that the average ELL program student scored over one half standard deviation unit higher in *oral reading fluency* than the average ELL control group student (effect size = 0.53).

Table i.3: Reading Fluency by Subgroups, Pooled Second and Third Grades Sample

Subgroup Characteristic[f]	Total N[e]	Reading Fluency				
		Treatment effect[a,b] (β_1)	p-value[a]	Effect size[c] (α_1/σ)	Prog. Mean[d]	Control mean[d]
Racial or Ethnic subgroups						
American Indian or AK Native	18	5.914	0.275	g	97.259	91.345
		(5.414)				
Asian	25	9.065	0.259	g	97.835	88.770
		(8.023)				
Black or African American	66	10.650	0.034	0.497	104.697	94.047
		(5.031)				
Hispanic/Latino	46	3.771	0.467	g	100.667	96.896
		(5.181)				
Gender subgroups						
Female	204	5.735	0.021	0.220	101.014	95.279
		(2.486)				
Male	198	7.878	0.013	0.467	102.311	94.433
		(3.169)				
Language subgroups						
ELL	94	16.279	0.000	0.528	113.992	97.714
		(4.672)				

a: Reported statistics from model that includes the Fall assessment, gender, race, ELL status, and the school averages of the Fall assessment, gender, race, and ELL status; the treatment effect is allowed to vary.
b: Standard errors in parentheses.
c: Effect size reported from unconditional model without control variables.
d: Reported statistics represent marginal predictions based on the model that controls for the Fall assessment, gender, race, ELL status, and the school averages of the Fall assessment, gender, race, and ELL status; all controls are held at their sample averages.
e: Subgroups containing fewer than 10 students were excluded from analysis.
f: The Minnesota model includes sampling weights for generalizability.
g: Non-significant effect sizes not reported.

Concluding Thoughts

Kindergarten and first grade students who received the Minnesota Reading Corps program achieved significantly higher literacy assessment scores by the Winter benchmark than control students who did not participate in the program. Specifically, Kindergarten students produced more correct letter sounds than did students in the control group and reached the Winter benchmark score. First grade program students produced more letter sound segments within nonsense words than students in the control group and nearly reached the Winter benchmark score. While *oral reading fluency* is not typically a focus of Reading Corps tutoring until the second semester in first grade, Reading Corps students scored significantly higher at the Winter benchmark on average for *oral reading fluency* than control group students. This finding may indicate that first grade Reading Corps students are transferring early phonics skills gained from Reading Corps tutoring to the more complex skill of reading fluency.

Positive results were likewise found among second and third grade students. After a full year of tutoring, second and third grade program students achieved significantly higher literacy assessment scores by the Spring benchmark than did control students. Participating second and third grade students were selected because they had *oral reading fluency* scores furthest from the Fall benchmark, and while neither grade

level achieved the Spring benchmark, program students showed significant improvements in *oral reading fluency*. In addition, a statistically significant impact of Reading Corps was found among second and third grade students despite minority status (i.e., Black), gender, or ELL status. For each of these characteristics, second and third grade students who received the program significantly outperformed control students on *oral reading fluency* scores and produced larger effect sizes than those found for the average student in the program. Together, the findings show that the Minnesota Reading Corps program can have a substantial and positive impact on at-risk students who may be underserved.

Overall, the results of the evaluation showed that the Minnesota Reading Corps program positively impacted Kindergarten through third grade students' literacy outcomes. Similar to the previous 2014 study's findings, the magnitude of the effect of the program varied by grade, such that students in Kindergarten and first grade on average achieved larger gains within a single semester, and second and third grade students furthest from benchmark showed moderate gains in a more complex literary skill over a longer period of time. Therefore, based on findings from two highly rigorous studies of the program, it is possible to conclude that the Minnesota Reading Corps K-3 program is effective at improving K-3 students' early reading skills. Such results provide support for the continued implementation of the program and replication of the Reading Corps model for eligible K-3 students.