

The Effectiveness of SRA/McGraw-Hill *Corrective Reading* Program on Reading Fluency for Middle School Students Identified with Special Needs

By SKF Educational Services, LLC

Introduction

Recent educational mandates have underscored the need for increased achievement in reading. The No Child Left Behind (NCLB) Act of 2001, a federally-mandated law enacted in 2002, requires public schools to make “adequate yearly progress” (AYP) in their efforts to have all students in all schools achieve proficiency in reading by the 2013-14 school year. While many students will meet this goal, students with disabilities often struggle to achieve proficiency. The data for 2007 indicated that 2,563,665 US students age 6 through 21 were identified as learning disabled and received special education services under IDEIA, Part B, and most of these students struggled in reading (U.S. Department of Education Office of Special Programs, OMB#18200043).

Oral reading fluency is one reading component identified by reading specialists as critical for overall reading development and achievement (Schilling, Carlisle, Scott, & Zeng, 2007). Generally, oral reading fluency refers to the ability to read connected text smoothly, effortlessly, and with little focus on the mechanics of reading, such as decoding (Mather & Goldstein, 2001). Research has demonstrated that oral reading fluency has strong predictive validity for overall reading skill (Schilling, Carlisle, Scott, & Zeng, 2007) and for performance on standardized reading assessments (Shapiro, Solari, & Petscher, 2008; Hixson & McGlincey, 2004), yet many special needs students struggle in this area.

Purpose of Study

The purpose of this study was to investigate the effects of SRA/McGraw-Hill’s *Corrective Reading* on the reading fluency and achievement for a select group of middle school students identified with special needs. This study addresses two primary research questions:

1. What effect does the CR program have on the reading fluency of selected special needs students?
2. How does student participation in the CR intervention program affect the students’ performance on state-mandated assessments?

Research Design

Educators and researchers must seek practical and empirically robust tools to facilitate the determination of an intervention’s presence, stability, and durability of treatment effects. Single-subject designs, as employed in this case, allow educators to investigate the process of change for a *particular* child, not the *average* child. Unlike its correlational and descriptive cousins, single-subject design methodology is experimental; its purpose is to determine causal or functional relationships between variables (Horner, Carr, Halle, McGee, Odom, & Wolery,

2005). While there are many variants of single-subject designs, most involve only one participant or a small group of participants (3 to 8) in a single study; the dependent variables are typically observations of a target behavior; and the independent variable is a specified program or intervention procedure that is actively manipulated and carefully monitored throughout the investigation. An effect is demonstrated when the change in the target behavior covaries with manipulation of the intervention.

This study utilized a multiple baseline design. Generally, multiple baseline designs contain the following elements: (a) repeated measurement of the dependent variable across at least two baselines; (b) staggered introduction of treatment across baselines, and; (c) immediate observed effects of the intervention with no observable effects in conditions in which the intervention has not been implemented. In the multiple baseline across subjects design, the same intervention is 'staggered' over time, and the same behavior monitored throughout the intervention.

Sample

The middle school selected for this study is in a relatively low-income school district located in central Ohio. According to the 2000 census, the town's population is 13,500 and the median household income is about \$26,700. The city school district, with an average daily enrollment of 2,338 students, is predominantly Caucasian (94.3%) and considered economically disadvantaged (39.4%). The special education population approximates 16%, and is the highest of surrounding districts.

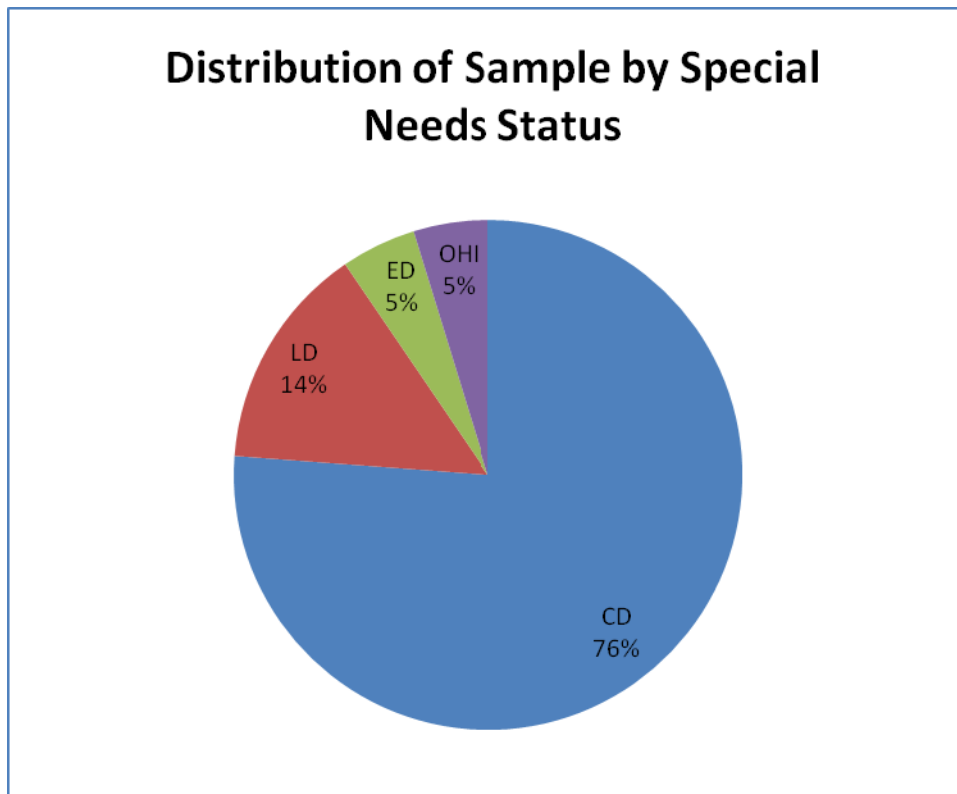
The district's subpopulation of middle school students with special needs was selected for the intervention program, as this particular group experienced a failure to meet AYP in reading and mathematics. According to the information provided on the Ohio Department of Education website, during the 2008 school year 62.5% of the district's middle school students with disabilities scored in the 'Limited' or 'Basic' range on the reading portion of the Ohio Achievement Test (OAT).

The original sample selected for this study included 25 middle school students ranging in grade from the 6th to the 8th grade. All students were identified with special needs early in elementary school and had a history of receiving special needs services, primarily in a resource room setting. The final sample available for analysis fell four short of the original sample. Shortly after program inception, one student was removed from the school and placed on home instruction. Two students moved out of the district in the middle of the year, and were thus excluded from the final analysis. One student was selectively excluded from the analysis based on poor attendance/frequent removals from class. The final sample yielded 21 students with complete data that was available for analysis. All students are economically similar and are on free/reduced lunch. An ethnic breakdown of the sample reveals 19 Caucasian students, 1 African American student, and 1 Hispanic student, and slightly more girls ($n = 13$) than boys ($n = 8$).

All students are eligible for special needs services, according to the state of Ohio's criteria for program eligibility. Figure 1 provides a distribution summary of student by special needs placement. Approximately 76% of students ($n = 16$) are identified as 'cognitively disabled' (CD) or having mild mental retardation, based on significant weaknesses in cognitive functioning and adaptive behavior skills. Roughly 14% of students ($n = 3$) are identified with a learning disability. One student is identified as Other Health Impaired (OHI), based on a diagnosis of

ADD or ADHD and associated learning difficulties. One student is identified as having an emotional disturbance (ED), meaning that the student's behavior significantly impedes learning. The mean IQ for this sample is 71, considered in the 'Low' or 'Borderline' range.

Figure 1. Distribution of Sample by Special Needs Status



All students participating in the *Corrective Reading* program demonstrated specific weaknesses in reading, and received their core reading instruction in a resource room setting. Prior to administration of the *Corrective Reading* program, students were placed into homogenous groupings based on their performance on the Decoding Placement Test. The Decoding Placement Test contains a series of reading passages of increasing length and complexity. Students place at a corresponding level of instruction according to their fluency and accuracy on the reading passages. For the group of students in this study, six students placed at a *Corrective Reading* level 'A', considered the lowest level in the program. Seven students placed at level 'B1', considered the next highest. The remaining eight students placed at a *Corrective Reading* level 'B2'. Program instruction occurred in the resource room setting, with roughly 5 to 8 students per grouping. Instruction was provided by an Ohio-certified teacher with special needs training and licensure and training in using the *Corrective Reading* program. The *Corrective Reading* program was implemented in September of 2009 and remained in place through May of 2010.

Procedure

Prior to implementing the *Corrective Reading* program, baseline assessments were conducted to determine student proficiency in reading fluency. The Oral Reading Fluency (ORF) subtest of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) 6th Edition was administered to all students to determine baseline levels. The DIBELS is a standardized, individually administered curriculum-based measure consisting of various short, one-minute reading assessments designed to evaluate a student's fluency on specific reading tasks (University of Oregon Center on Teaching and Learning). The reading fluency score is defined as the number of words read correctly within a one-minute time period. Substituted or omitted words are counted as errors, as are hesitations of more than three seconds. Words self-corrected within the three-second criteria are scored as accurate. The number of words read aloud minus the number of errors represents the Oral Reading Fluency score (University of Oregon Center on Teaching and Learning). Test-retest reliabilities for oral reading fluency on elementary students ranged from .92 to .97; alternate form reliability of different reading passages drawn from the same level ranged from .89 to .94 (Tindal, Marston, & Deno, 1983). Criterion-related validity studied in eight separate studies in the 1980's reported coefficients ranging from .52 to .91 (Good & Jefferson, 1998).

The DIBELS ORF probes range in difficulty and span the first through the sixth grade. For each grade level probe, there is a 'target range' of words per minute. Students performing below this target range are administered probes at that particular grade level for progress monitoring, and students performing above the target range are administered the next higher grade level probe for progress monitoring purposes.

To determine the appropriate grade level probe for conducting the baseline assessments and for progress monitoring throughout the intervention, students were administered grade level probes until their performance fell below the target range, indicating that they had not reached proficiency for that grade level, according to DIBELS criteria. Once the appropriate grade level was determined, students were administered three parallel forms of the ORF subtest to determine baseline levels. The median score on the three baseline administrations of the ORF subtest was recorded as the initial or baseline ORF score. Monthly progress monitoring assessments, using parallel forms of the DIBELS ORF, were administered to assess students' response over time to the *Corrective Reading* program. If a student was found to have scored at or above the 'target range' for that particular grade level probe, the next highest grade level probe would be administered for the next month's progress monitoring. All assessments were conducted by a school psychologist with eleven year's experience and independently licensed by the Ohio State Board of Psychology. The school psychologist had extensive training in intervention implementation and analysis of data.

Results

Results reflect the first year of instruction using the *Corrective Reading* program. The baseline measurement consists of the median score from three administrations of the ORF subtest of the DIBELS. Given the nature of student performance throughout the year, these results are divided into two sections. The first section details the performance of students who increased their reading fluency by one or more grade levels, according to guidelines provided for using the ORF subtest of the DIBELS. Since the grade level of ORF probe changed over the course of the year as student performance increased, the number of items correct cannot be directly compared across administrations. That is, 50 words per minute on a first-grade ORF probe cannot be compared in any quantitative way to 48 words per minute on a second grade fluency probe.

Table 1 lists students' reading fluency performance at baseline, according to the grade level ORF probe and the grade level of probe administered throughout the program implementation.

Table 1. Student Performance by Grade Level Probe

Student	Baseline	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
A	3	3	3	4	4	4	4	4	4
B	3	3	4	4	4	4	4	4	4
C	3	4	4	4	4	4	4	4	4
D	2	3	3	3	3	3	3	3	3
E	2	3	3	4	4	4	4	4	4
F	1	2	3	3	3	3	3	3	3
G	1	2	3	3	3	3	3	3	3
H	1	2	2	2	2	2	2	2	3
I	3	4	4	4	4	4	4	4	4
J	2	3	3	3	3	3	3	3	3

For example, on the baseline administration of the ORF probe, student 'A' performed above the target range on the second-grade ORF probe, but below the 'target range' on the third-grade ORF probe. Student 'A' was assessed using the third-grade ORF probe in October and November, until she scored above the 'target range' on the December progress monitoring assessment. At that time, Student 'A' was administered the fourth-grade probe for progress monitoring purposes, and remained at the fourth-grade level throughout the year. Results are interpreted in a similar fashion for Students B through J. Findings indicate that 48% (n = 10) of students included in the entire sample improved their reading fluency by at least one grade level after one year's instruction incorporating the *Corrective Reading* program.

The remaining 11 students utilized the same grade level of ORF probe throughout the year. Since the same grade level probe was administered each month, the number of words per minute can

be quantitatively compared across time. Figures 2 through 5 reveal the performance of these students from program inception to the end of the school year. For ease of interpretation, each graph contains the performance of a maximum of three students according to their assigned level of *Corrective Reading*. The first data point for each student represents the median score on the baseline assessments. The vertical line demarks the boundary between the baseline data, or pre-program performance, and the intervention data. Each data point to the left of the vertical line reflects the student’s performance on each subsequent progress monitoring assessment. The x-axis represents the number of words read correctly per minute. The y-axis reflects month of program instruction, where baseline represents ‘September’, ‘1’ represents ‘October’, and so forth.

Figure 2. Reading Fluency for Group A

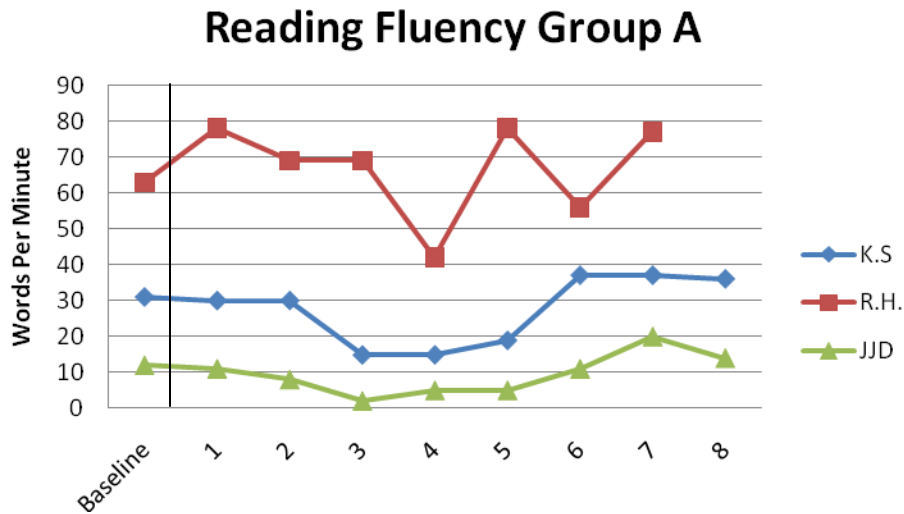


Figure 3. Reading Fluency for Group B1

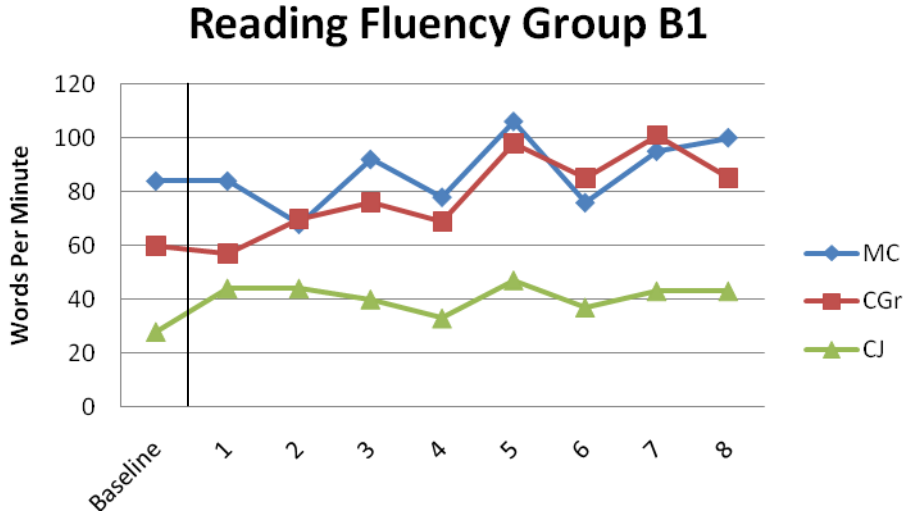


Figure 4. Reading Fluency for Group B2

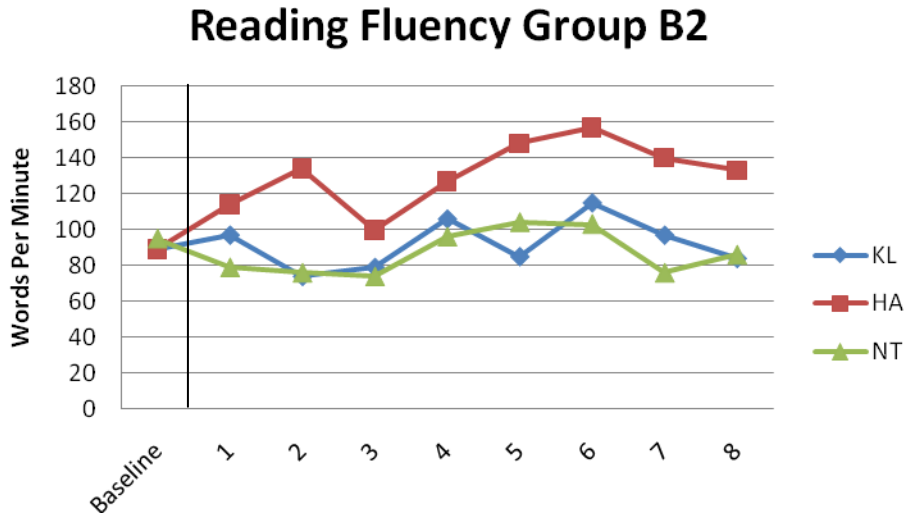


Figure 5. Reading Fluency for Group B2

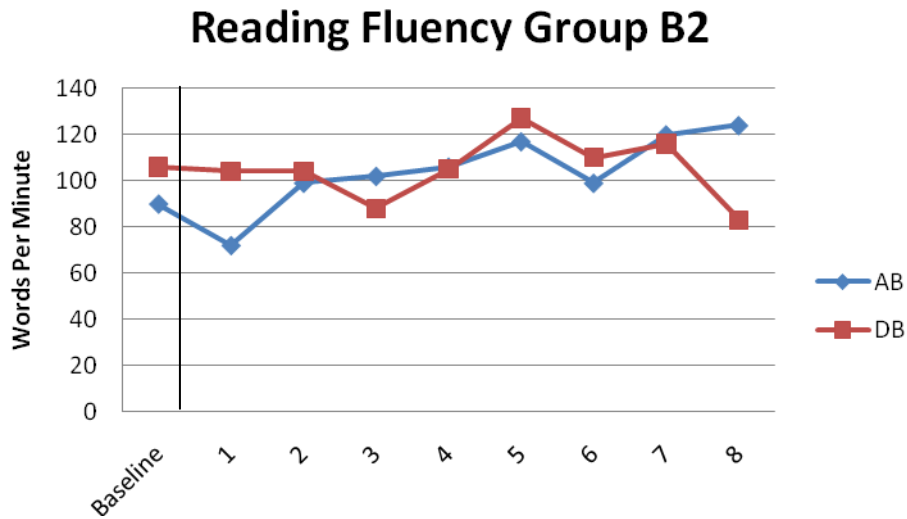


Table 2 presents the *percentage of non-overlapping data* (PND) according to descriptive categories for all students. The PND is a commonly-used method for analyzing data in single-subject designs. It is calculated by first determining the number of data points in the intervention phase that exceeds the highest data point in the baseline phase. This value is divided by the total number of data points in the intervention phase, and multiplied by 100, yielding a percentage score. Descriptively, values of 90% or higher reflect “highly effective” interventions; values of 70% to under 90% reflect “moderately effective” interventions; values from 50% to under 70% reflect “mild” or “questionably effective” interventions; and values below 50% reflect an “ineffective intervention” (Ma, 2006).

Table 2. PND Descriptive Category for Students, by Corrective Reading Level

Category	Level					
	A		B1		B2	
	n	%	n	%	n	%
Highly Effective	3	50	4	67	5	63
Moderately Effective	1	17	1	17	1	13
Mildly Effective	0	0	1	17	1	13
Ineffective	2	33	0	0	2	25

Note: Percentages calculated by Corrective Reading Level

As presented in Table 2, for at least half of the students at each instructional level of Corrective Reading instruction was ‘highly effective’ in increasing reading fluency; in fact, for students in levels B1 and B2, the program was determined ‘highly effective’ for roughly two-thirds of students (67% and 63% respectively). Roughly 17% of students at all levels found the *Corrective Reading* program ‘moderately effective’. The program was considered ‘mildly effective’ for 17% of students (n = 1) at level B1, and 13% of students (n = 1) at B2. Finally, the program was considered ‘ineffective’ for 33% of students (n=2) receiving instruction at level A and 25% of students (n=2) at level B2. There were no students for whom the program was considered ineffective at level B1.

Table 3 provides a breakdown of descriptive category for the subset of students who did not meet the targeted words per minute to advance to further grade levels on the ORF reading probes. This table presents the PND descriptive category for the students (n=11) who were administered the same grade-level ORF probe throughout the school year.

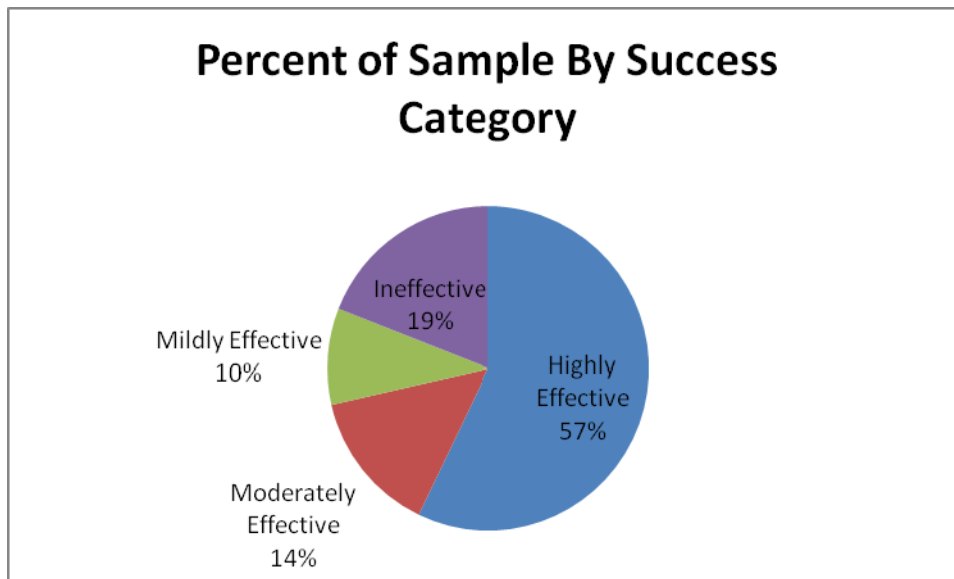
Table 3. PND Descriptive Category for Students (Total)

Category	n	%
Highly Effective	2	18
Moderately Effective	3	27
Mildly Effective	2	18
Ineffective	4	36

Results indicate that, overall 45% of students (n = 5) administered the same grade-level probe over the course of the first four months of instruction found *Corrective Reading* instruction ‘highly’ to ‘moderately effective’ for increasing reading fluency. About 18% of students (n = 2) experienced ‘mild’ success, and 36% of students (n = 4) experienced ‘minimal’ success.

Figure 6 provides detailed results for all students, whether administered the same grade level of ORF probe or different grade level ORF probes. Results indicate that 57% of special needs students included in the study experienced significant success using the *Corrective Reading* program; of these, 48% (n=10) improved their reading fluency by at least one grade level over the course of the year.

Figure 6. Percent of Sample by Success Category



Teacher Interview

Prior to the administration of the January progress monitoring assessment, and again at the end of the year, a semi-structured interview was conducted with the intervention specialist responsible for administering the *Corrective Reading* program. The purpose of the interview was to gain the teacher's perception on the overall utility of the program, to provide student feedback, and to obtain suggestions for improvement after four months of using the program. The intervention specialist consistently stated during both interviews that she most likes the 'different levels of instructional materials, which cover a wide range of remedial work needed by my students...the instructions and directions are straight-forward and easy to follow'. Originally unfamiliar with direct-instruction methods, she further indicated that 'although it was challenging in the beginning, I feel that once I had the routine down I was using time more efficiently'. Feedback from students revealed that most feel 'the program is repetitive', but many students have remarked that they feel they are improving. One student remarked to the examiner conducting the progress monitoring assessments that she feels that she 'keeps reading more and more' on the assessments and that she enjoys reading more than before. The intervention specialist noted that although some students feel the program is repetitive, 'they have benefitted most from the repetition of instruction' and greatly require more focus on developing decoding skills. On a personal note, the intervention specialist stated, 'I feel like I am making an impact on improving the skills the students are lacking'.

Discussion

Preliminary results reveal that the *Corrective Reading* program is effective in increasing the reading fluency of this group of special needs students, many of whom possess low cognitive ability. Approximately 57% of special needs students included in the sample significantly improved their reading fluency, in some cases by as much as one grade level. About 14% of the sample demonstrated 'moderate' success, according to guidelines for interpreting data using single-subject design methodology. As a whole, 71% of students with special needs found that the *Corrective Reading* program was 'highly' to 'moderately effective' for increasing reading fluency.

For six students in the study, the program was considered 'mildly effective' or 'ineffective'. Since this group of students are considered exceptional in terms of cognitive functioning and behavior, it is worth further discussion. It should be noted that these students entered the program with the weakest reading skills of all students in the sample, and additionally, scored quite low on their last administration of a test of cognitive ability. The mean Full Scale IQ for this group of six students is represented by a standard score of 63, considered in the 'Well Below Average' range or more than two standard deviations below average. Motivation and cooperation during the administration of the progress monitoring assessments also varied greatly, and these students required much encouragement and prompting to attempt the reading passages. One of the students for whom the program was considered 'ineffective' has been diagnosed with a mood disorder and has struggled to regulate mood and behavior throughout the year. Another student for whom the program was deemed 'ineffective' possesses the lowest cognitive functioning (Full Scale IQ = 59) and exhibits severe behavioral difficulties that rendered it difficult for him to fully engage in instruction.

The intervention specialist assigned to teach the *Corrective Reading* program notes that as a whole, these students brought forth many challenges. Behavioral and psychological difficulties were common themes throughout the year, evidenced not only in the aforementioned six lowest performers in the sample but in the class as a whole. Peer conflicts, verbal outbursts, and defiance were not infrequent visitors to the classroom on a near-daily basis. Several students experienced major disruptions in their living arrangements, as well; two students were determined 'homeless', one student intermittently lived in temporary housing, and two students were essentially neglected by parents. Certainly these students faced many obstacles that no doubt impeded their ability to participate fully, and these factors should be noted when considering these findings.

Given the difficulties faced by this group of students, the findings are considered quite remarkable. Three of the highest performing students in the *Corrective Reading* program will be moving into the inclusion or general education classroom for the upcoming school year, and with support, will receive instruction with non-disabled peers. Although the program was considered 'mildly effective' to 'ineffective' according to PND criteria for the six lowest performing students in the classroom, the students were reported by the intervention specialist to use decoding strategies more frequently and regularly as the year progressed. Further information regarding the effectiveness of the *Corrective Reading* program will be reported as Ohio Achievement Assessment scores are received in late July, 2010.

The *Corrective Reading* program will be implemented for a second year, beginning in September of 2010 and will continue throughout the school year. The program will also be expanded to include fourth-grade and fifth-grade students with special needs.

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