

## **Improving Reading Comprehension through Holistic Intervening and Tutoring During After-School with High Risk Minority Elementary School Students**

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The current study took a quasi-experimental approach investigating the effect of a holistic after-school intervention, on reading comprehension measured by the Gray Oral Reading Test (GORT)-4 on at-risk students in Grade 2 through Grade 5. Analysis of Variance was used to investigate the relationship between pre- and post-intervention scores. The study showed encouraging results. The 91 student participants showed gains in their GORT-4 total scores after the intervention. Results of after-school tutoring lend support to the use of peer-tutoring in afterschool in the elementary schools. Due to the exploratory nature of the study in a single school, there are constraints on generalizability and utility of findings to other schools across the board.

**Keywords:** after-school tutoring, elementary, intervention, Grays Oral Reading Test, at-risk students

Currently, there is much interest in developing effective ways to enhance the learning opportunities for young children who are falling behind their peers in learning to read. Results of the National Reading Panel (2000) report showed that early intervention was more effective than later remediation. Title I legislation of the No Child Left Behind Act of 2001 (2002, Section 1114) requires extended school programs such as before- and after-school tutoring programs and additional summer instructional programs, particularly for at-risk students. The intention of such intervention programs is to increase the amount of quality of learning for disadvantaged and at-risk students. The main purpose of the present study was to investigate the effects

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of a supplemental comprehensive holistic tutoring intervention model on the reading abilities of at-risk students.

### **United States Children and Reading Standards**

There is a significantly high percentage of children in the USA who fall below minimum competency in reading at elementary school level. National Center for Education Statistics (National Center for Educational Statistics [NCES], 2004) reported that 37% of the fourth graders read below the basic level. Percentages of African-American and Hispanic children reading below basic level were even higher (60 and 56%, respectively), as was the percentage of children who qualified for free/reduced-price lunch (55%). Reading below basic level means that children lack even "partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade" (NCES, 2004, p. 2). The percentage of the fourth-grade students with reading difficulties remained constant over the last 10 years, but 26% of students still do not read at a basic level by Grade 8 (NCES, 2004). Francis, Shaywitz, Stuebing, Shaywitz, and Fletcher (1996) carried out a longitudinal study that showed that children who were poor readers in Grade 3 typically could not catch up with peers in reading skills in higher grades throughout school. The study showed that 70% of children who were poor readers in Grade 3 remained poor readers in Grade 9. These findings show the importance of literacy intervention at elementary school level. With nearly 70% of the fourth-grade students reading below basic levels (Lyon, 2003), the importance of intervention at the earlier grades in elementary schools cannot be overstated.

### **Minority Status, Socioeconomic Status, and Reading**

Minority children and children from low-income households have been consistently identified as at risk for academic failure (Washington, 2001). Additionally, students who come from high poverty urban areas, when compared with more affluent peers, are at greater risk for reading failure (Foorman & Moats, 2004; Washington, 2001) and are in greater need of systematic and early intervention. There are a number of reasons for the racial achievement gap including socioeconomic factors, home environment, political history, peer culture, and parental support (Ferguson, 2001; Lee, 2002; Roach, 2004). Many disadvantaged children come from homes where parents are alienated from school or feel unwelcome, or face so many emergent crisis including unemployment, inadequate shelter or food, violence, or mental health/drug and alcohol that their children's education gets short changed (Lee, 2002; McKay, McCadam, & Gonzales, 1996).

Over the past decades, multitude of research studies has documented the link between socioeconomic background of children and their academic

success. Low-income students enter kindergarten academically behind their more advantaged peers (Lee & Burkam, 2002; Mayer, 1997), and these initial academic differences widen as students' progress through school (Downey, von Hippel, & Broh, 2004; Reardon, 2003). Factors for this inequality include disparities in family and educational resources; the persistent associations between social class and race; and sociocultural disconnects between home and school environments (see Duncan & Magnuson, 2005; Lareau, 2003; Rothstein, 2004).

In recent years, many studies have been conducted on the effectiveness of tutoring programs on reading abilities of students (Gupta, Robinson, & West, 2001; Invernizzi, 2001; Wasik, 1998). The majority of these intervention studies reported improvement in reading performance of students receiving tutoring services. Following up on the research literature, authors of this study examined the reading performance of students who were receiving tutoring services in an after-school program, which led to the development of the following research questions:

- (1) Are there meaningful differences in Grays Oral Reading Test (GORT)-4 pre-intervention scores based on grade level or gender?
- (2) Does an after-school intervention improve reading scores, as measured by the GORT-4?
- (3) Who experiences the most reading comprehension gains on completion of the after-school holistic intervention?

### **Intervention**

The Teaching, Enhancing, and Nurturing (TEN) delinquency prevention program was developed to identify and provide early intervention services for elementary school children at risk of academic failure and delinquency. Program components were designed to target the specific factors associated with the increased risks for subsequent juvenile delinquency, including academic failure, domestic violence, poor social skills, and school truancy.

The TEN program facilitates academic and socialization competencies through an integrated learning approach. Utilizing a multimodal intervention strategy, didactic activities were developed to challenge and motivate improved academic, personal, social, and family functioning.

### **Program Components**

The program components included after-school tutoring, a reading component, tutored homework sessions, social skill development, after-school snack, home visits, parenting meetings, teacher consultation, and clinical supervision were provided. The after-school program operated daily from 2:30 to 6:00 pm and served as a vehicle for teaching academic and social

skills, problem-solving, critical thinking, and other resiliency skills. The after-school program provided a location for tutoring, socialization, and peer and adult role models and mentors. For example, a music session can be an opportunity for reading, writing, performance art, economics, and technology.

The reading component was a primary focus of the intervention with intensive efforts toward remedial reading skills for 2 hr, twice a week. Activities were developed to target phonetic pronunciations, phoneme blends, sight vocabulary, and word-dismantling strategies. Children with basic reading skills were challenged with more advanced structured activities that focused on reading comprehension, advanced vocabulary, pronunciation and grammar, and creative writing (e.g. poems).

Tutored homework sessions occurred daily in which each child's homework was obtained from their classroom teacher and he/she was assisted through completion. Successful High School students were recruited from community volunteers and were trained to function as individual tutors and mentors for the children participating in the TEN program. Tutor involvement was one of the major components of the TEN program, lending itself as a powerful intervention medium. Based on the fundamentals of Social Learning Theory (Bandura, 1977), the TEN program recognized that the probability for any individual's learning increases as the similarity of a model approximates the target individual. That is, children and adults are most likely to glean the greatest amount of learning when the *teacher* is similar to them.

The social skills component utilized the Promoting Alternative Thinking Strategies (PATHS; Kusche & Greenberg, 1994) program curriculum to facilitate more effective use of adaptive strategies to self-manage emotions and behaviors. The PATHS program targets children's social skills through interactive, *hands-on* activities that capture children's attention and sustain their enthusiastic involvement.

Teacher consultations were necessary, and at least once a month, family educators and program staff consulted with children's teachers. Consultation focused on changes in classroom behavior, specific academic strengths or weakness, teacher's concerns regarding family functioning, or salient events (e.g. spelling test, field trip, etc.). Teachers were encouraged to initiate contact as their concerns surfaced and offered suggestions for effective intervention strategies.

Clinical supervision of the TEN program was conducted by licensed psychologist. The psychologist was available for consultation, program monitoring, staff support, and troubleshooting, including the development of specific interventions for particularly problematic child behaviors or learning difficulties. A system of 24-hr availability of professional supervision was maintained through contract with Hempfield Behavioral Health, Inc. which was a local community mental health provider.

### **Family Involvement Programming**

Family Educators are culturally competent social work staff members who were trained to make family-focused home visits and designed to strengthen the parent/child bond, to promote academic and school success. Weekly visits to the home of each child participant were conducted by the Family Educators to facilitate a collaborative relationship between the families, school, social services, and other resources in the community. Components of home visiting were incorporated from the Homebuilders and Healthy Families America Home visiting models (Daro & Harding, 1999; Rossi, 1992).

Parent meetings for child participants were held monthly and consisted of parent education, strategies to motivate children to perform, creative academic activities, behavior management, communication, and conflict resolution strategies for families. Having parents meet and discuss their concerns and ideas facilitated their own involvement within the community, and further reduced their sense of isolation and feelings of helplessness regarding their children's academic or behavior problems. Parents were paid (five dollars per session) as team members for attendance, participation, and skill acquisition to increase their sense of involvement and importance.

### **Method**

#### **Participants**

The sample for this study included 154 elementary school students who participated in a free after-school program in the 2009–2010 school year in an urban US school district in the Northeast. Racially, the group was comprised of 81.6% African-American, 17% Latino, and 1.2% Asian. Academically, the group was 5.2% the first grade, 12.3% the second grade, 21.4% the third grade, 20.8% the fourth grade, 28.6% the fifth grade, and 11.7% the sixth grade.

Missing data brought the valid *N* to 104, after recoding the first and the sixth graders to system missing the valid *N* is 91. The first and sixth graders were not a part of the intervention; however, because of family relationships some first and sixth graders attended the same after-school program as their siblings. The intervention is specifically for the second through fifth graders; therefore, they were the target group.

#### **Measures**

Basic demographic information was collected for each student including, current grade level, race, gender, school, and teacher. After-school program staff kept track of the number of after-school program days, parent meetings, home visits, phone contact with parent, school visits, classroom observations, skill sessions, and reading sessions. Additionally, each student was asked to

complete the GORT-4 (Wiederholt & Bryant, 2001) twice, once before the intervention and once after the intervention.

GORT-4 (Wiederholt & Bryant, 2001) is a measure of oral reading comprehension skills in terms of:

- Rate – the amount of time taken by a student to read a story;
- Accuracy – the student's ability to pronounce each word in the story correctly;
- Fluency – the student's rate and accuracy scores combined;
- Comprehension – the appropriateness of the student's response to questions about the content of each story read; and
- Overall reading ability – a combination of a student's fluency and comprehension scores.

The reliability of the GORT-4 is high; all average internal consistency reliabilities are .90 or above. GORT-4 assesses reading comprehension, which is defined by a child's ability to appropriately respond to questions about the content of a story or passage that they have read. GORT provides an efficient and objective measure of growth in oral reading and an aid in the diagnosis of oral reading difficulties. The test consists of two forms, each containing 14 developmentally sequenced reading passages with five comprehension questions. The GORT has four scores: reading fluency, rate, accuracy, and oral reading comprehension. The oral reading comprehension score is calculated by the number of correct responses to the reading comprehension questions.

### Procedure

Children selected for participation in the TEN program were identified as being at high risk for truancy and school failure through nomination by teachers, clergy, school counselors or principals, and local law enforcement. The TEN program selected children from the second to the fifth grade (ages 9–11) who were deemed at-risk for delinquent behavior based on the following risk factors:

- (1) Children with poor academic performance, particularly poor reading skills.
- (2) Children with frequent school absences or truancy.
- (3) Children who demonstrate disruptive conduct within the classroom environment.
- (4) Children with previous legal contact for minor offenses (e.g. trespassing).
- (5) Children living in high-risk families, such as substance abuse, domestic violence, child neglect/abuse, parent/sibling legal involvement.

Children with a known history of major criminal offenses, drug/alcohol abuse, or psychiatric diagnosis/medication were not considered for participation and were referred to alternative sources of assistance.

The after-school program had a span of 170 days and the mean was 117 days through the 2009–2010 academic school year. Prior to the start of the intervention, training was provided to potential tutors, facilitators, and staff. Trainings involved weekly lesson-planning sessions, bi-weekly site management meetings, and monthly team building activities. In addition to *standing trainings*, staff attended many trainings throughout the year including Red cross HIV/AIDS facilitators and CPR/first aid training, technology training, child protective law, mandated reporter requirements, family group conferencing, and parent intake training.

## Results

### Research Question 1

**Grade-level differences pre-intervention.** A one-way between groups analysis of variance was conducted to evaluate the impact of grade level on the GORT-4 before the intervention. This was completed to ensure that students were reading at their appropriate level. Participants were divided into four groups based on grade level (Group 1: The second grade, Group 2: The third grade, Group 3: The fourth grade, and Group 4: The fifth grade). There was a statistically significant difference at the  $p < .001$  level in GORT-4 scores for all four grade levels  $F(3, 87) = 7.11, p < .001$ . The effect size calculated using eta squared, was .19, which is significantly large. Post-hoc comparisons using Tukey HSD test indicated that the mean score for Group 1 ( $M = 12.00, SD = 6.70$ ) was significantly different from Group 4 ( $M = 24.62, SD = 9.17$ ). Group 4, however, did not differ significantly from Group 3.

**Gender differences pre-intervention.** An independent-samples  $t$ -test was conducted to compare the GORT-4 scores for males and females. There was no significant differences in scores for males ( $M = 20.00, SD = 9.01$ ) and females ( $M = 19.67, SD = 10.59, t(99) = .167, p = .86$ , two-tailed). The magnitude of the differences in the means (*mean difference* = .32, 95% CI [-3.54 to 4.19]) was very small (*eta squared* = .0002).

### Research Question 2

A paired-samples  $t$ -test was conducted to evaluate the impact of intervention on students' scores on the GORT-4. There was a statistically significant increase in GORT-4 scores from Time 1 ( $M = 19.78, SD = 9.67$ ) to Time 2 ( $M = 22.56, SD = 10.16$ ),  $t(101) = -3.07, p = .003$  (two-tailed). The mean difference in GORT-4 scores was 2.77 with an 85% confidence interval

ranging from  $-4.56$  to  $-.986$ . The eta squared statistic (.08) indicates a moderate effect size based on the guidelines proposed by Cohen (1988).

### Research Question 3

A paired-samples *t*-test was conducted to evaluate the impact of the intervention on male and female students' scores on the GORT-4. There was not a significant increase in GORT-4 scores from Time 1 for males ( $M = 20.00$ ,  $SD = 9.01$ ) to Time 2 for males ( $M = 21.94$ ,  $SD = 10.42$ ). There was not a significant increase in GORT-4 scores from Time 1 for females ( $M = 19.67$ ,  $SD = 10.59$ ) to Time 2 for females ( $M = 23.33$ ,  $SD = 10.11$ ). Mean scores for females, on average, increased more than their male counterparts.

A one-way between groups analysis of variance was conducted to evaluate the impact of grade level on the GORT-4 pre- and post-intervention. Table 1 shows means, standard deviations, and the confidence interval for each group. Participants were divided into four groups (Group 1: second grade, Group 2: third grade, Group 3: fourth grade, and Group 4: fifth grade). The interaction effect between pre-scores and grade level was statistically significant,  $F(3, 87) = 7.11$ ,  $p < .01$ , however, the effect size was large (*partial eta squared* = 1.96). The interaction effect between post-scores and grade level was statistically significant,  $F(3, 86) = 8.74$ ,  $p < .01$ , however, the effect size was small (*partial eta squared* = .23). Post-hoc comparisons using the Turkey HSD test indicated that the mean difference ( $-12.61$ ) for the second and the fifth graders was significantly different at the .05 level for pre-intervention and post-intervention (*mean difference* =  $-14.545$ ). Post-hoc comparisons using Turkey HSD test indicated that the mean difference ( $-10.727$ ) for the second and the third graders was statistically significantly different at the .05 level.

Table 1  
GORT-4 Scores Pre and Post by Grade Level

Grade	<i>n</i>	<i>M</i> ( <i>SD</i> )	95% CI
<i>Pre</i>			
2	12	12.00 (6.70)	[07.74, 16.26]
3	22	18.55 (8.12)	[14.94, 22.15]
4	23	19.17 (8.73)	[15.40, 22.95]
5	34	24.62 (9.17)	[21.42, 27.82]
Total	91	20.11 (9.36)	[18.16, 22.06]
<i>Post</i>			
2	12	13.00 (9.05)	[07.25, 18.75]
3	22	23.73 (7.42)	[20.43, 27.02]
4	23	20.96 (6.87)	[17.98, 23.93]
5	33	27.55 (10.34)	[23.88, 31.21]
Total	90	22.99 (9.78)	[20.94, 25.04]

### Discussion

The results of the study indicated that instructional intervention in the form of after-school in-house tutoring from peers in higher grades seems to make a difference in the development and outcomes of the reading skills of at-risk students. The obtained performance gains on the GORT reading test were encouraging but cannot be solely contributed to the intervention. Generality of findings must be constrained, as it may not be representative of the general population across different schools.

### Grade-Level Differences

The first research question assessed grade- and gender-level differences in reading comprehension amongst an elementary school population pre-intervention. Results for grade-level differences showed that the fifth graders scored highest on reading comprehension amongst second, third, and the fourth graders. These results are as expected because this group would be amongst the most academically advanced at the elementary school level. Additional results found that there were no significant differences in reading comprehension scores amongst the fourth and the fifth graders, interpreted to mean the fourth and the fifth graders in this study who were identified as high risk show minor differences in reading comprehension ability.

### Gender Differences

In our current study, there were no gender differences in reading comprehension. Both males and females in the study had close mean scores and performed at about average. This is similar to some of the findings indicating that gender does not have a significant effect on students' meaningful thinking ability that relates to comprehension. Lauer (2007) argued that there are no differences between male and female thinking abilities. According to Lowrie and Diezmann (2007), there is no significant relationship between spatial thinking and gender. The findings are consistent with those of this study. Although, in overall reading performance scores, female students generally tend to outperform male students specifically in a national sample, the female fourth graders scored higher on average in reading than their male counterparts (NCES, 2007). In 2007, the gap between the two groups was not significantly different from the gaps in 2005 or in 1992 (NCES, 2007). Average reading scores remained higher for female students than for male students. The reading measure also determines to a great extent the outcomes based on gender. For instance, in a study by Gupta and Sinha (2007) on reading attitudes with respect to gender differences, it was found that boys scored higher average scores than girls in recreational reading.

### **Intervention Effects on Reading**

Research question two assessed the success of a holistic intervention on reading comprehension. Previous research has shown success with reading tutoring programs for at-risk elementary school students (Morris, Shaw, & Perney, 1990) and out-of-school programs that are focused on literacy-oriented activities (Powell, Peet, & Peet, 2009). Another study on after-school interventions found that 76% of tutored children improved their letter grade in reading from the beginning of the school year to the end of the year, compared with 35% of children in the nontutored group. Additionally, none of the children in the tutored group dropped a letter grade, while 17.64% of children in the nontutored group experienced a decrease in their letter grade (Gupta, 2004, p. 59). The current study found improvements in reading comprehension scores for students who participated in the after-school intervention throughout the 2009–2010 school year. The mean difference in reading comprehension from time one to time two was 2.77 and was statistically significant. In addition, findings from research question three found that females mean scores on average increased more than their male counterparts and all grade levels increased their scores on the GORT-4 after the intervention.

These findings imply that an intervention during after-school hours may be able to help improve reading comprehension. Ritter, Barnett, Denny, and Albin (2009) conducted a meta-analysis study of the effectiveness of volunteer tutoring programs for improving the academic skills of students enrolled in public schools Grades K–8 in the USA. Overall, the authors found volunteer tutoring has a positive effect on student achievement. With respect to particular sub-skills, students who work with volunteer tutors are likely to earn higher scores on assessments related to letters and words, oral fluency, and writing as compared to their peers who are not tutored (Morris, Shaw, & Perney, 1990; Ritter et al., 2009).

### **Limitation**

Due to the implementation of the program in a single school, there are constraints to generalizability of the findings. Additionally, there were high percentage of students from low socioeconomic background who participated in other school-wide Title One programs. Thus, the gains cannot be credited totally to the intervention program. Results from this study must be considered in light of several study limitations. First, there was no randomization of at-risk student participants, so there was a selectivity bias. Stakeholders in the community nominated at-risk youth to be involved in the program. This selection process might hinder the overall diversity within the group, as an example, to be selected, one had to come into contact with some resource within the community, which would imply that the student or the parent is already tapped into the resources of the community. Since there was no

comparison group, there could be other confounding variables, such as regular teacher instruction contributing to the impact on gains, parent involvement, classroom size, and other contextual factors.

Replication of the study across multiple school divisions is necessary to confirm the results. To see whether the findings are generalizable beyond the single school, variability is needed. The sample used in the particular study was moderately small; increasing the sample size may also increase the diversity within the sample and the findings. Furthering the investigation over multiple school years will yield whether the gains were sustainable over the next year.

### Conclusion and Implications

In our study, we investigated the effects of intervention on the reading comprehension scores of at-risk students in two tiers, gender, and grade level. Results of the intervention lend support to the use of peer-tutoring afterschool across all grade levels (Grades 2–5) in the elementary schools. With our data, we contribute to the research in that there is evidence to support the existing after-school peer-tutoring program in the school district. First, we indicated that there are no significant gender differences in the way students comprehend information from the texts. Second, there is evidence to support the improvement in reading comprehension as reflected by .08 effect size as documented in our study.

The tutoring intervention aims to close the achievement gap in reading comprehension of at-risk students with those of their peers. According to our findings, students who received the intervention made significant gains irrespective of their gender or grade level. Critical to the intervention was training of the volunteer tutors and providing a structure to their tutoring session. The individualized attention that peer-tutors provided children served as an additional factor that bolstered students' confidence and self-esteem. A future long-term follow-up study with the same students is needed to assess the sustainability of gains in terms of whether the gains continue with time in absence of the after-school intervention program.

### Notes on contributors

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