

A Volunteer-Tutoring Program in Reading: Examining the growth in reading achievement of elementary grade Students with SLD in a tutoring based intervention

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Abstract:

This evaluation examined the effects of a supplemental reading intervention for students identified with specific learning disabilities in reading, and who had at least one reading goal listed on their current IEP. All consented participants in the study presented with below grade level on fall benchmark scores on DIBELS 6th ed. Revised. Participants consisted of a treatment group, those who received supplemental reading instruction in addition to core + special education services and a control group of students who received only core + special education services. The students in the treatment group received 26 weeks of Project MORE instruction delivered multiple times each week from trained volunteer tutors. Using a regression-discontinuity design, condition and comparison groups were compared on reading development growth using DIBELS ORF. Significant findings were reported for grade 2, 3, and 4.

One-to-one tutoring, provided as an extension to classroom teaching, is commonly considered to be the most effective way of increasing students' academic proficiency, particularly in the area of early reading skills. The effectiveness of one-to-one tutoring as an effective reading intervention has been validated by empirical research, especially for those children who are considered at-risk for academic failure, or have been identified as having reading or learning disabilities (Elbaum, Vaughn, Tejero-Hughes, & Watson-Moody, 2000; Osborn et al., 2007; Slavina, Lake, Davis, & Maldena, 2011; Vaughn et al., 2009). Elementary teachers routinely identify trained volunteer one-to-one tutoring, an optimal instructional strategy to implement in their classrooms. Yet, these teachers report that it is challenging to implement in their classrooms (Elbaum, et al.; Pullen, Lane, & Monahan, 2004). The importance of reading interventions in the primary grades is underscored by Hecht and Greenfield (2001), who note that few changes in individual reading skills occur after the third grade.

As other important consequences to lack of early intervention include, poor academic outcomes, increased behavioral issues, higher probability of these students dropping out of school will lead to limited employment opportunities later in life.

Many educators and researchers have found that while one-to-one tutoring can be an effective method of improving the reading skills of students who are struggling with reading, there is some debate on which type of programs provide the most effective avenue for improving students' reading through tutoring. In a review of the defining characteristics of successful tutoring programs, Power & Cummings (2011) identified eight important variables to consider when determining best practice for one-to-one tutoring programs: (1) volunteers, (2) training and supervision of volunteers, (3) tutoring strategies, (4) length and frequency of tutoring, (5) students' grade level, and (6) location of the tutoring sessions, (7) materials, and (8) finances. Addressing these variables can serve as components of effectiveness of tutoring programs on improving student outcomes were further explained as training for volunteers, connecting the tutoring program to student learning in school, providing the student with tutoring sessions over an extended period of the academic year (Power & Cummings).

Students with reading difficulties

Despite the success of early reading interventions studies in assisting students to improve their reading skills, many students continue to have significant reading difficulties (Vaughn et al., 2009). Other research findings indicate that some students progress in their reading proficiency at a much slower rate, even in the presence of a highly qualified teacher and evidence-based instruction (Al Otaiba & Fuchs, 2002). Students who may present a resistance to evidence-based reading instruction may have different characteristics from students with reading difficulties. Multiple research findings examining the differences in students' response to reading interventions indicate that the areas of phonological processing, rapid-naming ability, and verbal ability could indicate differences in the level of these students progress in reading (Al-Otaiba & Fuchs, Vaughn, Wanzek, Woodruff, & Linan-Thompson, 2007). Students who fail to respond to evidence-based reading instruction provide a population from which we can explore the development of reading skills, effective instruction, and those students who present with reading difficulties and/or disabilities (Vaughn et al., 2009).

Volunteer Tutoring

The implementation of tutoring programs has existed in education for several decades. Multiple reasons are frequently cited for the growth of a variety of tutoring programs in schools. The attention of the public was focused on the deficiencies of student proficiency in reading, particularly after the publication of the National Commission on Excellence in Education's, *A Nation at Risk* (1983). With this increased attention came a resurgence of volunteers ready to tutor students who may be struggling in reading development. Yet, despite the increased use of volunteer tutoring in schools, particularly with volunteers considered to be "non-professional" volunteers, there is not yet a sufficient body of evidence to confirm the effectiveness of the use of a diverse population of volunteer tutors (Ritter, Barnett, Denny, & Albin, 2009).

Empirical research has been conducted in a few large-scale studies aimed at improving the academic achievement of students who struggle the most in foundational reading skills. Two important studies, Reading Recovery and Success for All (Shanahan, 1998; Wasik & Slavin, 1993) are considered to be effective tutoring programs, but both require the use of professional tutors in their implementation. The most significant limitation to these programs rests in the limited availability of professional volunteers, which in turn, limits the number of struggling students who can be assisted (Ritter et al.). In a review of 17 studies which employ volunteer tutors to improve students' reading skills, Wasik (1998) found that some of these programs could assist students who are struggling with reading development; only 2 of the 17 programs reviewed compared targeted students with a comparison group. This review has led to an increase in the evaluation of programming to meet the needs of students who struggle with reading development. Many of these studies have provided a beginning body of evidence for the effectiveness in the implementation of volunteer tutors in providing additional instructional supports for students in need of support in the area of reading (Burns, Senesac, & Symington, 2004; Fitzgerald, 2001; Moore-Hart & Karabenick, 2009; & Pullen, Lane, & Monaghan, 2004). The intention of continuing to build the body of evidence on the use of volunteer tutors for assisting students with reading difficulties formed the basis of this evaluation. Researchers were asked to evaluate a currently used program for using volunteer tutors to assist students with reading disabilities improve their reading development as a supplement to core reading instruction and special education services.

Rationale for Project MORE intervention

When we initiated this study, the most reliable and valid empirical support for implementing interventions for students who have reading difficulties used standardized interventions (Vaughn et al., 2009). In a review of intervention studies, Wanzek & Vaughn (2007) reports findings from 18 studies conducted with primary grade students with significant reading difficulties. None of the studies reported using problem-solving or individualized instruction based upon student needs. This report defines an intervention of having high levels of standardization within the intervention and allowing for possible adjustments based upon student performance (Vaughn et al.). Project MORE (PM) incorporates the use of standardized methodologies in each of their tutoring sessions, while allowing for a small portion of the tutoring session toward meeting the students' reading needs based upon student IEP goals. The objective of PM is not to replace general education instruction in reading, including those programs considered in Tier One Response to Intervention (RTI) programming. PM is used as a supplement to core instruction and special education services (Osborn et al., 2007).

PM has been developed and funded through a partnership between state legislators and educational leaders to create a special education initiative unfolded in 15 schools in 2000, and has since grown throughout the state (Wilson & Rychener, 2009). PM used a commercially available tutoring intervention, Reading Tutors (reading-tutors.com, 2007). This program provides lessons and materials, as well as assessments pertaining to alphabet, phonological awareness, phonics, high-frequency words, fluency and comprehension of reading. PM provides schools with over 450 tutor packets from the Reading Tutors program that are organized into the six categories stated above, covering key areas of literacy development cited by the National Reading Panel (Wilson & Rychener). This study examined the growth of reading proficiency of a group of students with SLD in reading, compared to a group of non-disabled peers. We were interested in examining whether students with reading disabilities would benefit from supplemental intervention using PM, in addition to core instruction and special education services, when compared to typical nondisabled peers.

Overview of the Study

The current study was formed around the goal of comparing the reading gains of students in the Project MORE (Mentoring in Ohio for Reading Excellence) intervention program with the

reading gains of similar students who had not received the PM intervention. Our primary question was, will students with SLD in reading who receive supplemental volunteer tutoring in reading perform significantly higher on reading scores than those students with SLD in reading who did not receive the supplemental volunteer tutoring in reading. The intervention was of a comprehensive design focusing on oral language skills, phonemic sound-symbol relationship, and structural analysis, as well as morphemic awareness, vocabulary building, and reading fluency.

This study reports the relative benefits of the PM tutoring program for use as a supplemental reading intervention for students with SLD using a regression discontinuity analysis. Using regression discontinuity analysis, we were able to examine statistically significant gains in reading proficiency for students in the treatment condition when compared to their same grade level typically performing peers. The performance of the students receiving the PM intervention will be detailed relative to outcomes of DIBELS Oral Reading Fluency (DORF) given at grade level three times during the academic year. The initial benchmark score served as the pretest score and the spring benchmark score served as the posttest score.

Method

Participants and setting

The participants in this evaluation consisted of 246 second, third, and fourth grade students from 11 schools from nine rural districts in a Midwestern state. All students were identified as having been identified with a SLD in reading as determined by IEP disability category, and each participant having at least one goal in reading listed on their respective IEP. This identification method has been used in previous research comparing the outcomes intervention research (Osborn et al., 2007 Vaughn et al., 2009; Wilson & Rychener, 2009). For the purposes of this study, students who had been identified as an English Language Learner (ELL) were not considered for either the treatment or control groups. Two groups were formed into treatment and control groups from each grade at each school. Inclusion of students into the treatment group and the control group based upon a cutoff score from the Fall DORF benchmark score. For students in grade two the cutoff score for participation in the study was a DORF fall benchmark score of 20 or below, grade three, DORF fall benchmark a score of 27 or below, and grade four, a score of 38 or below. While the sample for this study was based upon convenience

in their attendance in a school that had previously adopted the PM program for their students, for the purpose of the study, students were randomly assigned to the treatment or control group. Parental consent was required prior to being considered for this study and youth assent was obtained prior to the initial benchmark assessment at the pre-test screening.

In August of 2007, all students were screened using grade-level DIBELS ORF measures (Treatment Group: $n = 121$; Control group: $n = 125$). At the outset of the study, the groups were matched in sample size of 140 students in each group. The resulting sample size described in this study varied due to students leaving the school in which the study was conducted. There were 121 students in the treatment group, (63 female: 52%, 58 male: 48%). 89 students in the treatment group were Caucasian (74%), 24 were African American (20%), 6 students were Hispanic (5%), and 2 students were identified as other (2%). Free and reduced lunch status for the treatment group were 29 students (24%). For the students in the control group, there were 125 participants (59 female: 49%, 66 male: 51%). 96 students in the control group were Caucasian (77%), 18 were African American (14%), 11 students were Hispanic (8%). Free and reduced lunch status for the control group were 33 students (26%). Table 1. Lists the number of participants by grade level.

Table 1. Sample size by grade.

Grade	Treatment Group	Control Group
Grade 2	24	27
Grade 3	21	26
Grade 4	76	72
Total	121	125

Volunteer tutors. For the PM intervention, volunteer tutors were used at each school site ($n = 37$). Volunteers were recruited from the community and varied in their age from 16-67 years old, gender, and previous education and work experience. Tutors can be high school students, retirees, college students, professionals, laborers, parents, and anyone who the school can recruit, train, and commit to the PM tutoring program (Osborn, et al 2007). Use of tutors with a diverse background is widely supported in the literature (Al-Otaiba & Pappamihiel, 2005; Caserta-Henry, 1996; Elbaum, Vaughn, Hughes, & Moody, 2000; Morris, Tyner, & Perney, J., 2000).

All tutors were trained by local school staff that were trained by supervisory personnel in charge of the state's Project MORE programming from the county Educational Service Center (ESC). Training consisted of one 2-hour session, and included treatment of fidelity in implementation of tutoring sessions conducted at the end of the training session and at the end of the first month of tutoring services. Any tutor who scored below the minimum 95% accuracy in the tutoring sessions based upon a checklist and inter-observer reliability were remediated in their training and were reassessed until they met the minimum accuracy level.

Detailed records were obtained over the 26 weeks of the intervention and were verified by members of the research team as well as through on-site observation and interviews with tutors and supervisory personnel at each of the 11 sites in order to assure accurate data entry.

Independent and dependent variables

Given that this study involves the evaluation of a standardized intervention by using a quasi-experimental design it is important to distinguish the variables that drive the evaluation of the study outcome. The independent variable for this study is the student outcomes for the intervention, PM that would be delivered to the treatment group but withheld from the control group. The dependent variable for this study is the Project MORE intervention programming.

Procedures

The treatment for this study consisted of the PM intervention delivered three times each week for approximately 30 minutes for each session. This intervention was delivered in addition to any reading instruction given in the general classroom or during special education minutes. The control group differed from the treatment group in only the delivery of the PM intervention. PM provided the overall structure to deliver the reading intervention. The goal of PM is to supplement reading instruction for students who have been identified with disabilities in reading proficiency, with each participant having at least one IEP goal in reading (Osborn, et al, 2007). The program delivers structured tutoring to a student who is identified as a struggling reader via data derived from curriculum-based measurement screening at grade-level in reading.

The PM intervention consisted of one-on-one tutoring by trained volunteer tutors conducted in a room outside of the classroom, and was conducted during the school day. There were three sessions each week over 26 weeks, each lasting 30 minutes. All students in the PM

intervention were given an initial screening using the Dynamic Indicators of Basic Early Literacy Skills-6th Edition, Revised (DIBELS). Once a student's reading proficiency was determined, PM sessions were created from the Reading Tutors reading program (reading-tutors.com, 2007). The Reading Tutors program contains 450 comprehensive lesson plans with teaching tips, instructional resource packets, formative and summative assessment, and resources in alphabet, phonological awareness, phonics, high-frequency words, fluency, and comprehension. The 450 tutor packets are organized into six categories covering six areas of literacy development cited by the National Reading Panel. They include alphabet recognition, phonological awareness, high-frequency word recognition, fluency, and reading comprehension. The Reading Tutors program conforms to the National Reading Panel's recommendations for successful reading programs (Osborn, et al, 2007). Students and tutors met in one-to-one tutoring sessions three times each week. A student may have as many as three different tutors in a week, but typically, tutors remained consistent throughout the year. The use of multiple tutors during the week could be problematic, but using an intervention system that is considered highly standardized lessens the impact of multiple tutors (Vaughn & Wanzek, 2007). Each session consisted of three instructional segments, with the first segment lasts for five to 10 minutes consisting of fluency building activities which included timed cold, warm, and hot reading, based on the premise of repeated reading. The second segment of each session focused attention on skills targeted at building reading comprehension by using predicting, previewing, and asking questions in advance of reading passages, followed by tutor reading aloud as the student follows along as a model of proficient reading. The final 10 segment focused on high-frequency response type reading games related to specific skill development based upon the specific needs of the student as outlined in the student's IEP. Activities included high response instructional games, manipulatives, and kits or cards to promote specific skill development. Areas of reinforced practice included work analysis, vocabulary, comprehension, study skills, and writing (Osborn, et al).

Table 2.
Means and Standard Deviations for DIBELS Oral Reading Fluency(DORF) scores

<i>Measure</i>	<i>Treatment Group</i> M (SD)	<i>Control Group</i> M (SD)
DORF		
Fall Grade 2	15.69 (7.36)	15.96 (7.41)
Fall Grade 3	21.91 (9.35)	21.05 (9.18)
Fall Grade 4	28.67 (13.87)	27.58 (12.94)
DORF		
Spring Grade 2	22.02 (8.43)	18.47 (6.28)
Spring Grade 3	27.67 (11.31)	24.33 (11.02)
Spring Grade 4	31.26 (12.26)	29.19 (11.86)

Data Collection

A team of trained graduate students traveled to each school to administer the DIBELS Oral Reading Fluency (DORF) screening that were administered to each student and used as pretest and posttest scores to both the treatment and comparison groups. Co-primary investigators (PI) completed fidelity of implementation checks on the graduate students for 25% of DIBELS administrations and these checks resulted in a 96% correct administration rate. Additionally the PI's verified the scores listed on the scoring booklets on 50% of the students' booklets in both the treatment and control groups for each administration.

DIBELS DORF. DORF is a standardized, individually administered test of accuracy and fluency with connected text. The passages are calibrated for the goal level of reading for each grade level. Student performance was measured by having students read three passages aloud, each for one minute. ORF scores are derived from the number of correct words per minute, is considered the oral reading fluency rate. The DORF test-retest reliability over the course of several days is .90 (DIBELS Technical Reports, 2003). The DORF is highly correlated with the Woodcock-Johnson reading subtests among students with SLD ($r = .89$) (DIBELS Technical Reports). Additionally, the DORF is significantly correlated with the state high-stakes annual assessment for fourth grade students (Vander Meer, Lentz, & Stoller, 2005).

Regression Discontinuity Research Design

The effectiveness of the PM intervention was evaluated using a regression-discontinuity (RD) research design. This quasi-experimental design is a particularly strong alternative to the use of randomized control research design to evaluate the efficacy of an intervention (Trochim, 1984). It is appropriate to use RD when the group receiving the condition and the comparison group are intentionally selected to differ in ability as assessed by a quantitative criterion prior to the introduction of the condition. When used with a strictly enforced cutoff score for inclusion into the condition group, RD provides a robust alternative to randomized experimental design, with additional benefit of not having to construct a comparison group by denying the intervention to those who need it (Gersten & Dimino, 2006; Vaughn et al, 2009).

The core assumption of RD is that the relationship between the pretest criterion score and the posttest outcome measure would be the same for all students. A program effect is obtained by examining the degree to which the regression line for students in the condition group differ from the expected line that is based in the pre-post relationship in the comparison group. RD can be used to determine both if a main effect exists for the condition group and if an interaction effect also exists. A main effect is evidenced when the regression line for the condition group is shifted above the expected line. This shift raises the regression line of the condition group above the line of the comparison group by a constant value. When the lines are prepared visually, the result is a vertical gap between the two lines at the location of the cutoff score on the x-axis. An interaction effect indicates that the effect of the condition differs across members of the treatment group based on their pretest scores (Gersten & Dimino, 2006).

Results

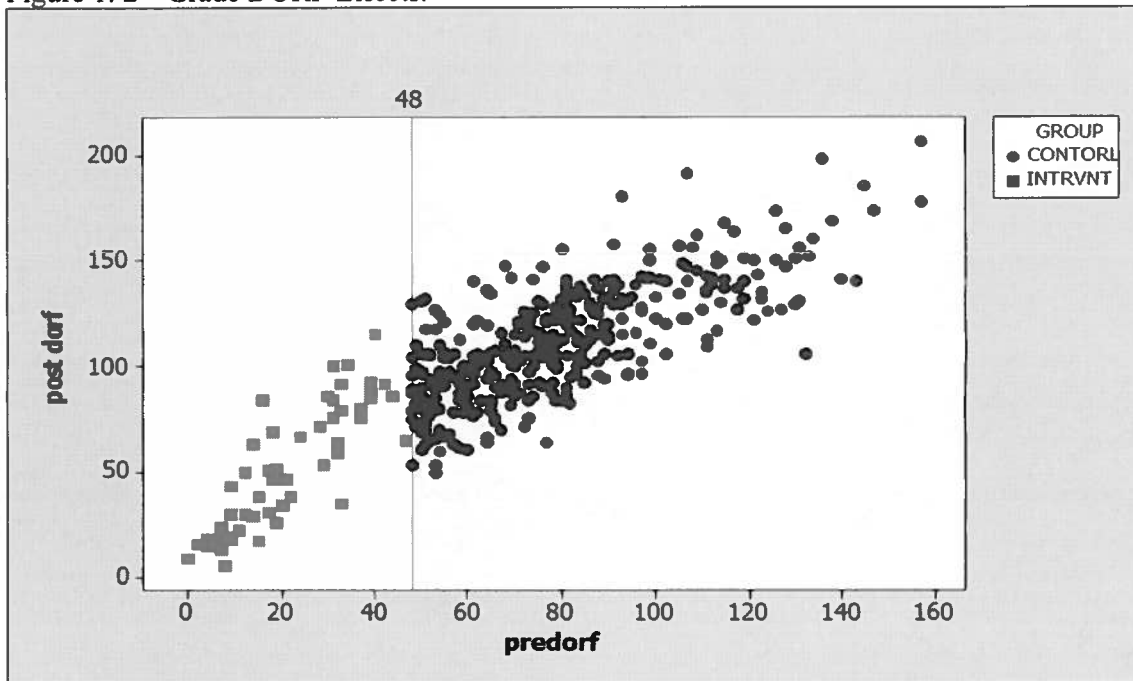
To address our question of interest, examining whether students with reading disabilities would benefit from supplemental intervention using PM, in addition to core instruction and special education services, when compared to typical nondisabled peers. Pretest and Posttest variables included in this analysis was the appropriate grade level DORF. Each of the grade level pretest measures was administered in the spring of 2007, and the posttest measures were administered in the spring of 2008. We determined that the use of RD analyses would best suit the data that we generated for this study.

The validity of RD is dependent on meeting five assumptions (Trochim, 2007). First, the cutoff score criteria have been consistently applied in assigning students to the condition and comparison groups. In our study we used a standard cutoff score to determine inclusion into both the treatment and control groups. Second, the statistical model applied to the data contains sufficient terms to provide an unbiased estimate of the main and interaction effects. For this study, we used a density test and by examining the continuity at pre-test were obtained and were well within the range of acceptable to proceed with RD analysis. Third, there are a sufficient number of observations in the comparison group to reliably estimate the pre and posttest regression line. Our study did contain both pre and post-test observations that framed the data collection timeframe. Fourth, subjects were chosen from a group with a continuous distribution of pretest scores, thereby avoiding selection bias. And lastly, the PM intervention is provided to the condition group in a uniform manner (i.e. equivalent sessions over the weeks for all participants). Each of these assumptions has been attended to in the design and data analysis of the within study.

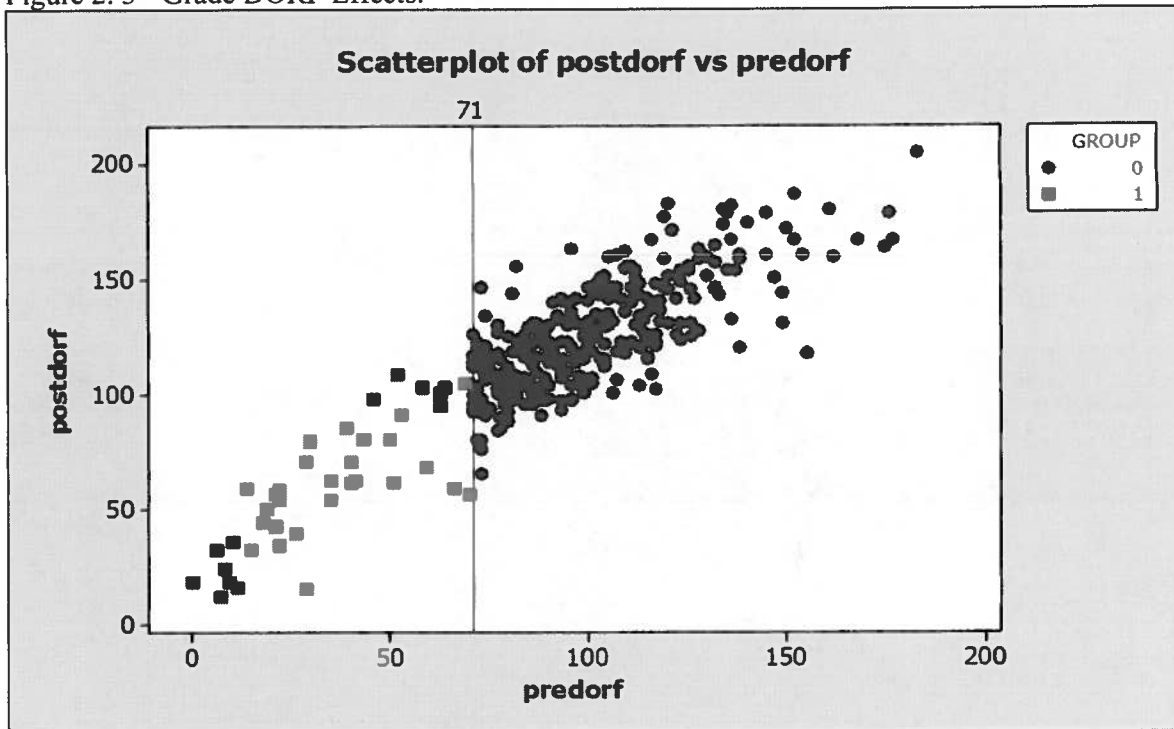
Results of the regression discontinuity analyses are presented in the following figures by outcome and grade level. To aid in the visual presentation of the results, these data used the cutoff score which was determined from the mean PM DORF score for students identified for participation in our study at the fall benchmark from each grade. In order to find scores that are not only statistically significant, but practically advantageous, the treatment group must have significantly higher reading gains (DORF) than their counterparts in the control group. It is generally considered difficult for an intervention to produce this type of reading gain at a statistically significant level (Gersten & Dimino, 2006; Wilson et al., 2007). To ensure the most rigorous cut score to determine the relative shift in group results, we used the mean DIBELS score at each grade level from the fall benchmark to serve as the position from which we could determine reading gains. In order to illustrate significant reading gains over an academic year for the treatment group relative to the control group. The treatment group which had similar pretest scores, must have significantly higher gains than the control group of students who had similar pretest scores. The results suggest that the DIBELS posttest scores for the treatment group increased at a higher rate than for the control group during the academic year.

2nd Grade Results

Figure 1. 2nd Grade DORF Effects.



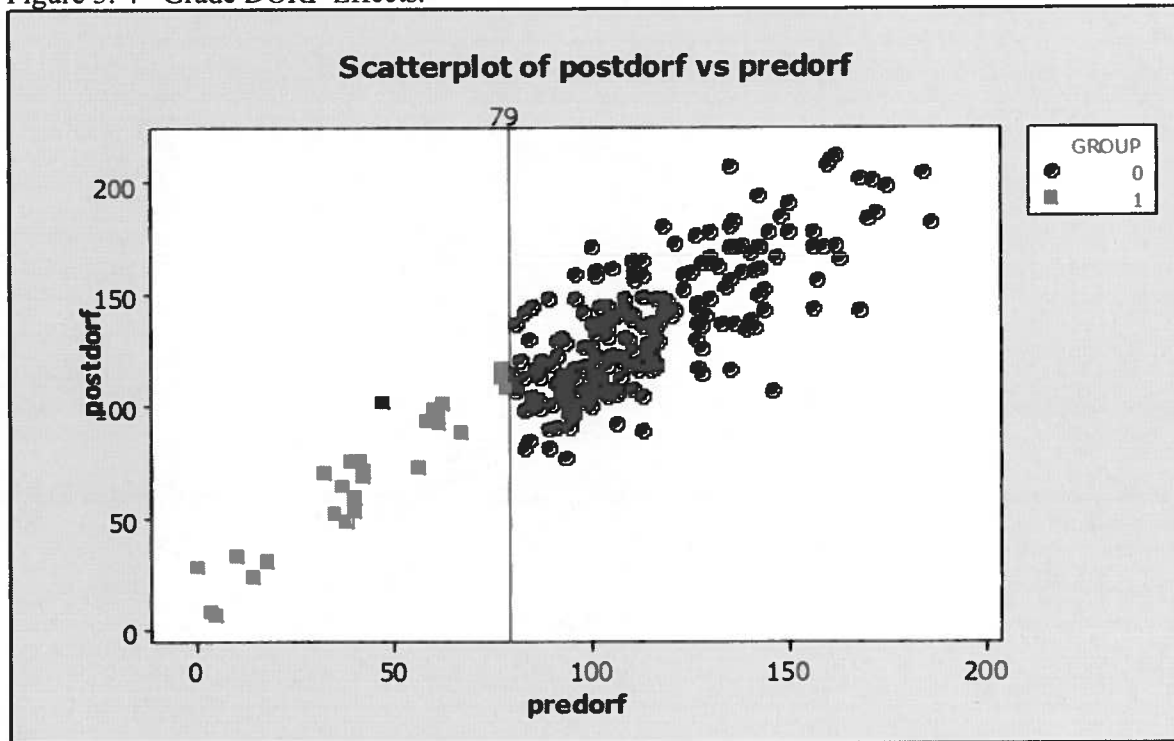
For students in the 2nd grade treatment group, fall-to-spring reading gains on the DORF increased at a statistically significant rate than those scores of the control group ($T= 7.55, p < .00^{**}$). As shown in the scatterplot (Figure 1) the regression line is significantly different in position on the x-axis and in slope to the line for the control group.

3rd Grade ResultsFigure 2. 3rd Grade DORF Effects.

For students in the 3rd grade treatment group, fall-to-spring reading gains on the DORF as evidenced by the posttest DORF scores increased at a statistically significant rate than those scores of the control group ($T= 4.20, p < .00^{**}$). As shown in the scatterplot (Figure 2) the regression line is significantly different on the x-axis and in slope to the line for the control group.

4th Grade Results

Figure 3. 4th Grade DORF Effects.



For students in the 4th grade treatment group, fall-to-spring reading gains on the DORF as evidenced by the posttest DORF scores increased at a statistically significant rate than those scores of the control group ($T= 2.25, p < .03^*$). As shown in the scatterplot (Figure 3) the regression line is significantly different on the x-axis and in slope to the line for the higher responder group. It is important to note that the analysis of the participants in 4th grade revealed the lowest differences in the gain scores, although they were still statistically significant.

Discussion

This evaluation reports the response to the PM reading intervention program of students with SLD in reading who were below benchmark in their respective grade level reading screening scores at the beginning of the academic year. Using a regression discontinuity design the research team evaluated the performance at the end of the academic year of students with SLD who received the same core reading instruction in the classroom and special education services, but differed in only the delivery of an experimental intervention, PM.

When comparing the ORF scores for each grade, all grade levels reported statistically significant growth in overall reading proficiency when compared to students who did not receive the PM intervention. Students in the treatment group reported the largest growth in second grade and students in the treatment group in fourth grade reported the lowest growth rate, while all were statistically significant. This effect can be best seen in the scatterplots presented. In each grade-level scatterplot presented reveal a larger shift or discontinuity when plotted along the control group of students who did not participate in the intervention. The group comparisons suggest that for each grade, students in the treatment group in reading made significant progress in their reading proficiency during the academic year over their control group peers who did not receive the PM intervention.

These comparison results may suggest important outcomes for students with reading disabilities who receive supplemental volunteer tutoring in reading during their instructional day in addition to core + special education instruction. These students who are most in need of support in reading development as evidenced by their identification as having a SLD in reading showed significant progress after an academic year program of supplemental reading instruction provided by trained volunteer tutors. This may suggest that the delivery of supplemental instruction can be provided by trained volunteers who may not be professional intervention specialists. An interesting question that may be a result of this evaluation can be, would the format and delivery of the PM intervention by volunteer tutors constitute a special education, and could the PM intervention be as effective if given in small group instruction versus one-on-one delivery?

Implications for Practice

One practical implication emerging from this study is the need for schools and communities to emphasize the potential benefits of utilizing a trained cadre of volunteer tutors within their schools. This would assist educators and administrators emphasize educational partnerships and cooperative associations with the community at-large that could invigorate community involvement in their local schools. Another implication for practice lies in the notion of supplemental reading programs that do not take the place of core instruction or special education services can serve to support those services, this is extremely timely as populations of students with disabilities continues to grow, and the ability for all educators to support those students in effective and sustained one-one instruction becomes more difficult. While the results

of this present study represent the outcomes for students with SLD in reading, the notion of one-on-one volunteer tutoring could help students who struggle, yet are not identified, and can be seen as helpful for all students who may need extra help learning new concepts.

Limitations

There are some limitations that are present in this evaluation. Our student participants were selected from several school districts, but there was limited diversity in the population and there was limited availability of urban students. We were able to utilize both benchmark and growth data to differentiate the groups, but we did not have the benefit of developing a random-control experimental design study that is optimal for intervention evaluation. To counter this significant limitation we did utilize regression discontinuity design that the literature suggests is robust in analyzing data without the requirement of random assignment of treatment and control groups (Gersten & Dimino, 2006; Trochim, 2007; Vaughn et al, 2009). Future examination using the standard criteria of experimental design while examining the PM intervention effects for students with SLD in reading and students who struggle with reading development who do not present with SLD could benefit all students in reading development.

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