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# The effects of multisensory phonics instruction on the fluency and decoding skills of students with learning disabilities in a middle school resource classroom

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**THE EFFECTS OF MULTISENSORY PHONICS  
INSTRUCTION ON THE FLUENCY AND  
DECODING SKILLS OF STUDENTS WITH  
LEARNING DISABILITIES IN A MIDDLE SCHOOL  
RESOURCE CLASSROOM**

by

Angela E. Williams

A Thesis

Submitted to the  
Department of Interdisciplinary and Inclusive Education  
College of Education  
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For the degree of  
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Thesis Chair: Amy Accardo, Ed.D.

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## **Dedication**

I would like to dedicate this thesis to my two dogs, Tinkerbelle and Sophie.

## **Acknowledgements**

I would like to express my appreciation to Dr. Amy Accardo for her guidance throughout this entire research process. Her optimistic attitude, and time spent helping me through this journey are greatly appreciated. The skills I have gained throughout this journey with her are ones that I will use for the rest of my professional career.

I would like to thank my parents, Bob and Annette, and my sister, Melissa, for their steadfast love and support throughout this endeavor. Their continued support in my academic career has allowed me to reach so many goals that seemed impossible.

## **Abstract**

Angela Williams

THE EFFECTS OF MULTISENSORY PHONICS INSTRUCTION ON THE  
FLUENCY AND DECODING SKILLS OF STUDENTS WITH LEARNING  
DISABILITIES IN A MIDDLE SCHOOL RESOURCE CLASSROOM

2016-2017

Amy Accardo, Ed.D.

Master of Arts in Special Education

The purpose of this investigation was: (a) to determine the effects of a multisensory phonics instruction approach on students with learning disabilities in a middle school resource room, and (b) to ascertain the impact of phonics instruction at the middle school level for fluency and decoding performance for this particular population. This study utilized a single subject multiple baseline across participants design. Study results show students demonstrated a large increase in performance in both fluency rate and decoding accuracy. The average growth for fluency rate was 35% and the average growth for decoding accuracy among students was 24%. Analyses revealed that the multisensory phonics instruction in the small group setting during student tutorial periods improved their ability to read faster and decode text accurately at their reading levels. Implications for using multisensory phonics instruction for students with learning disabilities to help increase fluency rate and decoding accuracy are discussed.

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## **Chapter 1**

### **Introduction**

Phonics can be described as the different approaches designed to teach children about the orthographic code of language, spelling patterns, and sounds (Stahl, 1992). The National Assessment of Educational Progress (NAEP) is the largest national assessment of how United States' students are performing in reading, math, and science. They assess students in fourth grade and in eighth grade and compare proficiency percentages across nations. In 2015, NAEP reported that 20% of grade 8 students in New Jersey scored below basic on the reading assessment compared to 24% of grade 8 students in the nation (New Jersey School Performance Report, 2015). In addition, literacy has been found to be a problem with approximately six million adolescents assessed as reading below grade level (Joftus, 2003).

Though studies have shown that teachers well versed in phonics strategies and monitoring procedures can provide reliable estimates of children's reading abilities, results as measured by objective tests still show students are not proficient (Snowling, Duff, Petrou, Schiffeldrin, & Bailey, 2011). The question of whether or not phonics should be taught in middle school is one that has been controversial for decades (Groff, 1980). Specifically, studies have shown that reading is the main difficulty for students with learning disabilities (Giess, Rivers, Kennedy, & Lombardino, 2012). Additionally, researchers report that students who struggle with basic reading skills have improved their vocabulary development, fluency, and metacognitive strategies through explicit, multisensory phonics instruction (Giess, Rivers, Kennedy, & Lombardino, 2012).

## **Statement of Problem**

Children in the early grades struggle with basic phonics skills, such as decoding, yet instruction by teachers has shifted towards focusing on the comprehension of text (Brasseur-Hock, 2011). Students are often taught a whole language phonics approach at the elementary level (Davidson, 2007). Students who are in middle school may have problems with decoding, phonemic awareness, fluency, comprehension, and other core phonics skills that are crucial to reading success (Davidson, 2007). The Phonics First program provides a strong scientific research-based program in phonics (Davidson, 2007). The scope and sequence of the program teaches students skills in phonological awareness, matching sounds to letters, and then proceeds to systematically and explicitly teach students more advanced patterns of spelling-sound relationships contributing to increased sight word knowledge, a foundation for proficient reading (Davidson, 2007).

Specifically, between 2002–2011, the mean NAEP fourth grade reading score of students without disabilities *increased* from approximately 220 to 225, whereas the reading scores of students with disabilities *declined* from 188 to approximately 186 (NAEP, 2011). Moreover, the researchers found that students who were not classified were improving their reading performance and students who were classified had declining performance in reading assessments (Vaughn, 2014). Students in resource rooms or in-class-support settings may benefit from multi-sensory phonics instruction in middle school which combines listening speaking, reading, and writing together through hands on learning (Feldman, 2008) The data from national studies provides a consistent message about the poor performance of individuals with disabilities in reading.

Particularly concerning is the low growth rate in reading for students with disabilities (Vaughn, 2011).

*Phonics First* is a Reading and Language Arts Center (RLAC) nationally accredited program, a multisensory Orton Gillingham based program designed to teach literacy to students (RLAC, 2016). The program uses interactive trainings to provide both special and general education teachers with evidence based instructional strategies and tools that improve student growth and achievement (RLAC, 2016). *Phonics First* uses Orton-Gillingham philosophies for reading instruction through a language based, structured, flexible approach that reaches students through multiple sensory approaches (RLAC, 2016).

### **Significance of Problem**

Many students at the middle school level, classified or not, are well below grade level in reading skills. The importance of learning to read is critical and often takes a combination of skills for students to be successful. Multiple studies have found significant relationships linking reading fluency to comprehension. Researchers have found that adolescents are reading four to six years below grade level, and increased attention is needed to support students who struggle reading in the early grades (Brasseur-Hock, 2011). National, state, and local reports reveal that adolescent struggling readers score in the lowest percentiles on reading assessments (Cirno, 2013). The National Reading Panel identified five targets for instruction to enhance proficiency in reading: phonemic awareness, phonics (decoding), comprehension, fluency, and vocabulary (NRP, 2000). Yet for students in middle school who are less than fluent

readers, the challenge to read texts has become a critical issue (Paige & Magpuri-Lavell, 2014).

In addition, student-decoding skills contribute to reading success. Studies show that students with reading difficulties have decoding problems, which come from poor phonemic awareness skills, or the inability to recognize word phonemes. Many children and adults who are poor readers have issues decoding words in text, yet to become fluent, the reader must be able to produce a pronunciation using phonics knowledge (Penney, 2002).

### **Purpose of the Study**

The purpose of this study was to: (a) examine the effectiveness of using the multisensory program as a reading intervention, (b) examine the effectiveness of using the Phonics First program to increase fluency and decoding skills, and (c) evaluate student satisfaction and perception of this intervention.

### **Research Questions**

Research questions investigated follow:

1. Will the use of multisensory phonics instruction increase the reading fluency of students with learning disabilities in a middle school resource classroom?
2. Will the use of a multisensory phonics approach increase the decoding skills of students with learning disabilities in a middle school resource classroom?
3. Are students satisfied with the use of multisensory phonics instruction?

## **Chapter 2**

### **Review of the Literature**

Reading problems are a major concern in the achievement of American school students. Reading skills are fundamental to educational achievement, career readiness, and adult well-being (Snowling, Duff, Petrou, Schiffeldrin, & Bailey, 2011). Mesmer and Griffith (2006) report that phonics is an important component of literacy instruction, and that teaching learners the relationships between letters and sounds, and how to recognize words using this relationship, are essential. There is evidence that the inclusion of a systematic phonics program benefits children learning to read, however, there is no evidence to support phonics in isolation as the best method (Clark, 2013).

Phonics helps students to become successful readers (Hook, Macaruso, & Jones, 2001; Dahl & Scharer, 2000). Specifically, researchers have implemented phonics instruction at the elementary level and have found phonics instruction increases reading outcomes for students in elementary grades (Beverly, Giles, & Buck, 2009; Clark, 2013; Dahl & Scharer, 2000; Invernizzi & Hayes, 2004; Joseph & Orlins, 2004; Vadasy, Sanders, Peyton, & Jenkins, 2002). In contrast, there is limited research on the effect of phonics instruction at the middle school level. In addition, there is limited research conducted on the effects of phonics instruction on students with learning disabilities at the middle school level, and on whether it leads to increased student reading skills for this population.

## **Phonics History**

Phonics instruction has been debated by teachers, parents, administrators, and researchers since the 1950's (Dzama, 1994) There are various types of phonics instruction according to Mesmer and Griffith, which include three features: “(a) curriculum with a specified, sequential set of phonics elements; (b) instruction that is direct, precise, and unambiguous; and (c) practice using phonics to read words...” (2005, p.369). Furthermore, Stahl (1992) describes phonics as many different types of instruction designed to teach students about the orthographic code of language and how relationships of spelling patterns relate to sound patterns. The different approaches to phonics instruction vary from instruction within the literature content to direct phonics instruction (Stahl, 1992). Clark (2013) suggests there are two main types of phonics instruction: (1) analytic phonics which avoids sounding out and focusing on student inferences based on sound-symbol relationships of words; whereas (2) explicit phonics is when instruction is based on the teaching of letter-sound relationships, in an explicit way.

## **Multisensory Phonics Instruction: Orton-Gillingham Approach**

The Orton Gillingham approach can be defined as one that offers reading instruction through a combination of explicit instruction in phonological awareness, syntax, syllables, and semantics (Ritchey, 2006). A vital part of Orton Gillingham reading instruction is that it combines visual, auditory, and kinesthetic learning all in one. This is sometimes referred to as “The Learning Triangle” (Ritchey, 2006). Dr. Samuel Orton, founder of the method reports that successful reading instruction requires auditory competence by teaching students the “phonetic equivalents of the printed letters and the

process of blending sequences of such equivalents so that they might be able to produce for themselves the spoken form of the word from its graphic counterpart” (Ritchey, 2006, p. 171).

In two studies conducted by Simpson, Swanson, and Kunkel (1992) to measure the effectiveness of the Orton Gillingham (OG) approach with adolescents in middle and high school, students who were given OG instruction outperformed those who used a comparison condition. The study utilized a quasi-experimental design and included participants aged 13-18 receiving reading remediation. Students received 90 minutes per day of OG instruction, five days a week, and took the Woodcock Reading Mastery Test. Their results were compared to students who received 45 minutes per day of traditional reading instruction. Results found that students receiving OG instruction students showed more reading growth and outperformed the comparison group (Simpson, Swanson, & Kugel, 1992).

### **Multisensory Phonics Effects on Elementary Students**

A study conducted by Hook, Macaruso, and Jones (2001) focused on the effects of Fast For Word, a program designed to improve auditory processing skills to that of OG instruction through a longitudinal study of elementary school students. Students aged seven to twelve received reading instruction through Fast ForWord activities or OG instruction during a summer program. Pre and post assessments, which measured word attack, phonemic awareness, and word identification, found that both groups made large improvements in phonemic awareness. Regarding word attack, the Fast ForWord group made limited improvements, whereas the OG group made significant growth, however

neither group made improvement in the area of word identification (Hook, Macaruso, & Jones, 2001).

Another elementary school based study conducted by Joshi, Dahlgreen, and Boulware-Gooden (2002) investigated the reading instruction in first grade general education classrooms through the use of quasi-experimental design. The classes were taught using Language Basics, a multisensory OG based program and student progress was compared to two classrooms using the Houghton Mifflin reading program for instruction. At the end of the first grade school year, both groups showed reading comprehension growth. Only the OG Language Basics based group made significant growth, and the growth spanned two categories: word attack and phonological awareness (Joshi, Dahlgreen, & Boulware-Gooden, 2002).

Moreover, a study conducted by Dahl and Scharer (2000) investigated the effectiveness of whole language instruction and phonics instruction on improving reading fluency and spelling accuracy. Students who were in first grade were split into two instructional groups in a general education classroom. The first group was given instruction through a whole language approach where students read words in context of a story and were not given phonics instruction. In comparison, the experimental group was given explicit phonics instruction without story context over the course of four weeks. The study showed that there were no differences in student fluency or spelling accuracy on the post test. After further investigation, there were, however, gains in spelling accuracy for students receiving the explicit phonics instruction. Dahl and Scharer suggest

that the phonics and literacy approaches should be combined to increase student-reading outcomes (2000).

In contrast, an elementary school based study conducted by Westrich-Bond (1993) focused on the results of students with learning disabilities who were in resource room or self-contained classrooms, and the impact of receiving Orton Gillingham or basal reading based instruction, through a quasi-experimental design. The instruction took place four times per week and was measured through The Woodcock Reading Mastery Test and Word Identification and Word Attack subtests. The subtest results indicate that there was no real differences between the two types of instruction, but there were significant differences between results of types of special education classrooms. Students receiving instruction in the self-contained classroom had higher word reading gains than students in resource room classrooms (Westrich-Bond , 1993).

### **Middle School Phonics Instruction**

Feldman (2008) suggests explicit phonics instruction, based on the OG multisensory phonics approach, is also appropriate for older students (Feldman, 2008). Geiss, Rivers, Kennedy, and Lambordino (2012) explored the effectiveness of the OG based instruction program with high school students. Nine students, grades nine through eleven, participated in the study and took part in a pre and post-test battery of assessments. The students had lower level reading skills and were chosen from a pool of thirty students who attended the charter school. They were given Barton Reading and Spelling system, an OG based instruction program, through a supplemental reading period. Every student showed improvement in their post-test, with increases varying from

moderate to large improvements. The study results suggest that OG is successful for adolescent readers, and that additional research is needed on the effect of OG on student reading skills at the high school level (Geiss, Rivers, Kennedy, & Lambordino, 2012).

The use of OG on reading skills of adolescents has also been studied. A review of studies was investigated by Cirino, Romain, Barth, Tolar, Fletcher, and Vaughn, (2013) investigated the reason students were considered poor readers in middle school students with reading difficulties. Participants included 1,025 sixth, seventh, and eighth grade students identified as struggling readers through their state reading comprehension proficiency assessment scores. Eighty-five percent of these students also had poor national standardized test scores, primarily in comprehension. The study analyzed scores and data to find that students scored poorly in decoding and fluency (Cirino, Romain, Barth, Tolar, Fletcher, & Vaughn, 2013).

Wanzek, Vaughn, Roberts, and Fletcher (2011) investigated the effects of student achievement when receiving a year-long reading intervention program, everyday for 50 minutes, to students with learning disabilities compared to students who did not receive an intervention program. The class did not replace any regular instruction and the program focused on vocabulary and comprehension techniques with opportunities for guided discussion to address student needs in understanding the words and text. Out of 136 students, 76 students were chosen to receive the intervention. The study showed that the reading intervention was successful in that students improved on decoding, fluency, and passage comprehension.

## **Decoding and Fluency**

In 2015, NAEP reported that 20% of grade 8 students in New Jersey scored below basic on the reading assessment compared to 24% of grade 8 students in the nation (New Jersey School Performance Report, 2015). These findings indicate that students in both New Jersey and the nation need to improve their performances in academic areas related to reading. As previously stated, many students who are in middle school have problems with decoding, phonemic awareness, fluency, comprehension, and other core reading skills that are crucial to reading success (Davidson, 2007).

A review of the literature by Joseph and Schisler (2006) considered published research studies to measure the effects of teaching basic reading skills to adolescents. Joseph and Schisler identified numerous studies that spanned over twenty years and reviewed their data and findings. They found that methods designed to teach basic reading skills to adolescents specifically improved their fluency skills. The students also performed better on reading achievement tests, suggesting comprehension increases when overall fluency improves significantly (Joseph & Schisler, 2006).

Kim, Wagner, and Lopez (2012) studied 270 first and second grade students in a latent-variable longitudinal study, considering the relationship among student reading skills, fluency, and comprehension. The study found that in second grade, students reading fluency was directly related to successful reading comprehension. In addition, Kim et al. found that the relations among list reading fluency, listening comprehension, text reading fluency, and reading comprehension are not static, but change as children develop reading skills (2012).

Finally, McArthur, et al. (2015) studied the impact of a trial of sight and word phonics training using a randomized controlled trial design on student reading skills. Participants included a group of 41 low level readers given eight weeks of phonics training followed by eight weeks of sight word training to measure the effects of the treatment. A second group was exposed to the same training but in reverse order, first eight weeks of sight word training, then eight weeks of phonics training. The results indicate that the both of the training, regardless of the order they were given to both groups had a moderate to significant effect on accuracy and fluency (McArthur et al., 2015). The study suggests that phonics and word training are reliable interventions for poor readers.

### **Summary**

Based on a review of the research, it appears that there is a need for more research on phonics instruction at the middle school level. Specifically, there remains a lack of research on the effects of phonics instruction on the decoding and fluency skills of students with disabilities. The OG phonics approach has been reported through numerous studies to have a significant impact on both at risk readers and readers with learning disabilities at the elementary age.

Most middle school students are below grade level in reading, which indicates they are more than likely to have problems with fluency and decoding of text (Joseph & Schisler, 2006). The present research study may help provide evidence based on the benefits of phonics instruction for middle school aged students with learning disabilities

who are a part of resource room instruction. The study will assess student growth, with a focus on decoding and fluency through the use of an OG based program, Phonics First.

## **Chapter 3**

### **Methodology**

#### **Setting and Participants**

This study included five students, all who are part of an eighth grade English resource room. The students attend a middle school in southern New Jersey, where the study took place. This is a large school district, with two separate middle schools. The middle school for this particular study includes grades six through eight and has approximately one thousand students separated into pods. Students have their academic classes within each pod and travel outside of the pod for lunch and special area classes. The typical school day is six hours and thirty minutes, with fifty-two minute periods for instructional periods.

According to the New Jersey School Performance Report (New Jersey Department of Education, 2015), 44.7% of the students are white, 22.9% are Hispanic, 14.9% are Asian, 12.5% are Black, and 4.9% are two or more races. English is the primary spoken language, but 14% of students are Spanish speaking. Furthermore, 9% of students have disabilities, 50% are living at an economic disadvantage, and 1.4% are English Language Learners.

All of the students participating in this study are eligible for special education services and have a documented disability and Individualized Education Program (IEP). The classroom teacher recommended the students for the study based on their low level comprehension skills based on a beginning of year assessment. Students were leveled

using the Benchmark Assessment 2 by the Fountas and Pinnell company at the start of the school year. Table 1 presents the general participant information.

Table 1.

*General Information of Participating Students*

<b>Student</b>	<b>Age</b>	<b>Grade</b>	<b>Classification</b>	<b>Reading Grade Level per IEP</b>
RT	13	8	Aspergers' syndrome, ADHD	5 <sup>th</sup>
TC	14	8	ADHD	6 <sup>th</sup>
TG	13	8	Communication Impaired/SLD	2 <sup>nd</sup>
BH	13	8	ADHD	6 <sup>th</sup>
MG	14	8	Other Health Impaired	4 <sup>th</sup>

**Participant 1.** RT is an eighth grade, Caucasian, male student who is currently receiving special education services under the category autistic. The student has been diagnosed with Asperger's syndrome, and also has a documented diagnosis of ADHD inattentive type. RT receives instruction for English and mathematics in a resource room setting, and social studies and science in an in-class support setting. He also attends a social skills group after school once a week for an hour to help improve social behaviors. RT has strong recall, but has trouble decoding words and reads at a slow pace. RT often

pauses or stutters when reading. RT also has difficulty staying on task and completing long assignments.

**Participant 2.** TC is an eighth grade, Caucasian, female student who is currently receiving special education services through an IEP under the category other health impaired. TC has a documented diagnosis of ADHD. TC receives instruction for English and mathematics in a resource room setting and has social studies and science in an in-class support class. TC's ADHD affects involvement and progress in the general education curriculum. TC's heightened alertness to general environmental stimuli limits alertness to the educational environment, impacts educational performance, and creates a need for special education services. TC engages in a high number of behaviors that adversely affect her involvement and progress in the general education curriculum. TC also receives school counseling twice a week for help managing her emotions and behaviors. Due to her extremely low self-esteem and confidence, this is applicable in the classroom as well, where TC is often too shy to read or becomes impulsive and acts out when it is time to read.

**Participant 3.** TG is an eighth grade, Hispanic, female student who was just recently classified and given an IEP under the categories communication impaired and specific learning disability. During testing for eligibility the subcategories decoding and processing were significantly low and showed major discrepancy. TG has recently been put in resource room for English and mathematics and in-class support for social studies and science. It was revealed during testing that TG's IQ was a 78. Reading is a major concern of her parents, who shared that her sixth grade brother can read much better than

their eighth grade daughter. During initial leveling through the Fountas and Pinnell Benchmark Assessment, it was determined that TG was reading at a second grade level.

**Participant 4.** BH is an eighth grade, Black, female student who is receiving special education services through her IEP under the classification category other health impaired. BH was diagnosed with ADHD, which significantly impacts her performance in the classroom. BH has resource room for English and in-class support for mathematics, social studies, and science. BH is able to think critically and abstractly about text, but has difficulty reading. BH is a highly organized student, but often has behaviors that impact her learning and focus in the classroom. Even in the small group, BH has trouble concentrating, completing assignments/homework, and staying on task.

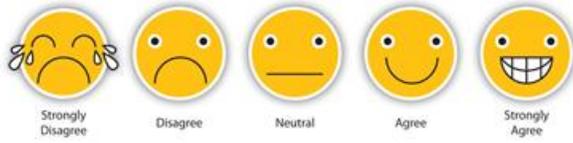
**Participant 5.** MG is an eighth grade, Hispanic male who is receiving special education services under an IEP with the classification of other health impaired for a prolonged seizure as a toddler which caused brain damage. MG lived in the Dominican Republic until fourth grade, and was an ELL student upon entry to the school system in New Jersey. MG has resource room English and mathematics and in-class support for social studies and Science. MG was receiving a supplemental reading class, but it was cancelled due to funding. MG has trouble with letter sounds and decoding words when reading which significantly hinders his comprehension of the text and his fluency rates.

### **Procedure**

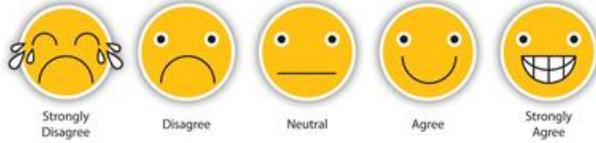
The intervention was implemented over a six-week period from February 2017 to April 2017. Using the Phonics First, Orton Gillingham based program, the teacher taught students phonics lessons during their tutorial periods. Students were exposed to the

interventions at different times, while others were not receiving intervention following the multiple baseline design. During session 1 baseline data was collected on the students. They were given two fluency assessments to time their reading rate and three decoding assessments to test their ability to decode words. All of the students were required to read passages from Fountas and Pinnell Benchmark Assessment 2, based on their IEP reading grade level, for calculation of fluency rate. The students were also given the same three Phonics First word lists to decode prior to the start of intervention. The percentage of words decoded correctly was calculated for later data analysis. All students were told that the sessions they would be participating in would be during their tutorial period, with a goal of helping them improve their reading. Students were allowed to ask questions about the upcoming sessions and were told that we would be completing activities using the Phonics First lessons. During Phase A students were given baseline assessments in fluency and decoding skills provided by the Phonics First program over the course of week one. The data was collected for each student, so that each had five baseline points. During Phase B each student started the intervention one week after another until they were all participating. At the end of the last session the student was given the Likert survey to rate how they liked the Phonics First learning sessions. The scale asked students to choose a rating 1 to 5, 1 being strongly disagreed and 5 being strongly agreed. The categories students will rate include: enjoyed learning phonics skills, believe the lessons helped them read faster, believe the lessons helped them sound out words better, liked the ways the lessons were setup, and whether they would do it again.

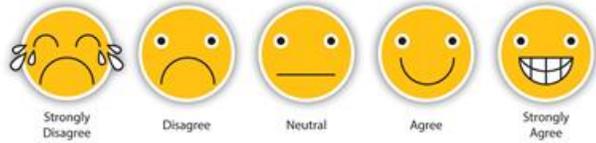
1. I enjoyed learning new phonics skills.



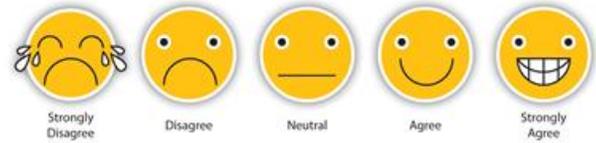
2. I believe these lessons helped me read faster.



3. I believe these lessons helped me sounds out words better.



4. I liked the way the lessons were set up.



5. I would do this again.

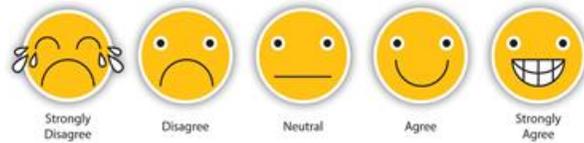


Figure 1. Likert Scale

## Variables

The independent variable was the Phonics First intervention. This intervention aimed to increase students' fluency and decoding skills to improve their overall reading. The dependent variables in the study were the student's decoding and reading fluency levels.

## **Experimental Design**

This study utilized a single subject multiple baseline across participants design. The Phonics First instruction consisted of multiple sessions. For the purpose of measuring the specific reading skills of decoding and fluency, the sessions followed specific lessons within the program that helped students improve these skills. Students were exposed to instruction over different amounts of times, since they were exposed to intervention at different weeks, focusing on phonics skills that would hopefully help improve those two specific skills. A total of eight data points were taken with each student; five at baseline and 3 at intervention. During Phase A students were given baseline assessments in fluency and decoding skills provided by the Phonics First program over the course of week one. The data was collected for each student, so that each had five baseline points. During Phase B, each student started the intervention one week after another until they were all participating. Student RT began week two, TC week three, TG week four, BH week five, and MG week six. The sessions took place three days per week (Monday, Wednesday, and Friday) during their fifty-two minute tutorial period. The students were instructed on phonics skills through the multisensory approach. After each student was exposed to intervention and student five had been participating for one week, final data points were taken.

## **Data Analysis**

Data was analyzed visually through the patterns and trends of the responses of all five students. All of the data points were collected and then placed into visual graphs.

This format shows the results of the mini lesson sessions on student's fluency and decoding in an easy to analyze visual format.

## **Chapter 4**

### **Results**

#### **Introduction**

This single subject study followed a multiple baseline across participants design to investigate the effects of Phonics First instruction on the fluency and decoding skills of students with learning disabilities. The research questions investigated follow:

1. Will the use of multisensory phonics instruction increase the reading fluency of students with learning disabilities in a middle school resource classroom?
2. Will the use of a multisensory phonics approach increase the decoding skills of students with learning disabilities in a middle school resource classroom?
3. Are students satisfied with the use of multisensory phonics instruction?

The baseline data was obtained through five decoding assessments and five fluency assessments prior to intervention for all five students. Data was taken throughout the intervention on fluency and decoding after each student session. Maintenance data was taken two weeks after the conclusion of the study. The results are reported in Table 3. At the conclusion of the study, the students completed a Likert scale on their satisfaction with the intervention. The results are reported in Table 4.

#### **Group Results**

Research question one asked, will the use of multisensory phonics instruction increase the reading fluency of students with learning disabilities in a middle school resource classroom? Student's fluency scores were based off of Fountas and Pinnell Benchmark Assessment 2 individual reading level fluency passages through the

Benchmark 2 Assessment. These assessments were calculated using a fluency calculator and student reading time divided by the amount of words in that particular passage to get a total fluency rate of words read per minute (WPM). Table 2 shows the fluency rates and decoding scores each student had during the baseline, intervention, and maintenance phases.

Research question two asked, will the use of a multisensory phonics approach increase the decoding skills of students with learning disabilities in a middle school resource classroom? Students decoding skills were based off of Phonics First word lists that contained combinations of 25 words. Results were calculated by dividing the number of words that students correctly decoded by the number of words on the list ( $\#d/25=\%$ ).

Table 2.

*Student Fluency and Decoding Rates Across Intervention Phases*

Participant	Fluency				Decoding			
	Baseline (WPM)	Intervention (WPM)	Days of Intervention	Maintenance (WPM)	Baseline (%)	Intervention (%)	Days of Intervention	Maintenance (%)
	Total	Total	Total	Total	Total	Total	Total	Total
1	152	165	15	166	52%	77%	15	82%
2	168	174	12	173	60%	75%	12	77%
3	95	105	9	106	24%	64%	9	65%
4	170	181	6	183	68%	84%	6	84%
5	130	138	3	142	44%	68%	3	78%

*Table 3* shows the individual student mean scores and standard deviations for both dependent variables during each phase. Examining participant’s fluency rates and decoding skills reveals that all participants increased, especially in the dependent variable of decoding. For example, participant 3 increased the percentage of words decoded correctly by more than double from baseline to intervention. Examining participant’s fluency rates also reveals that participants increased from baseline to intervention. For example, during intervention all students increased their fluency rates by at least 5% from baseline. Overall, there was an increase in skills for all participants.

Table 3.

*Mean and Standard Deviation Across Phases*

Participant	Fluency						Decoding					
	Baseline		Intervention		Maintenance		Baseline (%)		Intervention (%)		Maintenance (%)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	152	3.5	165	3.3	167	0.0	52%	2.8	77%	4.1	82%	2.1
2	168	2.0	174	2.6	173	1.6	60%	4.0	75%	5.2	77%	3.5
3	95	3.7	105	2.2	106	1.0	24%	2.8	64%	2.8	65%	1.0
4	170	2.0	181	1.4	183	1.0	67%	1.8	84%	5.1	84%	3.5
5	130	1.0	138	1.7	142	1.0	44%	4.0	68%	4.0	78%	2.0

## **Individual Results**

Figure 2 illustrates the outcomes for each participant detailing fluency rates during baseline (Phase A), intervention (Phase B), and maintenance data collection. During baseline, Participant 1 had an average fluency rate of 152 WPM, which increased to 167 WPM during intervention. During maintenance taken after intervention ended, Participant 1 increased to 167 WPM. Participant 2 read at a mean rate of 168 WPM during baseline, which increased to 173 WPM during the intervention phase. When maintenance data collection took place, Participant 2's mean rate was maintained at 173 WPM. Participant 3 had a mean fluency rate of 95 WPM during baseline, which increased to 105 WPM during intervention. During maintenance data collection, the mean continued to increase to 106 WPM. During baseline Participant 4 had a mean fluency rate of 170 WPM, which increased to 181 during intervention phase, and continued to go up during maintenance at a mean of 183 WPM. Finally, during baseline, Participant 5 read at a mean fluency rate of 130 WPM, which increased to 138 during intervention. During maintenance data collection, the mean continued to increase to 142 WPM.

Data reflects continuous progress for all participants from baseline to intervention. Maintenance data shows Participants 1, 3, 4, and 5 continuing to maintain skills post intervention. All five students increased their mean decoding rate from baseline to intervention, and maintained or increased their fluency rate post intervention.

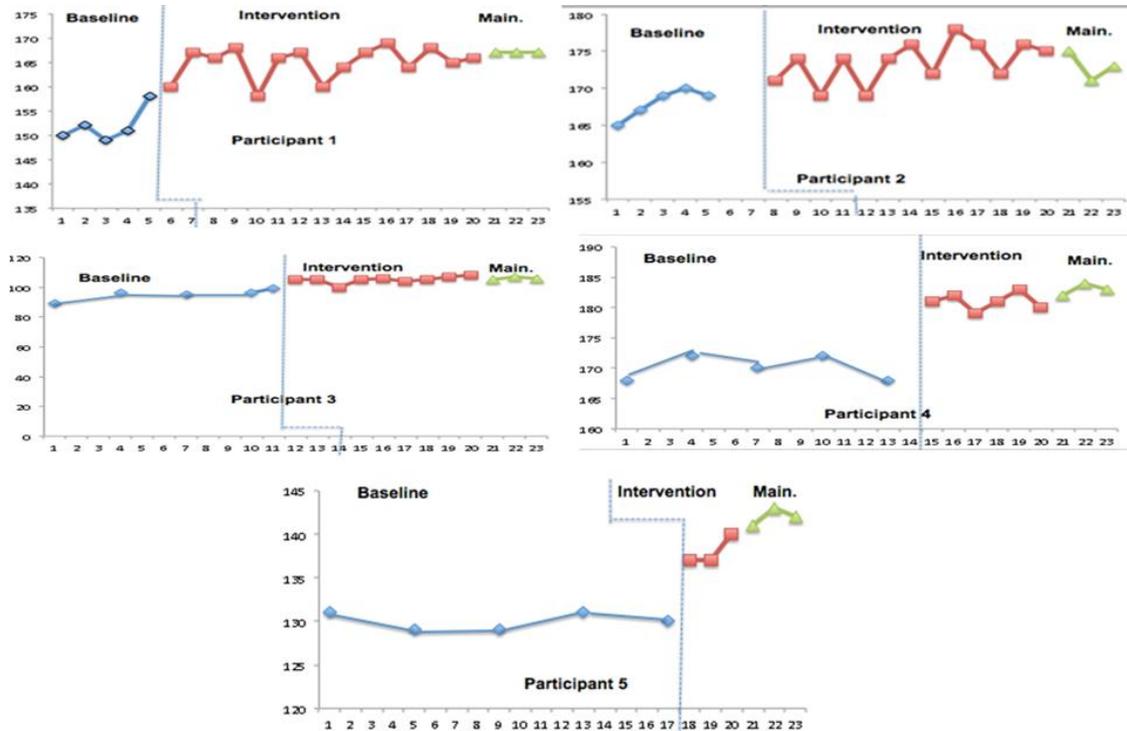


Figure 2. Fluency Rate

Figure 3 illustrates the outcomes for each participant detailing decoding accuracy during baseline (Phase A), intervention (Phase B), and maintenance data collection. During baseline, Participant 1 decoded 52% of the words on assessment lists, and then increased to 77% mean words decoded during intervention. During maintenance data collection, taken post intervention, the mean increased again to 82%. During baseline, Participant 2 decoded 60% of words accurately, then increased words decoded to 75% during intervention, and continued to increase decoding to 77% during maintenance data collection. Participant 3 decoded 24% of words during baseline data assessments, then more than doubled decoding to 64% during intervention. During maintenance data collection, the mean increased by an additional 1%, to 65% post intervention. Participant

4 read with accuracy at a mean percentage of 67. During intervention, the participant increased the words decoded accurately to 84%, which remained the same during maintenance data collection. Lastly, Participant 5 decoded a mean of 44% with accuracy, which increased to 68% during the intervention phase. After maintenance data was collected the percentage increased further to 78%. After analyzing the data it appears that all five students increased outcomes from baseline to intervention, and maintained the skills post intervention.

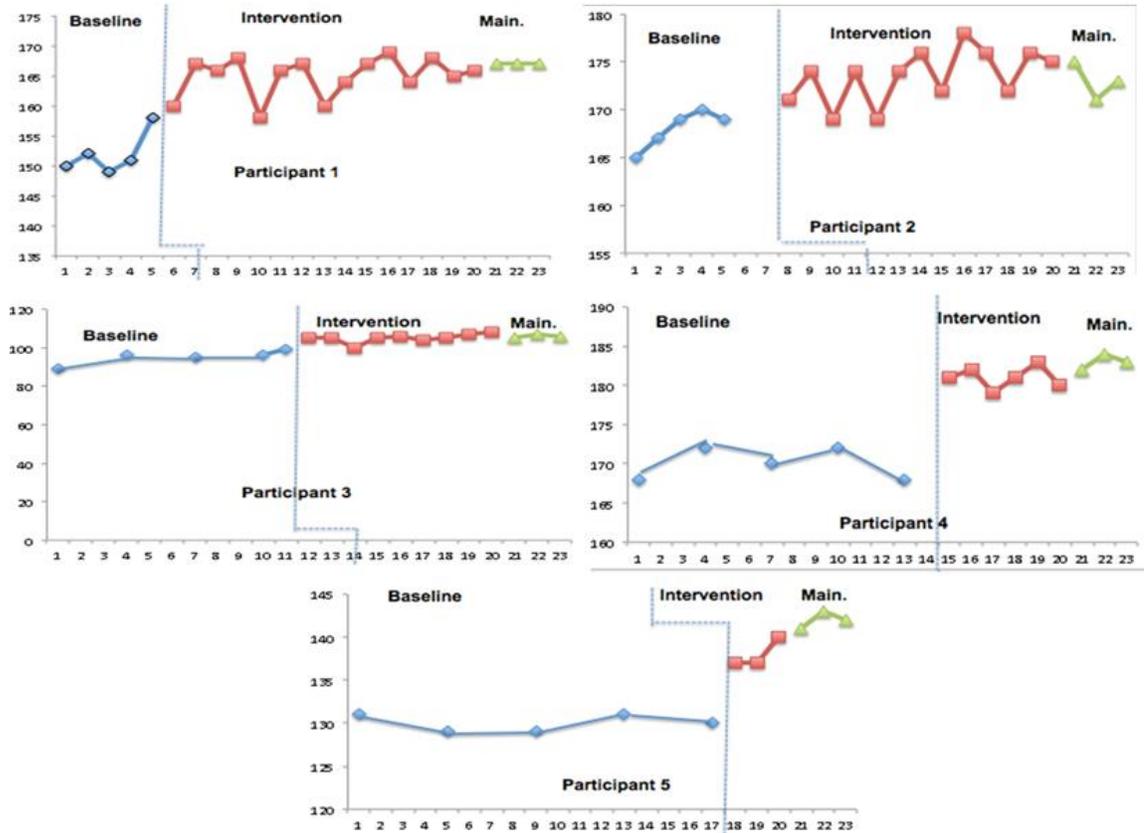


Figure 3. Decoding Accuracy

## Survey Results

Research question three asked, are students satisfied with the use of multisensory phonics instruction? All students completed a Likert scale type satisfaction survey at the conclusion of the intervention. Results were tallied and calculated into percentages. Table 4 represents the percent of student responses to each statement.

Table 4.

*Student Satisfaction at Study Conclusion*

<b>Statement</b>	<b>5 Strongly Agree (%)</b>	<b>4 Agree (%)</b>	<b>3 Neutral (%)</b>	<b>2 Disagree (%)</b>	<b>1 Strongly Disagree (%)</b>
1. I enjoyed learning new phonics skills.	80	20	0	0	0
2. I believe these lessons helped me read faster.	60	20	20	0	0
3. I believe these lessons helped me sounds out words better.	80	20	0	0	0
4. I liked the way the lessons were set up.	100	0	0	0	0
5. I would do this again	60	0	20	20	0

At the conclusion of the study, student responses show that 80% strongly agreed, and 20% agreed with the first statement, “I enjoyed learning new phonics skills.”

Students responded to the statement “I believe these lessons helped me read faster”, with 80% agreement (60% strongly agreed, 20% agreed, and 20% reported a neutral response). In response to statement three, “I believe these lessons helped me sounds out words better”, to help measure if students thought the phonics lessons helped improve their decoding skills 100% of students agreed (80% strongly agreed and 20% agreed). In

terms of statement four, "I liked the way the lessons were setup," 100% of students strongly agreed with the statement. The final statement on the scale read, "I would do this again." Student responses revealed that sixty percent of students strongly agreed, 20% were neutral, and 20% disagreed with the statement.

## **Chapter 5**

### **Discussion**

The purpose of this study was to determine if a multisensory phonics program, Phonics First, has an effect on the decoding and fluency of students with learning disabilities. The study utilized a multiple baseline across participants design to investigate the effects of the phonics program on student decoding and fluency performance. In addition, a student satisfaction Likert scale was administered to examine student's opinions of the Phonics First instruction. The research questions included:

1. Will the use of multisensory phonics instruction increase the reading fluency of students with learning disabilities in a middle school resource classroom?
2. Will the use of a multisensory phonics approach increase the decoding skills of students with learning disabilities in a middle school resource classroom?
3. Are students satisfied with the use of multisensory phonics instruction?

### **Findings**

The first research question asked if the use of multisensory phonics instruction would increase the reading fluency of students with learning disabilities in a middle school resource classroom. The results of the study showed that all five students increased their fluency skills during intervention and maintenance phases. Participant 1 who participated in Phonics First for five weeks increased from 152 WPM to 167 WPM. Participant 5 who was exposed to the intervention last was increased his or her reading

fluency from 130 WPM to 138 WPM. The mean growth rate among students for fluency rate was 35%.

The second research question was, will the use of a multisensory phonics approach increase student's decoding skills? The results of the study showed that the decoding scores of the five students increased during the intervention phase, and were maintained or increased further during the maintenance phase. When Phonics First was implemented in the resource room classroom during student tutorial periods, all students increased during the intervention phase of the study. Participant 1 increased by 25%, Participant 2 increased by 15%, Participant 3 increased by 40%, Participant 4 increased by 17%, and Participant 5 increased the amount of words correctly decoded by 24%. The average growth of student decoding was 24%.

Results from this study suggest that the intervention of phonics instruction resulted in an increase in participants' abilities to read fluently and decode words correctly. These results align with the findings of prior studies by Hook, Macaruso, Jones (2001), Feldman (2008), Joshi, Dahlgreen, and Boulware-Gooden (2002), and Weistrich-Bond (1993),

Hook and colleagues conducted a longitudinal study of two groups to compare the effects of Fast For Word, an auditory based reading program, and Orton-Gillingham (OG), a multisensory based instruction. The study found that the group exposed to Fast ForWord made limited growth in word attack, phonemic awareness, and word identification, whereas the group exposed to OG instruction made significant growth (Hook, et al., 2001). The findings of the present study support the findings of Hook,

Macaruso, and Jones, as both studies led to an increase in phonics skills due to exposure to multisensory phonics instruction.

Similarly, a previous study conducted by Joshi and colleagues (2002) suggests that phonics has positive effects on younger students. The quasi-experimental design studied reading instruction in general education classrooms. Two classes of students were either exposed to a Houghton Mifflin reading program or Language Basics, a multisensory Orton Gillingham program. The study found that only the OG Language Basics group made significant growth in two categories, which included word attack and phonological awareness. The results support the findings of the present study.

Lastly, two studies conducted by Simpson, Swanson, and Kunkel (1992), measured the effectiveness of OG approach with middle and high school students using a quasi-experimental design amongst 13 to 18 year olds. Similar to this study, students were exposed to reading instruction 90 minutes a day during reading remediation. Students outperformed the comparison group who received the traditional reading instruction for forty five minutes a day (1992). This also aligns with the present study and suggests that the multisensory approach is extremely beneficial for adolescent students.

### **Limitations**

The results of this study may have been different if more time was spent implementing the multisensory phonics program with students. The data collected from the study may have been stronger if each student spent a minimum of four weeks in the intervention, instead of one or two weeks in intervention. A second limitation was that since the thesis took place during the spring semester, the study was limited in the

amount of time that could be spent on the intervention as the end of the semester and school year were nearing. Another limitation was that the IRB approval took longer than anticipated, which affected the start of the study. If the IRB approval had been a shorter process then students would have been exposed to intervention sooner and for longer periods of time. The direct effect was that each student's time spent in intervention was shortened by a week, which could have affected overall study outcomes.

In addition, another limitation for this study was student sample size. Since the study focused on students within a resource room, there were only five student participants. Since the study followed a multiple participants across baseline design, the results of the small number of students participating may not be generalizable to the larger population. Additional research with a larger number of participants is needed.

### **Implications and Recommendations**

Despite the limitations of the study, the data suggests that multisensory phonics instruction has a strong, positive effect on the decoding and fluency of middle school students with disabilities. The results of the study suggest that phonics instruction can help improve student's overall reading performance.

Implications from Feldman (2008) also suggest that explicit phonics instruction is appropriate for older students. This, coupled with the findings of the present study, implies that teachers of students with disabilities in the middle and high school grades may benefit from professional development in multi-sensory phonics instruction, and programs such as OG. The implications from this study support multisensory phonics instruction for middle school students. Implications for future research involving phonics

instruction for middle school students include the recommendation for research using a larger sample size of students with disabilities to yield stronger results for longer duration of time.

### **Conclusion**

The results of this study are promising and show the positive effect that Phonics First, a multisensory reading intervention, has on students with disabilities, and reveals that students were satisfied with the phonics instruction overall. The study specifically demonstrates that the phonics instruction helped students with a multitude of disabilities, including specific reading disability, ADHD, and autism, and that all students benefitted from the instruction. Although this study demonstrates the positive effects that phonics instruction has on students, it is recommended that further research is conducted with a larger number of students, and over a longer period of time, to further validate findings.

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