Insights into Learning Disabilities 15(2), 195-205, 2018

Evaluation of Intensive Reading Strategies Intervention for Low-Performing Adolescents With and Without Learning Disabilities

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National Assessment of Educational Progress (NAEP) data have indicated that many secondary students lack sufficient literacy skills, and that students who receive free/reduced lunch, students from rural settings, and students with disabilities are particularly low-performing (National Center for Education Statistics, 2015). Despite some encouraging progress in validating instructional practices to address the literacy weaknesses of younger children, many adolescents continue to fail to master reading competencies necessary to successfully respond to the demands of secondary schools, succeed in post-secondary educational settings, or compete for meaningful jobs in the workplace (Faggella-Luby & Deshler, 2008; Hock & Deshler, 2003; NAEP, 2015). Therefore, at-risk secondary students require comprehensive interventions to attend to literacy needs and keep them in school. This paper details the evaluation of an intensive reading strategies intervention to address the needs of low-performing adolescents with and without learning disabilities in three districts in one state. Specifically, this report describes the evaluation of one year of outcomes for students participating in Xtreme Reading classes, including significant results with regard to gains in reading performance.

Recent NAEP data suggest that many secondary school students perform poorly on literacy tasks (National Center for Education Statistics, 2015). Furthermore, the literacy proficiency scores of students who receive free/reduced lunch are lower than those of students who are not eligible for free or reduced lunch. Additionally, students in rural settings score lower than those in suburban settings. For some struggling students, in fact, school performance actually appears to plateau in middle school, while the demands of school continue to increase or even escalate throughout high school, resulting in a growing performance gap (Hock, Brasseur, Deshler, Catts, Marquis, Mark, & Stribling, 2009). Given data such as these, it is little wonder that students with low performance are at significant risk for dropping out of school (e.g., Hammond, Smink, & Drew, 2007). Understandably then, the challenge of adolescent literacy is gaining increased attention in the media, research literature, as well as a variety of

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political venues (e.g., Alliance for Excellent Education, 2016; Hock & Deshler, 2003; Solis, Miciak, Vaughn & Fletcher, 2014).

Addressing the Needs of Adolescents with Learning Disabilities

In the face of such a challenge, secondary school students, including students with learning disabilities, require access to comprehensive, research-based interventions to meet the increasing literacy demands of schools. To address the academic needs of low-performing students, educators must provide specialized services and use research-proven techniques. A significant research base already exists to inform such services and practices. For example, John Hattie's (2009) seminal study of over 800 meta-analyses, *Visible Learning*, concluded that direct insturction and meta-cognitive strategy instruction, as well as key instructional elements of both forms of instruction (i.e., feedback), have moderate and high effect sizes for students with and without disabilities. Indeed, the positive results of direct instruction and strategies instruction were originally validated in meta-analyses conducted by Swanson and colleagues (Swanson, 1999a; Swanson, 1999b; Swanson, Carson & Sachse-Lee, 1996; Swanson & Hoskyn, 1998; Swanson, Hoskyn & Lee, 1999). Researchers examined intervention research from 1963 to 1997 to determine which instructional approaches produced the highest effects for students with learning disabiliteis (LD). Swanson et al. (1996) identified direct instruction (d = .91) and cognitive strategies instruction (d = 1.07) as the instructional approaches that produced the highest effect sizes for children with LD. These effect sizes were higher than for any other instructional approach. In short, empirical evidence has underscored the value of direct instruction and strategies instruction to meet the needs of low performing students, including students with learning disabilities. Moreover, research has suggested that teaching specific evidence-based strategies can improve the performance of all students, particularly at-risk students, and an IES report (Dynarski, Clarke, Cobb, Finn, Rumberger, & Smink, 2008) suggested that such interventions have significant probability of preventing dropouts.

Xtreme Reading

Based on nearly four decades of research and development, learning strategies from the *Strategic Instruction Model* have been validated to teach specific reading, remembering, and writing strategies (as well as other strategies) to students with learning disabilities and other low-performing adolescents (e.g., Schumaker & Deshler, 2010). Further, *Xtreme Reading* was developed as a comprehensive Tier 2 intervention comprised of eight foundational reading and motivation strategies from the *Strategic Instruction Model* to be delivered in a single school year. These strategies include the Word Identification Strategy (Lenz & Hughes, 1990) and the Word Mapping Strategy (Harris, Schumaker, & Deshler, 2008) that are used by students to decode multisyllabic words and determine their meanings. Students also learn reading comprehension strategies, including

the Self-Questioning Strategy to ask themselves questions and motivate themselves to keep reading (Schumaker, Deshler, Nolan, & Alley, 1994), the Paraphrasing Strategy to find and paraphrase the main ideas and details in reading passages (Schumaker, Deshler, & Denton, 1984), and the Inference Strategy to enhance inferential understanding of reading passages (Fritschmann, Deshler & Schumaker, 2007).

Xtreme Reading is a spiral curriculum that deploys explicit instruction of each strategy, including guided practice, meaningful feedback, and independent practice in generalizing and combining strategies within and outside school for small groups of students. Explicit instruction plays a critical role in helping all students develop the literacy skills and strategies they need to comprehend text or write at the level required in high school and beyond (Bulgren, Deshler, & Lenz, 2007; Deshler, Palincsar, Biancarosa, & Nair, 2007; Dimino, 2007; Lenz, Ehren, & Deshler, 2007).

Xtreme Reading is intended for students who exhibit poor reading fluency, small sight vocabularies, limited understanding of words and multiple word meanings, limited background and conceptual knowledge, and few skills in using strategies that enhance understanding and remembering of oral and written language. The objective of *Xtreme Reading* is to empower adolescent learners to reach academic goals and to teach them the strategies, habits of learning, and knowledge regarding reading and literacy that are required to thrive in the 21st century. *Xtreme Reading* was recently validated as a reading intervention based on *What Works Clearinghouse* (WWC) protocols (Boulay, Goodson, Frye, Blocklin, & Price, 2015). In two studies funded by *Striving Readers* grants and reviewed by WWC, one showed statistically significant positive effects on reading achievement of adolescents, and one found no effects.

The purpose of this program evaluation was to evaluate the effects of *Xtreme Reading* on the reading performance of a sample of struggling middle school students with and without disabilities. The primary question addressed was: Does *Xtreme Reading* affect the reading performance of struggling middle school students with and without learning or other disabilities?

Methods

This evaluation took place in three school districts in one state in the Southeastern US. The districts were awarded state support to implement *Xtreme Reading*, and ranged in type from rural to urban, spanning the state from the east to the west. Like many other districts, each one had discovered that given the literacy demands of secondary schools, current dropout rates among adolescents, and the challenges faced by content area teachers and administrators to meet the criteria set by federal and state legislation, there were few research-based options at the secondary level. Therefore, district leaders began to search

for literacy interventions for secondary schools that would not be just another "pull out" program, but one that would be an integral part of a schoolwide focus on literacy. In addition, state and district leaders were specifically interested in whether *Xtreme Reading* classes would affect the reading performance of students with disabilities.

Student Participants

This evaluation included data from 237 students, including 52 sixth graders (21.9%), 95 seventh graders (40.1%), and 90 eighth graders (38.0%). There were 173 students without disabilities (73%) who participated in an *Xtreme Reading* class and 64 (27%) students with disabilities. By far, the largest number of district-identified students with disabilities that participated in a class included students with learning disabilities (n = 40/16.9%). Other school-identified students with disabilities included those with behavioral and emotional disabilities (n = 5/2.1%), other health impairments (including ADHD) (n = 13/5.5%), speech/language disabilities (n = 1/0.4%), hearing impairments (n = 1/0.4%), autism spectrum disorder (n = 3/1.3%), and traumatic brain injury (n=1/0.4%). There were 112 females (47.3%) and 125 males (52.7%).

Reading Intervention Procedures

At each participating school, a daily class was created for target students who were several years behind their peers in reading performance, and at risk for continued failure and dropout. Seven teachers participated in *Xtreme Reading* professional development activities and received all necessary instructional and student materials. Teachers taught the *Xtreme Reading* class during regularly scheduled school hours on each school campus. Fidelity to instructional implementation was addressed by rigorous professional development, in-class instructional coaching by professional developers, and regularly scheduled principal walk throughs. Five teachers from the participating seven schools contributed student data, and data from each of the five teachers were judged as valid for the analysis.

Data Sources

In the *Xtreme Reading* classes, two standardized reading tests were group-administered as pre and posttests to measure reading performance growth in students over a school year: the Group Reading Assessment and Diagnostic Evaluation (GRADE) (Williams, 2001) and the Test of Silent Contextual Reading Fluency (TOSCRF-2) (Hammill, Wiederholt & Allen, 2014). The tests were selected because they were standardized, and could be administered to students in groups rather than individually in a brief amount of time so as not to negatively impact instructional time. Both measure dimensions of developmentally appropriate reading activity for students. The subtests for the GRADE include measures of Listening Comprehension, Vocabulary, and Sentence and Passage Comprehension. The GRADE also produces a total raw score that was first

included in the analysis so as to maintain construct validity. The TOSCRF-2 is a measure of reading comprehension and general reading fluency. The test produces a single raw score that was used in the analysis so as to maintain construct validity.

Student data were included for analysis when a pretest *and* a posttest score were reported for either or both the GRADE and TOSCRF-2. Thus, data from two hundred thirty-seven students met the criteria for analysis (n=237). To ensure anonymity of results, numbers replaced the names of students during the analysis.

Data Analysis

Evaluators compared student performance at two points in the school year, before and after participation in *Xtreme Reading* classes. That is, students were compared to themselves to calculate growth between pre and post performance. The performance of students participating in *Xtreme Reading* classes was *not* compared to the performance of another group of students who did not participate in *Xtreme Reading* classes. Raw scores were calculated by scoring individual student pre and posttest protocols according to test guidelines and used in inferential analyses using Statistical Package for the Social Sciences (SPSS).

A Paired-Samples t-test was conducted to examine the difference in means between pretest and posttest total raw scores from the GRADE and the TOSCRF.

A Paired-Samples t-test was conducted to examine the difference in means between pretest and posttest raw scores from the GRADE Listening Comprehension, Vocabulary, and Sentence and Passage Comprehension *subtests*.

A split file Paired-Samples t-test was conducted to examine the difference in means between pretest and posttest total raw scores from the GRADE and TOSCRF, for students with disabilities only. Analyses were conducted only when the number of students in any subgroup was greater than one.

Means and standard deviations were computed for pretest and posttest raw scores on the GRADE and TOSCRF for all students, by district, by school, and by teacher. The raw score means were then converted to Grade Level Equivalents (GEs) as per tables included in the test administration manuals and pretest to posttest differences were computed. The GE differences were then displayed in Microsoft Excel bar graphs.

Results

The following are reading performance results for students who participated in Xtreme Reading classes for one year. Results are organized by total raw score outcomes for the entire student sample group, outcomes on GRADE subtests, outcomes for students with LD and other disabilities, and then descriptive results by school and teacher.

Entire Student Group

For the entire group of students, there was a significant difference between the mean total raw scores on the GRADE pretest (M= 37.39, SD=8.02) and posttest (M=47.40, SD=9.58); t(203)=16.47, p=.000. The effect size was 1.13 (Cohen's d), a large effect size. There was a statistically significant difference between the mean raw scores on the TOSCRF pretest (M= 76.05, SD=23.47) and posttest (M=103.87, SD=24.90); t(205)=19.30, p=.000. The effect size was 1.15 (Cohen's d), a large effect size.

GRADE Subtests

There was a statistically significant difference between the mean raw scores on the GRADE combined *Sentence Completion* and *Passage Comprehension* pretest (M= 23.78, SD=5.76) and posttest (M=30.67, SD=7.19); *t*(203)=13.70, *p*=.000. The effect size was 1.06 (Cohen's d), a large effect size. There was a statistically significant difference between the mean raw scores on the GRADE *Vocabulary* pretest (M= 13.78, SD=3.89) and posttest (M=16.81, SD=4.36); *t*(203)=8.97, *p*=.000. The effect size was .73 (Cohen's d), a medium effect size.

Students with LD and Others with Disabilities

For *students with LD*, there was a statistically significant difference between the mean raw scores on the GRADE pretest (M= 34.62, SD=9.29) and posttest (M= 44.41, SD=9.77); t(36)=6.97, p=.000. The effect size was 1.02 (Cohen's d), a large effect size. There was a statistically significant difference between the mean raw scores on the TOSCRF pretest (M= 68.92, SD=19.82) and posttest (M= 96.00, SD=25.23); *t*(35)=8.31, *p*=.000. The effect size was 1.19 (Cohen's d), a large effect size.

For *students with OHI (including those with ADHD)*, there was a statistically significant difference between the mean raw scores on the GRADE pretest (M= 36.73, SD=9.70) and posttest (M= 47.55, SD=11.21); t(10)=3.73, p=.004. The effect size was 1.03 (Cohen's d), a large effect size. There was a statistically significant difference between the mean raw scores on the TOSCRF pretest (M= 60.09, SD=8.98) and posttest (M= 81.18, SD=23.06); *t*(10)=3.04, *p*=.013. The effect size was 1.21 (Cohen's d), a large effect size.

There were no statistically significant differences in performance on the GRADE or TORSCF for students with Behavioral and Emotional Disabilities, nor for students with Autism Spectrum Disorder.

Descriptive Results by School and by Teacher

In terms of reading performance gains by Grade Equivalencies (GE), the mean gain for all students on the GRADE was 1.6 GE in less than one school year, and the mean gain on the TOSCRF was 2.7 GE in less than one year. *By school*, the variance on the GRADE ranged from 1.2 to 2.2 GE gain. On the TOSCRF, the variance ranged from 2.0 to 3.3 GE gain. *By teacher*, the variance on the GRADE ranged from 1.1 to 2.5 GE gain. On the TOSCRF, the

variance ranged 2.0 to 3.2 GE gain. Because data were reported only from one district, graphs are displayed by school and by teacher. See Figures 1 and 2.

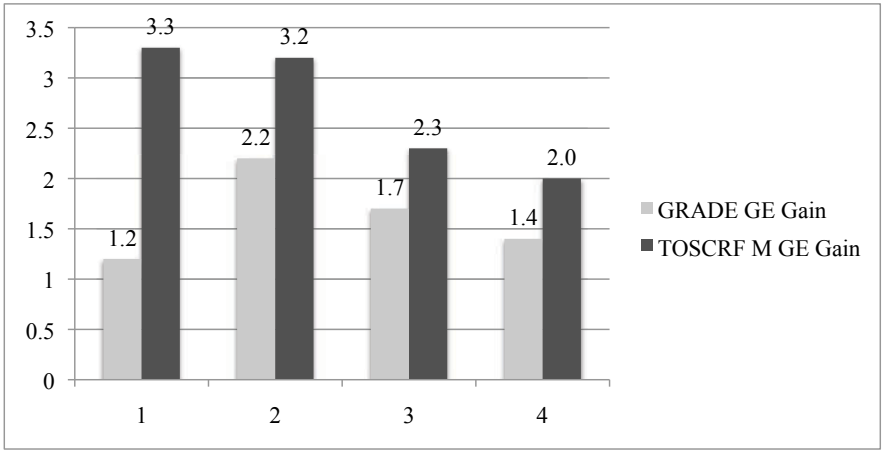

Figure 1. **Mean Grade Level Equivalent (GE) Gain Scores by School**

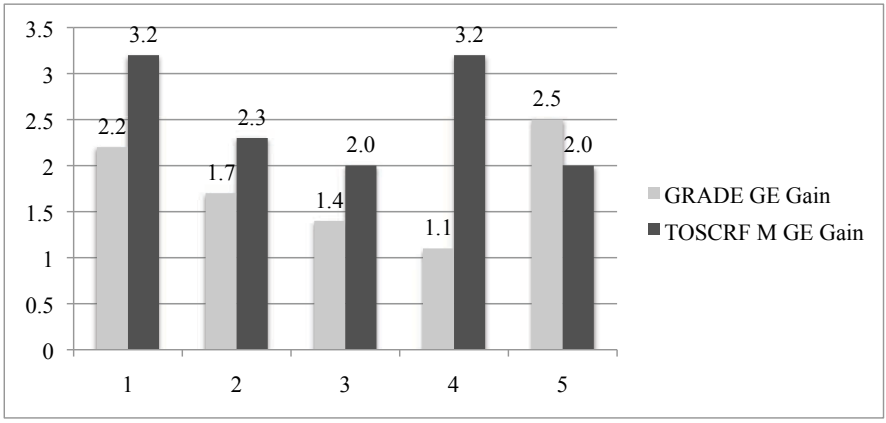

Figure 2. **Mean Grade Level Equivalent (GE) Gain Scores by Teacher**

Discussion

As a whole, students who participated in *Xtreme Reading* classes produced gains in reading performance, as measured by the Group Reading Assessment and Diagnostic Evaluation (GRADE) and the Test of Silent Contextual

Reading Fluency (TOSCRF). That is, given the difference in means and effect sizes, results suggest that after students participated in *Xtreme Reading* classes, they performed better on tasks that required vocabulary knowledge and reading comprehension as measured by the GRADE and reading fluency tasks as measured by the TOSCRF. Moreover, given the statistical difference in pre to posttest means, results suggest that students closed the gap between expected reading performance and actual reading performance, which is no small accomplishment for any low-performing secondary student.

Given the difference in means and effect size, the results of this evaluation also suggest that after this small sample of students with LD and OHI participated in *Xtreme Reading* classes, they performed better on the GRADE posttest than on the pretest, and better on the TOSCRF posttest than on the pretest. These results suggest that the reading performance of students with LD and OHI (including ADHD) improved after participating in *Xtreme Reading* classes.

Notes and Limitations

Across teachers, an average of approximately 8.5 months elapsed between the pretest and the posttest of the GRADE and the TOSCRF. Within class differences in pre to post testing time were small, with the exception of one teacher where there was more than 2.5 months difference between pre and post testing for the GRADE and pre/post testing for the TOSCRF. In other words, there was far more instructional time available to students in one teacher's class before they completed the GRADE than before they completed the TOSCRF. This may have negatively affected TOSCRF scores for that one teacher.

It is not clear whether teachers continuously taught *Xtreme Reading* on a daily basis during the period of time between pretests and posttests. Data regarding the frequency of instruction (i.e., daily, every other day) and the intensity of instruction (i.e., number of minutes per instructional session) were not tallied that would allow for a detailed assessment of fidelity to instruction. However, based on antidotal observations by principals and professional developers as well as teacher self-reports, teachers taught *Xtreme Reading* strategies four or five days per school week for approximately 45 minutes per day.

Implications for Practice

As noted earlier, data from the National Assessment of Educational Progress have indicated that many secondary students lack sufficient literacy skills, and students who receive free/reduced lunch, students from rural settings, and students with disabilities are particularly low performing (National Center for Education Statistics, 2015). Given that full-time employed individuals without a high school credential are likely to earn just $23,900 per year as opposed to $30,000 per year for peers with a high school credential (US Department of Education, National Center for Education Statistics, 2015), it is critical that at-

risk secondary school students receive comprehensive, research-based interventions that attend to existing literacy needs and keep them in school.

Furthermore, as students progress from elementary grades to secondary grades, they face greater academic demands. For students who haven't acquired the requisite academic skills, the demands of mastering content often result in failure. Academic interventions such as *Xtreme Reading*, whether for students with or without disabilities, require specialized, intensive, often individualized attention that translate to a significant investment of school time and monetary capital, sometimes even more than is anticipated (Hock, et al, 2009; Mastropieri, Scruggs & Graetz, 2003). That said, as Fuchs, Fuchs, and Vaughn (2014) insisted, "the cost of *not* providing intensive interventions (i.e., students exiting schools without the necessary skills to succeed) is more expensive" (p. 15).

Results from this evaluation, therefore, suggest that *Xtreme Reading* has promise for at-risk adolescent students, including students with learning disabilities, particularly given that one goal of *Xtreme Reading* is to close the reading performance gap for low-performing readers. This conclusion is consistent with promising practice outcomes of *Xtreme Reading* recently recognized by the *What Works Clearinghouse* (Boulay, Goodson, Frye, Blocklin, & Price, 2015).

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