Education and Training in Developmental Disabilities

Effect of Tutoring on Reading Achievement for Students with Cognitive Disabilities, Specific Learning Disabilities, and Students Receiving Title I Services

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Abstract: This empirical study investigated the effects of tutoring on the reading achievement of elementary students with cognitive disabilities and specific learning disabilities as well as students receiving Title I reading programs in Project MORE (Mentoring in Ohio for Reading Excellence). This school-based action research highlights volunteer tutors, early reading instruction, reading interventions, and one-to-one instruction. Students were pre and posttested on both informal and standardized measures of reading performance. Intervention students were matched and compared to control students in similar school districts. The results demonstrated significant positive effects for the intervention. Generally, intervention students had month-for-month gains and outperformed comparison students in reading over the six month period.

Reading First has identified a current national priority as teaching an increasingly diverse population of children to read (Hitchcock, Prater, & Dowrick, 2004). It is no secret that students who read below grade level face many challenges in school. According to Morris, Tyner, and Perney (2000), this is because reading provides access to much of what is considered important in the school curriculum across a variety of subject areas. Students who fall behind during the early years of elementary school have an extremely difficult time closing the reading achievement gap in later grades (Morris et al.). In addition, El-baum, Vaughn, Hughes, and Moody (2000) state that students who fail to acquire basic reading skills during early grades are at risk not only for school failure, but also for "negative outcomes beyond the school years" (p. 605). The importance of reading intervention in these early years of formal education is emphasized by Hecht and Greenfield (2001) who note that few changes in individual reading skills occur after the third grade. Additionally, poor academic outcomes, increased problem behaviors, higher probability of dropping out of school, limited employment opportunities, and a higher likelihood of living in poverty are all more likely to result following failure to acquire literacy skills in the early elementary grades (Hitchcock et al.). Though the importance of reading intervention and remediation is clear, the empirical literature, unfortunately, does not readily agree on one best program. Still, several themes stand out: supplemental instruction, such as one-on-one peer tutoring, to support general education reading instruction, individualized interventions based on student needs, diagnostic and prescriptive teaching, and progress monitoring.

Elbaum et al. (2000) found one-to-one instruction as a supplement to classroom teaching to be "the most effective way of increasing students' achievement" (p. 605) and noted that it has been "validated by empirical research, especially for students who are considered at risk for school failure or have been identified as having reading or learning disabilities" (p. 605). The only significant period of oral reading practice and intensive phonics instruction for at-risk students may be through supplementary tutoring (Vadasy, Sanders, & Peyton, 2005). One-on-one tutoring has been reported to be one of the best methods for working with students who are at risk, with specific and statistically significant student gains in reading resulting from supplemental instruction (Caserta-Henry, 1996; Elbaum et al.; Hayden, 1995; Hecht & Greenfield, 2001; Hedrick & Pearish, 1999; Invernizzi, Juel, & Rosemary, 1996; Jordan, Snow, & Porche, 2000; Morris et al., 2000; Pikulski, 1994; Saenz & Fuchs, 2002; Stage & Jacobsen, 2001; Tancock, 1994). Research shows that, for many struggling readers, expert, individual tutoring produces on-level reading achievement (Allington, 2004). A key element of successful one-on-one tutoring is tailoring lessons to meet individual student needs (Otaiba & Pappamihiel, 2005; Hayden; Invernizzi et al.; Morris et al.; Tancock).

The research literature also supports using a comprehensive instructional design, which undergirds the classroom teacher by supplementing direct instruction, and uses psychometric assessment or other diagnostic measurements to determine needs, eligibility, and progress. Leal, Johanson, Toth, and Huang (2004) state that "tutoring is most effective when five specific factors are the foundation for tutoring: one-on-one tutoring, supervision by certified reading specialists, intensive instruction, programs that are assessment based, and regular reflective evaluation on the part of the tutor" (p. 76). Many researchers advocate implementing a mentoring system that supports, but does not supplant or supersede, the reading instruction given by the general education teacher and that is assessed and monitored for efficacy (Otaiba & Pappamihiel, 2005; Caserta-Henry, 1996; Elbaum et al., 2000; Hayden, 1995; Hecht & Greenfield, 2001; Hedrick & Pearish, 1999; Invernizzi et

al., 1996; Jordan et al., 2000; Morris et al., 2000; Pikulski, 1994; Saenz & Fuchs, 2002; Stage & Jacobsen, 2001; Tancock, 1994).

Project MORE

Project MORE implemented two individualized reading interventions: HOSTS (Help One Student To Succeed) program and the Reading-Tutors program as its reading interventions. The HOSTS and Reading-Tutors programs employ the best practice themes described above: one-on-one mentoring, individualization, diagnostic measurement to determine students' needs, and a comprehensive design to enable low-achieving students to improve reading and problem solving skills. The goals of the HOSTS and Reading-Tutors programs are to: (1) improve academic achievement in reading, (2) build student problem solving skills, and (3) improve student behavior, attitudes and self-esteem. The specific purpose of this study was to investigate the effect on the reading achievement of students with reading disabilities of the HOSTS and Reading-Tutors programs during one school year.

Method

Participants

Forty-three elementary schools across Northwest Ohio participated in Project MORE for the present study. The majority were small town or rural schools. Generally, the schools were rated as "Effective" on the State of Ohio Report Card and the total cost to educate one student at the Project MORE schools averaged $8,069. Of the schools that reported data, seventy-eight percent of students in the schools served by Project MORE were Caucasian, seven percent Hispanic, eight percent African-American, five percent Multi-racial, and two percent Asian-American. On average, 15% of the population at Project MORE schools was students with disabilities. Forty-five percent of Project MORE students were receiving Free or Reduced Lunch.

Schools within the comparison group were matched to Project MORE schools based on Ohio Similar Districts Software. There were 21 comparison schools utilized in the study

across Northwest Ohio. These schools had a variety of core curricula, but did not provide reading one-to-one tutoring. The comparison schools were also small town or rural schools. Generally, the schools were rated as "Effective" on the State of Ohio Report Card. The average cost per student at comparison schools was $8,198. Seventy-seven percent of students in the comparison schools were Caucasian, seven percent Hispanic, three percent African-American, six percent Multi-racial, and seven percent Asian-American. On average, 15% of the comparison schools' populations were students with disabilities.

A total of 63 Project MORE 2nd grade students and 27 2nd grade comparison students with specific learning disabilities participated in the study. At the pretest, the average age (and age range) for Project MORE students with SLD was eight years, 6 months (seven years and four months to nine years and one month), students with CD was eight years, 6 months (eight years and two months to nine years and three months), and students in Title I was seven years, 5 months (seven years and two months to eight years and 11 months). At the pretest, the average age (and age ranges) for comparison students with SLD was eight years, 6 months (seven years and five months to nine years and two months), students with CD was eight years, 5 months (eight years and four months to nine years and one month), and students in Title I was seven years, 5 months (seven years and four months to eight years and 11 months). All Project MORE and comparison students with SLD demonstrated achievement not commensurate with his or her age and ability levels or the IEP team found that a student evinced a severe discrepancy between achievement and intellectual ability in one or more of the following areas: oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematics calculation, or mathematics reasoning. The severe discrepancy between ability and achievement was not primarily the result of a visual, hearing or motor impairment; mental retardation; emotional disturbance; or environmental, cultural, or economic disadvantage. A total of 31 Project MORE 2nd grade students and 22 2nd grade comparison students with cognitive disabilities participated in the study. All Project MORE and comparison students with CD demonstrated significantly subaverage general intellectual functioning (i.e., IQ of 70 or below), existing concurrently with two or more deficits in adaptive behavior manifested during the developmental period, that adversely affected each student's educational performance. A total of 86 Project MORE 2nd grade students and 130 comparison 2nd grade students who were receiving Title I services participated in the study. All Project MORE and comparison students served by Title I scored within the lowest one-third percentage of students who, according to assessments, are identified as having the greatest need for special assistance in reading.

Intervention

The objective of the HOSTS and Reading-Tutors tutoring programs is not to replace general education instruction in reading, but rather to supplement it. The programs deliver structured mentoring to a child who is identified as a struggling reader. In order to be cost effective, mentors are volunteers solicited from the community by the school. Mentors can be high school students, retirees, college students, professionals, laborers, parents, essentially anyone who the participating school can recruit, train, and commit to the tutoring program. Use of such individuals as mentors with training and assistance from teachers is widely supported in the professional literature (Otaiba & Pappamihiel, 2005; Caserta-Henry, 1996; Elbaum et al., 2000; Hayden, 1995; Invernizzi et al., 1996; Morris et al., 2000; Wasik, 1998).

Project MORE provided the overall structure to deliver the HOSTS and Reading-Tutors interventions. There is a one-to-one mentor-to-student ratio for Project MORE students during tutoring sessions. Mentors attended a two-hour training prior to mentoring and received feedback and guidance from the program coordinator on a regular basis. All Project MORE students were pretested to identify instructional reading level and skill deficits. Once a child's reading level and deficit areas were determined, a reading prescription was created. This prescription became the framework for the mentoring lesson plans.

Tutoring records, including progress-moni-

toring graphs, and end of the year post testing results were completed and distributed for Project MORE students. Mentoring time was primarily supplemental to reading instruction in general and/or special education classes. The coordinator developed lesson plans and the mentors delivered individualized instruction.

Students and mentors met in one-to-one tutoring sessions three to four days per week. A student may have had as many as four different mentors in the course of a week, but generally, mentors remained constant throughout the year except for college students. Each mentoring session lasted 30 minutes. Mentoring typically occurred in a classroom, but occasionally hallways were used. All lessons were structured in the same way and consisted of three instructional segments, described below. In addition to structuring lesson delivery, the lesson plan became a communication tool by which the mentor was guided through the lesson. Mentors provided the MORE Coordinator with feedback related to the student's level of attainment for the objectives covered.

HOSTS. The first ten minutes of the reading/language arts lessons consisted of guided reading instruction using an appropriately leveled reading book or basal reader. Next, the child and mentor worked for 10 minutes on spelling and vocabulary generated from classroom activities, which included word recognition (fluency and comprehension) and vocabulary development (meanings, structure, and relationships). The final ten minutes focused on specific skill development. The HOSTS Coordinator selected appropriate objectives from the student's prescription, and the mentor utilized a variety of resources, including high response instructional games, manipulatives, and kits or cards to promote specific skill building. Areas of reinforced practice included word analysis, vocabulary, comprehension, study skills, and writing.

Reading-Tutors. The Reading-Tutors program provides on-line instructional resources with research-based best practices for use in one-to-one tutorial sessions (Reading-Tutors. com, 2007). Specifically, they allow tutors to use developmentally appropriate resources for instruction and provide opportunities for repeated practice - an effective strategy recog-

nized by research. The Reading-Tutors website (Reading-Tutors.com) was developed specifically for Project MORE. This website is an immense repository of instructional materials developed for use in one-to-one tutoring. A companion website, Readinga-z.com (2007), contains 2,000 downloadable books for use by tutors and for students to take home to extend reading time. The Reading-Tutors website contains the following instructional components: 400 comprehensive lesson plans with teaching tips, instructional resource packets, formative and summative assessments, and tutor program resources covering lessons in alphabet, phonological awareness, phonics, high-frequency words, fluency, and comprehension. In addition, the site contains guidelines on building a tutoring program, recruiting volunteers, training and supervising volunteers, identifying students' needs, honoring mentors and tutees, and using the website. The assessment tools are patterned after DIBELS and other commonly used reading assessments. The 400 tutor packets are organized into six categories covering key areas of literacy development cited by the National Reading Panel. They include Alphabet Recognition, Phonological Awareness, Phonics, High-Frequency Word Recognition, Fluency, and Reading Comprehension. Each Reading-Tutors lesson structures the activities the volunteer tutor uses to build literacy in the various key literacy categories. The activities and resources are designed to align with and support classroom instruction (Reading-Tutors. com).

Dependent Measures

A team of trained graduate students traveled to each Project MORE and comparison school to administer pretests and posttests. Two standardized reading assessments, Dynamic Indicators of Basic Early Literacy Skills (DIBELS) and Woodcock-Johnson III Reading Achievement Battery, were utilized.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS). DIBELS Oral Reading Fluency (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. The number of correct words per minute was the oral reading fluency rate. Following DORF assessment, students' scores were categorized as "Low Risk," "Some Risk," or "At-Risk." Students in the At-Risk category qualified for Project MORE reading intervention. DORF test-retest reliability over the course of several days is .90 (DIBELS Technical Reports, 2003). The DORF is highly correlated ($r = .89$) with the Woodcock Johnson Reading Fluency among students with Specific Learning Disabilities (Wilson, Jones, Rychener, & Current, 2005). Finally, students' DORF performance is significantly correlated with Ohio's Fourth Grade Reading Proficiency Test (Vander Meer, Lentz, & Stollar, 2005).

Woodcock-Johnson (WJ) Reading Achievement Test III. Four subtests of the Reading Battery of the *Woodcock-Johnson III* were utilized as an individual standardized reading assessment (i.e., Letter-Word Identification, Reading Fluency, Passage Comprehension, and Word Attack). The Letter-Word Identification, Reading Fluency, and Passage Comprehension subtests are combined to form the Broad Reading cluster score, and the Letter-Word Identification and Word Attack subtests are combined to form the Basic Reading Skills cluster (Mather & Woodcock, 2001). The Broad Reading ($r = .97$) and Basic Reading Skills ($r = .95$) have excellent test-retest reliability. The WJ Reading Achievement Test III also has significant concurrent validity with the Kaufman Test of Educational Achievement (K-TEA) and the Wechsler Individual Achievement Test (Grew & Woodcock, 2001). The Woodcock Johnson is a widely used, well-supported research tool in special education, where individual administration, relevant subtest reports, and pre- and posttest comparisons are required.

Results

Project MORE pretest-posttest gains were examined with Related-Sample *t*-tests to examine reading gains for students receiving reading mentoring over a six-month period of time. Then, nine ANCOVAs were performed to examine the difference between the reading gains made by Project MORE students versus similar control group students that did not receive reading mentoring.

Pre and Posttest Scores of Project MORE Students

Project MORE students' pre- and posttest scores were compared to examine reading gains using Related Sample *t*-tests. Results were disaggregated by program (Reading-Tutors, HOSTS), grade level and disability status or Title I status. DORF and WJ III (Broad and Basic Grade Equivalent scores) were examined. There was approximately six months between pretest and posttest. For the DORF, the mean reading gain was 20 words-per-minute. Overall, both Reading-Tutors and HOSTS students had month-for-month reading gains for both WJ III Broad and Basic subscale. All gains were statistically significant.

Pre and Posttest Scores of Project MORE versus Comparison Schools

Project MORE students versus matched students at similar schools who did not receive one-to-one reading mentoring were compared using ANCOVAs to examine reading gains. The control variables were the students' pretest scores. The dependent variables were the posttest scores. Results were disaggregated by grade level and disability or Title I status. Because they were not statistically significantly different, students in both tutoring programs (HOSTS, Reading-Tutors) were combined. For both DIBELS and Woodcock Johnson assessments, standard score gains were examined. There was approximately six months between pretest and posttest. In all but one of the analyses, Project MORE students had higher standard score gains at the posttest. In one analysis, both groups had the same posttest standard score for the Basic Reading cluster. For DIBELS, Project MORE Oral Reading Fluency gains ranged from five to eight words-per-minute more than comparison students. Generally, Project MORE student's standard scores on most categories of the Woodcock-Johnson Reading Achievement ranged from one to seven points higher for both students with Specific Learning Disabilities and students receiving Title I services than comparison students. Project MORE students with Specific Learning Disabilities outperformed

TABLE 1

Posttest Means and ANCOVA Results for 2nd Grade Students with Specific Learning Disabilities

	Project MORE Posttest Mean	Comparison Posttest Mean	F	p
DIBELS Oral Reading Fluency	38	30	10.9	.01
Broad Reading (SS)	83	81	2.3	.13
Basic Reading (SS)	85	81	5.3	.02

Pretest score is Control Variable

comparison students at a statistically significant (.05) level on the DIBELS Oral Reading Fluency (DORF) assessment and in Basic Reading for the Woodcock-Johnson (See Table 1). Project MORE students with Cognitive Disabilities outperformed comparison students at a statistically significant (.05) level on the DORF assessment (see Table 2). Project MORE students who received Title I one-to-one reading tutoring in the 2nd grade outperformed comparison students at a statistically significant (.05) level on the DORF and Broad Reading and Basic Reading for the Woodcock-Johnson (see Table 3).

Discussion

Major Findings

There were three important results of this study. First, the reading achievement gains for the students who received the Project MORE intervention averaged more than one month gain for every month of intervention. This is

TABLE 2

Posttest Means and ANCOVA Results for 2nd Grade Students with Cognitive Disabilities

	Project MORE Posttest Mean	Comparison Posttest Mean	F	p
DIBELS Oral Reading Fluency	35	29	5.0	.03
Woodcock-Johnson III Reading				
Broad Reading (SS)	80	77	2.5	.12
Basic Reading (SS)	82	82	.1	.74

Pretest score is Control Variable

TABLE 3

Posttest Means and ANCOVA Results for 2nd Grade Students Receiving Title I Services

	Project MORE Posttest Mean	Comparison Posttest Mean	F	p
DIBELS Oral Reading Fluency	77	72	7.1	.01
Woodcock-Johnson III Reading				
Broad Reading (SS)	100	99	8.5	.00
Basic Reading (SS)	102	101	6.4	.01

Pretest score is Control Variable

quite important because students with Specific Learning Disabilities, students with Cognitive Disabilities, and students in Title I reading typically make achievement gains at a rate well below the average of their normally achieving peers. Second, in 6 out of the 9 group mean comparisons, Project MORE students statistically significantly outperformed comparison students. Thus, over 66% of comparisons favored Project MORE students to a significant degree. These findings were spread across both the fluency and standardized reading measures, for students with SLD, CD, and Title I students. Of particular interest was that all three Project MORE groups statistically significantly outperformed control students in Oral Reading Fluency. In addition to being statistically significant, the average difference between groups of nearly 5-8 more correct words read per minute by MORE students is educationally important. Third, in all but one comparison, Project MORE students out gained control students and in no case did control students outperform Project MORE students. Thus, not only did 66% of comparisons statistically significantly favor Project MORE students, but also in all but one of the remaining group comparisons Project MORE students outperformed, though not statistically significantly, comparison students.

Limitations

Results from this evaluation must be interpreted with caution due to several limitations. First, though comparison schools were matched with Project MORE schools using Ohio's Similar District Software, random assignment was not utilized. The realities of service delivery within and across school districts and the requirements of the Special Education IEP process prevented the evaluation from using an experimental design. Second, the study examined two similar one-to-one reading tutoring programs versus a comparison group that offered no one-to-one reading tutoring. There were no significant differences between the two reading tutoring programs, so they were combined as one group and match up to the comparison group. This creates an implementation threat to the internal validity of the study.

In spite of the above limitations, this study demonstrated that a cohesive remedial intervention that delivered the Reading-Tutors and HOSTS programs, one-to-one instruction with trained volunteer mentors, and scientifically-based instructional techniques, could statistically significantly increase the reading achievement of students with serious reading disabilities. Perhaps most important, Project MORE was conceived, administered, and delivered not in a clinic or university-based laboratory, but in typical school districts with all students who qualified for SLD, CD, and Title I services. Finally, the personnel involved in implementing Project MORE were the teachers, paraprofessionals, and administrators who provided day-to-day services in their home districts.

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