

ABSTRACT

ROSS, SARAH GWEN. Promoting Fluency in English Language Learners: Comparing a Small-Group and a One-on-One Reading Intervention. (Under the direction of Dr. John Begeny).

Currently, Hispanic students score significantly lower than White, non-Hispanic students in reading throughout their elementary school years. Although several evidence-based fluency techniques exist for students who speak English as a first language (e.g., Repeated Reading, Listening Passage Preview, and Phrase Drill) research has insufficiently evaluated their effects with English language learners. This study used an alternating treatments design to examine the differential effects of a one-on-one (1/1) and a small group (SG) reading fluency intervention implemented with Spanish-speaking, English language learners. Each intervention condition was also compared to a no-treatment control condition (NTC). Students' words read correct per minute (WCPM) served as the primary dependent measure, though standardized reading assessments and an experimenter-developed vocabulary assessment were also administered to measure student reading progress. WCPM scores were evaluated with visual analysis, standard-error of measurement (SEM) analysis, and randomization test analysis. Compared to the NTC, all students made significant WCPM gains as a result of receiving the 1/1 condition, whereas only two students significantly outperformed the NTC as a result of the SG condition. Standardized test gains and vocabulary gains were variable across students and conditions. Overall, the study offers preliminary evidence supporting two fluency-based reading interventions for Spanish-speaking, English language learners, each of which appear differentially useful depending on the time and resources available within a particular school setting.

Promoting Fluency in English Language Learners: The Effects of a Small-Group and a
One-On-One Reading Intervention

by
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DEDICATION

This paper is dedicated to all brave students struggling to learn a second language in a
new place.

BIOGRAPHY

Sarah Gwen Ross was born September 6, 1983 in Reidsville, NC. She is the daughter of Ken and Betty Ross. After graduating from Reidsville High School in 2001, she attended Wake Forest University where she majored in Psychology and minored in Biology. During her time at Wake Forest, Sarah participated in research in several areas, including animal behavior, examining bat echolocation, and cognitive psychology, studying task-switching behavior. She also spent the summer of 2003 in Jamaica studying marine biology. Upon graduating from Wake Forest in 2005, she worked for a year as a program coordinator for a social psychology research project funded by the National Institutes of Health. Ultimately, Sarah was interested in doing research that would contribute to the solution of community and social problems, especially those related to children. In the fall of 2006, she entered the School Psychology graduate program at North Carolina State University under the supervision of Dr. John Begeny. During her first years in the program, Sarah became aware of the need for reading intervention programs in elementary schools. She worked for two years developing and implementing these programs in a local elementary school. She also became interested in examining how non-parametric statistics could be utilized in small-N studies. The combination of these interests led to the development of the topic for her thesis. Upon completing her Master of Science degree in December 2009, Sarah plans on obtaining her doctoral degree in School Psychology. Outside of school, Sarah's hobbies include:

tennis, reading, music, gallery hopping, wine, being outside, Grey's Anatomy, hanging out with friends and family, babysitting, volunteering, napping, and procrastinating.

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Introduction

Reading is a crucial skill in our society, relating to a wide variety of variables including economic success (Marks, 2007), health (Sentell, 2003), and self esteem (Weiss, Francis, Senf, Heist, & Hargraves, 2006). Also, the importance of acquiring literacy skills in the primary grades is well documented. Students who do not develop early literacy skills continue to struggle with reading in later grades (Felton & Pepper, 1995; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Morris, Shaw, & Perney, 1990; Savage & Stuart, 1998). It is therefore unfortunate that many students have great difficulty learning to read, and a large number of individuals do not acquire basic literacy skills. The Committee on the Prevention of Reading Difficulties in Young Children (Snow, Burns, & Griffin, 1998) reported that approximately 3.5% of students in U.S. schools receive services for a reading disability, which amounts to over two million students nationwide. Further, in the most recent large-scale evaluation of US students' reading achievement, the 2007 report from the National Center for Education Statistics (NCES) reported that 33 % of 4th grade students are reading *below* a basic level. In other words, when reading fourth-grade text, these students are unable "to make relatively obvious connections between the text and their own experiences and extend the ideas in the text by making simple inferences," (Lee, Grigg & Donahue, 2007, p.20). Collectively, national reports of US students' reading achievement suggest the imperative need for improving students' reading development, particularly at the early grade levels.

Chapter 1:

Review of the Literature

Essential Components of an Early-Elementary Literacy Program

Recent reviews have identified the five components most critical for successful early-elementary reading instruction: phonemic awareness (the recognition and ability to manipulate sounds present in language), phonics (the linkage of phoneme information to letters and words), reading fluency (the ability to read quickly, accurately, and with appropriate expression), comprehension (the potential to understand what one reads), and vocabulary (an understanding of the definition of words that one reads). (Armbruster, Lehr, & Osborn, 2001; National Reading Panel, 2000; Snow, et. al, 1998). One component that has received much recent attention is reading fluency.

LaBerge and Samuels (1974) explain reading fluency in terms of automatic processing, stating that the more basic components of reading must become automatic in order for fluency to be reached. When first learning to read students pay attention to each individual letter and word, making the reading process slow and inaccurate. It is not until the identification of words becomes automatic that students can increase their speed and comprehension when reading. LaBerge and Samuels therefore argue that the automatic recognition of letters and words frees up cognitive space that can then be allocated to fluency and comprehension. From this perspective, reading difficulties stem from a reader's poor decoding skills. When readers have trouble decoding words, a bottleneck is created that slows the flow of reading. As students learn to read they reassign their

attention from lower level word identification to higher level comprehension, and it is therefore proposed that oral reading fluency is actually an accurate measure of overall reading competency (Fuchs, Fuchs, Hosp, & Jenkins, 2001). For example, reading text fluently has been shown to be an accurate predictor of reading comprehension (Hintze, Callahan, Matthews, & Tobin, 2002), with evidence that it is a better indicator of comprehension than more direct measures (i.e., questioning, retelling, and cloze) (Fuchs, et al., 2001).

From a slightly different perspective, Haring and Eaton (1978) describe the development of reading fluency using a learning hierarchy and identify four stages in the skill development process: acquisition, fluency, generalization, and adaptation. Acquisition is defined as “the period between the first appearance of the desired behavior and the reasonably accurate performance of that behavior” (Haring & Eaton, p. 25). During the acquisition stage, instruction should emphasize accuracy and use instructional techniques such as modeling, prompting, and error correction (Martens, Witt, Daly, & Vollmer, 1999).

After a student has acquired a skill (e.g., reading), the focus of learning then shifts to proficiency/fluency building (Haring & Eaton, 1978). A student who can perform a task fluently is able to perform the task quickly, smoothly, and without hesitation. Similar to the description provided by LaBerge and Samuels (1974), Haring and Eaton (1978) suggest that a student in the fluency stage of reading “has mastered basic decoding skills and is able to concentrate on the meaning of the story” (p. 26). During the fluency stage,

reading instruction should focus on practice and reinforcement (Martens et al., 1999). For example, reading passages repeatedly (e.g., two to four times) and setting goals for particular rates of responding are common instructional strategies during this phase (Daly, Lentz, & Boyer, 1996).

The final two stages of the learning hierarchy are generalization and adaptation. Generalization refers to performing a skill in a variety of settings and in response to new stimuli that are similar to those presented in the acquisition stage (Haring & Eaton, 1978). Instruction during the generalization phase should focus on discrimination across stimuli and maintenance over time (Martens et al., 1999). Adaptation involves modifying a skill to correspond with environmental changes, and instruction should focus on opportunities for the student to perform a task in different environments (Daly et al., 1996).

Promoting Reading Fluency

There is a growing research base of strategies aimed to improve students' reading fluency. Several of these strategies will be incorporated into the reading intervention proposed in this article. Each strategy (repeated reading, listening passage preview, and phrase-drill error correction) will be discussed individually, and then research involving the use of these components in a treatment package will be included.

Repeated reading. The fluency-based instructional strategy with the strongest research base is repeated reading (RR). There have been multiple variations in how RR has been used in previous research (Freeland, Skinner, Jackson, McDaniel, & Smith, 2000; Sindelar, Monda, & O'Shea, 1990; Vaughn, Chard, Bryant, Coleman, &

Kouzekanani, 2000; Weinstein & Cooke, 1992) but a general RR procedure requires students to re-read a short story (i.e., passage) two or more times, sometimes reading the passage until a suitable fluency level (i.e., criterion) is met.

Recent meta-analyses (Chard, Vaughn, & Tyler, 2002; National Reading Panel, 2000; Therrien, 2004) and literature reviews (Meyer & Felton, 1999) have substantiated the positive outcomes from using RR procedures. For example, Chard and colleagues (2002) examined the effects of 24 studies that addressed features of reading interventions and found that RR is associated with significant improvements in fluency and comprehension for students with learning disabilities (LD). Therrien (2004) combined the effects of 27 studies to identify key instructional components of RR on transfer measures (i.e., the effects of RR on unpracticed reading material). He reported that RR conducted by adults outperformed those conducted by peers and that the use of modeling (e.g., an adult reads the passage while the student follows along, prior to having the student read the passage) enhances the effects of RR. Additionally, Therrien reported that corrective feedback (i.e., correcting errors that the student makes while reading the passage) boosts the effects of RR. Another key component reported by Therrien (2004) is the use of performance criteria (i.e., having the student read a passage until a certain number of words are read correctly in a predetermined amount of time), and the use of charting to monitor a student's progress towards her goal.

Although previous research and meta-analyses have typically examined the effects of RR when implemented with students individually, more recent research has

investigated the impact of RR when used with small groups. For example, Begeny, Krouse, Ross, and Mitchell (2008) used an alternating-treatments design to investigate the effects of RR in comparison to other fluency building techniques that can be administered in a small-group setting. The study included 4 second grade students who tested below mastery level for second-grade materials, but still scored above 70 on both the Rapid Naming Composite of the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999) and the overall Basic Reading Composite on the Woodcock-Johnson Tests of Achievement, Third Edition (WJ-III; Woodcock, McGrew, and Mather, 2001). This stipulation is required because students reading two standard deviations below the mean on these measures (i.e., having a score of 70 or below) would not be as likely to benefit from the type of fluency-based interventions implemented in this study, and would more likely need intensive intervention focusing on phonemic decoding. To perform RR in a group-setting a student “leader” was chosen to read the passage aloud while the remaining students also read the story aloud, but in slightly quieter voices. The role of leader alternated between students so that each student acted as leader approximately the same number of times over the course of the study.

The study compared RR to a listening only condition (LO; i.e., children listened to a passage read to them by a trainer), a listening passage preview condition (LPP; i.e., children followed along on their own, individual copies of the passage while the trainer read the passage aloud), and a baseline (BL; no-intervention) condition. Students

received one of each of the four conditions approximately 3 times per week over the course of 6 weeks, ultimately receiving each condition 4 times.

Overall, each intervention condition resulted in performance increases that were larger than those obtained during BL conditions. However, the RR condition resulted in students reading more words correct per minute (WCPM) than all other conditions in both the immediate (i.e., students' reading of the passage directly after intervention) and retention (i.e., students' reading of a passage approximately two days after the intervention) assessments. The LPP condition also resulted in notable improvements for each of the participants, and the effects were greater for this condition than the LO condition. Thus, taken as a whole, this study provides evidence suggesting the RR, LPP, and LO procedures help to improve students' reading fluency of practiced material, though the RR strategy appeared most effective.

Listening passage preview. Listening Passage Preview (LPP) consists of a teacher/researcher modeling reading while students follow along. LPP has been proven effective with elementary school-aged students (Begeny & Silber, 2006; Daly, Martens, Dool, & Heintze, 1998; Daly & Martens, 1994), and also those with learning disabilities (Rose, 1984a; Rose, 1984b; Rose 1984c). Also, LPP has been shown to be particularly effective when paired with reinforcement for the student (Eckert, Ardoin, Daly & Martens, 2002), and as mentioned previously, when combined with a RR intervention (Therrien, 2004).

Rose (1984b) used an alternating treatments design to examine the effects of two previewing procedures on elementary-aged students' oral reading fluency: silent reading (SR) and LPP. There were five students with behavior disorders in the study, ranging in age from 9-12. SR required a student to read a passage silently before reading it aloud. LPP consisted of a teacher reading a passage aloud while the student followed along silently. Both conditions led to higher WCPM when compared to conditions where no previewing was provided. However, LPP was differentially related to higher WCPM than the SR condition. Neither of the conditions resulted in changes in words incorrect per minute (WIPM).

The effectiveness of LPP has been attributed the fact that students are able to preview the passage (as the trainer is modeling it) before the student actually has the opportunity to misread a word that has not been acquired (Daly et. al, 1996).

Phrase-drill with error correction. A procedure reported relatively less in the reading intervention literature is a variation of the RR procedure, known as phrase-drill (PD) with error correction. Like RR, PD requires students to read text repeatedly; however, in the PD procedure, students read a particular *phrase* from a passage repeatedly (e.g., three times consecutively) rather than reread the entire passage. Also, the phrases read by students contain at least one word that was incorrectly read on a previous reading of the passage, and the correct pronunciation of the incorrectly read word is usually modeled for the student before he or she reads the phrase. For example, if a student reads the sentence, "The monkey jumped down from the tree," and

mispronounces “monkey”, the phrase drill would consist of the student repeatedly reading the phrase “the monkey jumped down.” O’Shea, Munson, and O’Shea (1984) illustrated the importance of having students read a phrase instead of only the incorrect word. They found that having students repeat the entire phrase containing a misread word was more effective than both having the experimenter model the accurate reading of the misread word and having the subject repeat only the error word (instead of the complete phrase) several times.

Although there is much less empirical evidence supporting the effectiveness of PD compared to LPP or RR, some research has suggested that PD can be a useful component in reading interventions targeting fluency and accuracy. As with LPP, many studies have shown that PD is effective as part of an intervention package (e.g., Begeny & Martens, 2006; Daly et. al, 1998), but some studies have shown it to be effective even when used in isolation (e.g., Begeny, Daly, & Valleley, 2006; O’Shea, et. al, 1984). For example, Begeny and colleagues (2006) used an alternating-treatments design to compare the effects of PD to RR and a reward (RE) condition on the reading fluency of an 8-year-old male referred for reading difficulties. During RR sessions, the student read a passage two times before WCPM and WIPM were measured for the passage. During PD sessions, the student read the passage and then practiced all words read incorrectly (reading them within a 3-5 word phrase). Each phrase was read 3 times, and then the student read the entire passage while WCPM and WIPM were measured. In RE sessions, the student received a prize if he read a passage faster than a previously read passage of similar

difficulty, with WCPM and WIPM being measured at the time of reading. A baseline (BL) condition was also included during which the student simply read a passage. Each intervention condition was implemented 8 times, and the BL condition was implemented 4 times. Results suggest that RR and PD were about equally as effective at increasing oral reading fluency relative to the RE and BL conditions, but the PD condition resulted in the lowest error rate of all conditions. Although this study only included results for one student and therefore cannot be easily generalized to larger populations, it is useful because the results suggest that PD is an important component in promoting reading fluency, especially when addressing accuracy.

There are two primary reasons PD can be an effective reading fluency intervention: 1) reading phrases repeatedly (as opposed to isolated words) provides contextual cues for students, and thus should make it easier for students to read the problem word; and 2) PD may increase reading fluency because students are not practicing word-by-word reading, but rather are reading larger linguistic units (O'Shea, et. al, 1984).

Combining fluency-building techniques. As mentioned previously, the aforementioned interventions such as RR, LPP, and PD (and sometimes others) are occasionally combined in a “treatment package” an attempt to better improve students’ reading fluency. Unsurprisingly, several studies have found that combining these intervention components has positive effects on reading fluency in one-on-one (Daly, et. al 1998; Eckert, et. al 2002) and small-group settings (Begeny & Martens, 2006;

McCurdy, Daly, Gortmaker, Bonfiglio, & Persampieri, 2007). For example, Begeny and Martens (2006) examined the effects of different combinations of empirically supported reading interventions, with hopes of finding an optimal intervention for use in a small group setting to promote reading fluency. The study included 12 students from four separate classrooms. Students were chosen for the study because they were identified by their teacher as having difficulties with reading, and they met a pre-determined criteria set by the experimenters: they were reading at a mastery level below (but within two years of) their current grade level as indicated by fluency-based screening (FBS) procedure, they had a composite score above 70 on both the Phonological Awareness Composite of the CTOPP (Wagner et. al, 1999) and the Broad Reading Test of the WJ-III, and they were not currently diagnosed with an educational or psychological disability.

The dependent measures used in the study included the following: fluency-based screening (FBS) probes; the CTOPP Phonological Awareness Composite subtests; the WJ-III Broad Reading Test; Curriculum Based Measurement (CBM) reading probes; CBM comprehension probes; and two word lists (A and B). List A contained trained words and List B contained words similar to those on list A (i.e., every word on list B contained the same beginning and/or ending sound as its match on List A, but unlike List A, students had no opportunities as part of the intervention to practice words in List B).

A multiple baseline design across reading groups was used to evaluate the effects of a reading intervention that included PD, LPP, and RR. NTC conditions involved measuring students' reading fluency of text they encountered as part of their typical

classroom instruction. Participants received intervention in a small group of six children. Each intervention session lasted 15-20 minutes and took place over a period of approximately 10 weeks.

With trained passages (i.e., passages that students practiced during the intervention), results showed significant increases in WCPM with the onset of the intervention condition across both groups. There were also significant improvements on pre to post tests for fluency-based screening probes, and the Letter Word Identification, and Passage Comprehension components of Broad Reading Composite of the WJ-III, and on pre to post word accuracy on Word Lists A and B. Overall, the study showed that the combination of research-based intervention components implemented with a group of 6 students not only lead to increases in fluency of practiced material, but also improved students' performance of non-practiced material, including their performance on standardized measures of reading (e.g., the WJ-III).

In another study, Begeny and Ross (2009) looked at the effects of a treatment package that included LPP, PD, RR, and an additional comprehension component on increasing the reading fluency of 4 second grade students at risk for reading difficulty. An alternating treatments designed was used to examine the effects of the intervention implemented in one of four different ways: a small group vs. one-on-one intervention, each administered in a 12-15 minute (shorter) or 18-20 minute (longer) format. A baseline condition was also included in the study to compare the four intervention conditions to a non-intervention condition. Students met 3 times per week for 10 weeks,

and were assessed on a trained passage two days after intervention (retention assessment), and a generalization passage (i.e., a different passage that included approximately 80% of the words from the trained passage) immediately following intervention (generalization assessment).

RR in the one-on-one setting involved the student re-reading a passage several times during the intervention session. RR during the small group condition consisted of the trainer choosing a student leader to read the passage aloud, while the other group members read as well, using slightly quieter voices. RR was completed two times during the shorter intervention, and 4 times during the longer intervention.

LPP in the one-on-one setting involved the student following along on his student packet while the trainer read the passage out loud at approximately 80 words per minute. The trainer would randomly call on the student to read the next word in the passage approximately 5-7 times during the reading of the passage. During the group setting, LPP followed the same protocol, except the trainer would call on multiple students to read the next word over the course of reading the entire passage. LPP in the shorter condition occurred one time, and in the longer condition occurred two times.

PD in the one-on-one setting involved the trainer modeling a word that a student misread during the first reading of a passage, and then prompting the student to read a phrase that included the missed word 3 times. This procedure was repeated for three to four misread words. During the small group setting, difficult phrases were selected from the passage prior to the intervention session and written on a whiteboard for students to

read from. The trainer modeled the phrases and then prompted students to read the phrases from the whiteboard. PD occurred 1 time during the shorter condition, and two times during the longer condition.

When evaluating the average WCPM scores across condition for each student, findings from this study showed that the longer small-group condition resulted in the highest WCPM gains for retention scores for two students, while the longer one-on-one condition was most successful for the remaining two students. Regarding generalization scores, two students made the most WCPM gains in the longer small-group condition, while the remaining two students were most successful in the shorter small-group condition, and the shorter one-on-one condition. Although findings from this study were not completely consistent across all participants, the results provide further support for implementing reading intervention packages in small-group settings—an instructional context that is likely to save teachers’ time and resources compared to one-on-one intervention implementation.

English language learners: A neglected area in reading fluency research.

Although there is increasing evidence showing the effectiveness of RR, LPP, and PD in a variety of settings, little research has specifically focused on techniques for promoting reading fluency with the growing English language learner population in the US.

Although there is a possibility that the types of reading fluency interventions described above would also be effective for this population, there is little evidence to support this claim. Additionally, teachers report that because of limited knowledge of how to address

reading instruction for English language learners, time, and resources, they are unsure of how to intervene with English language learner students who are having difficulty in their classes (Fletcher, Bos, & Johnson, 1999). Given that the lack of effective early interventions is a contributing factor in slow achievement rates, which in turn often result in special education referrals (Ortiz & Kushner, 1997), additional research should be conducted to develop interventions that accelerates English language learners' reading (Malloy, Gibertson, & Maxfield, 2007).

To provide additional context for the overall purpose of the study being proposed in this report, the following sections will highlight the prevalence of the English language learner in the U.S., define common terms used when describing this population, and provide an overview of reading research with this population.

Literacy and the English Language Learner Population

Spanish is the language spoken by the largest population of English language learners in the United States (Vaughn, Linan-Thompson, Mathes, Cirino, Carlson, Pollard-Durodola, Cardenas-Hagan, & Francis, 2006). According to the U.S. Census Bureau (2000), Hispanics are the largest minority in the United States, with 12.5% of the total population reporting themselves as Hispanic. In the 2003-04 school year English as a Second Language (ESL) services were provided to a total of 3.8 million (11%) students in public schools in the US, constituting a 3% jump from the 1997-98 school year (National Clearinghouse for English Language Acquisition, 2006). The large increase in percentage increase of the English Language Learner school population is due to the growth of the Hispanic subpopulation (Kamps, Abbott, & Greenwood, 2007).

Unfortunately, many Hispanic children are having significant difficulty learning to read. In 2007, 50% of Hispanic 4th grade students read below a basic level, which was significantly different from the 22% of White peers reading below the basic level (Lee, Grigg, & Donahue, 2007). Perhaps a more alarming statistic is that in 2007 only 17% of fourth grade Hispanic students were reading at or above a proficient level (i.e., the ability to demonstrate an overall understanding of the text, providing inferential as well as literal information; Lee, Grigg & Donahue, 2007). This was significantly lower than the 42.67% of fourth grade White students who were at this level. In 2005, Hispanic students had the highest high school dropout rate (22.4%) in the US when compared to both White (6.0%) and Black (20.4%) students (National Center for Education Statistics, 2006).

Key terms. Before discussing the research in this area, it is important to highlight common terminology within the language acquisition literature. Three terms commonly used within research on second language acquisition are societal language, national language, and official language. A societal language is one language, usually of several, used in a country (August & Shanahan, 2004). English and Spanish are both societal languages in the US. The principal language spoken in a country is the national language (English is the national language in the US), whereas the “official language” status is given to a language by national law or by the nation’s constitution (August & Shanahan). The US does not have an official language, however, some states report English as the official language within their boundaries.

When speaking of the type of student discussed in this article, the most commonly used term is *language minority*, which refers to individuals from homes where a language other than a societal language is used (August & Shanahan, 2004). The term *second-language learner* is given to a language-minority student whose second language (e.g., English) ability is not yet strong enough for the student to benefit fully from instruction solely in that second language. For the purposes of this article, the term English language learner, will be used because each of the studies mentioned addresses students who are learning English. Also, because of the recent rise in Hispanic English language learners enrolled in U.S. schools, the focus of this study was on English language learners whose first language is Spanish, and therefore the future use of English language learner in this document will refer to a student who speaks Spanish as a first language.

Overview of Research on Literacy Instruction for English Language Learners

With hopes of improving the outlook for language minority students, the Institute of Education Sciences staff selected a panel of 13 experts in second-language development, cognitive development, curriculum and instruction, assessment, and methodology to review the research on the development of literacy in language-minority students. These experts constituted the National Literacy Panel (NLP) on Language-Minority Children and Youth (August & Shanahan, 2004). For the purposes of this manuscript, their findings on instructional techniques for English language learners will be discussed, as well as research that has been published since the release of the NLP report. The following sections briefly report research findings for English language

learners in the areas of Phonemic Awareness, Phonics, Vocabulary, and Oral Reading Fluency.

Phonemic awareness and phonics. Similar to students whose first language is English, phonemic awareness (the ability to identify and manipulate the individual sounds, or phonemes, in a spoken word) and phonics (knowledge of the relationship between the sounds in spoken words and the letters that represent those sounds) have been found to be positive predictors of early reading for students whose first language is English (National Reading Panel, 2000). Although only a small number of studies have examined the effects of this type of instruction on English language learners, overall positive effects have been found (Gunn, Biglan, Smolkowski, & Ary, 2000; Gunn, Smolkowski, Biglan, & Black, 2002; Kramer, Schell, & Rubison, 1983; Stuart, 1999). To illustrate, Stuart (1999) compared the effects of *Jolly Phonics*, a phonemic awareness and phonics intervention, to a Big Books approach (i.e., a form of shared reading between a teacher and students) with a group of 112 five-year-old students of which, 96 were English language learners. Overall, three classrooms implemented the Big Books approach and three classrooms implemented the *Jolly Phonics* approach. Each of the interventions was implemented one hour per day for a 12-week period. Students were evaluated with measures of spoken and written language, phonological awareness, and alphabet knowledge before and after the intervention. Significant positive effects of *Jolly Phonics* were found in comparison with the Big Books instruction on acquisition of phonological awareness and phonics and on the ability to apply these in reading and

writing. A one-year follow up assessment indicated that the *Jolly Phonics* group was still significantly ahead of the Big Books group in phonological awareness, as well as on standardized tests of reading and spelling, including the Neale Analysis of Reading Ability (Neale, 1997), the Clay Dictation Test (Clay, 1979), the Schonell Spelling test (Schonell, 1985), and the British Ability Scales (BAS) Single Word Reading Test (Elliot, Murray, & Pearson, 1983).

Vocabulary. The importance of vocabulary instruction for English language learners is also a critical component of developing early literacy and language. Lack of vocabulary knowledge puts these students at a disadvantage to readers whose first language is English. Students reading in their first language have already learned 5,000-7,000 words before they begin reading instruction in school (Biemiller & Slonim, 2001). This, of course, is not typical for second-language learners when assessed in their second language. It is therefore critical that English language learners receive some form of additional vocabulary instruction, in an effort to assist them in “catching up” to their peers. It is surprising then that very few intervention studies addressing vocabulary instruction specifically for English language learners are available in the English language learner literature-base. Of the few reported studies, all found that vocabulary instruction is most effective when it emphasizes a deeper processing of word meanings, requires repetition, and uses words in different formats (Vaughn-Shavuo, 1990; Perez, 1981; Carlo, August, McLaughlin, Snow, Dressier, Lippman, Lively, & White (2004).

For example, Vaughn-Shavuo (1990) examined two different procedures for presenting words to first-grade English language learners whose first language was Spanish. Children were randomly assigned to two groups, with each group being taught 31 words for 30 minutes per day for 3 weeks. In the first group, words were presented in individual sentences. In the second group words were presented in meaningful narratives, picture cards were presented that illustrated word meanings, and students developed their own sentences using the target words. The second group learned a greater proportion of word meanings at the end of 3 weeks than did the first group (21 words vs. 9 words). This illustrates the importance of providing deeper processing of word meanings and using words in different formats.

Carlo and colleagues (2004) developed and implemented an intervention that emphasized word knowledge and reading comprehension with 254 bilingual and monolingual fifth-grade students. The data for the bilingual students were analyzed separately. The intervention was organized around the topic of immigration, making it especially meaningful for English language learners. Supplies used in the intervention included brief excerpts from newspaper articles, diaries, firsthand documentation of the immigrant experience, historical accounts, and fiction. The intervention lasted for 15 weeks, with each session being 30-45 minutes long and occurring 4 days a week, with every fifth week constituting a review week. Target vocabulary words were chosen from the brief passages. Twelve vocabulary words were introduced each week. Activities included having English language learner students use an audiotape to listen to a chosen

passage in Spanish, having students identify target vocabulary words in the same passage translated to English, LPP, calling on students to define target words, assigning related homework (e.g., crossword puzzles using the selected words), and leading deep processing activities using the twelve vocabulary words (i.e., having students predict what ideas belong with certain words; e.g., “Which of these things would a reformer likely do? (a) Go to the park for a picnic, (b) work to change rules that are not fair for a group of people, (c) notice that something is not fair and say, “Oh well, I can’t do anything.” (p. 28).

As mentioned, English language learner students’ data were analyzed separately from English speaking students and were compared to English language learner students in classrooms that were taught the normal vocabulary curriculum. The intervention group made significant gains on several measures of vocabulary and comprehension including: (a) sentence generation that conveyed different meanings of multi-meaning words, (b) cloze passages, (c) tests of word meanings, and (d) on tests of word association and morphological knowledge. There were, however, no gains on the Peabody Picture Vocabulary Test, third edition (PPVT-III; Dunn & Dunn, 1997).

Oral reading fluency: Interventions in English. Despite the recent push to promote reading fluency research, the literature on its instruction for English language learners is limited. Denton, Anthony, Parker, and Hasbrouck (2004) examined the effects of two interventions aimed at increasing reading fluency in English language learners. One intervention emphasized phonics and one emphasized fluency. The study was

conducted over 4 months and involved 93 Spanish speakers in Grades 2 to 5. The students were divided into phonics instruction or fluency instruction groups depending on their scores on the Woodcock Reading Mastery Tests-Revised (WRMT-R; Woodcock, 1987). If students scored below Grade 1 on the WRMT-R they were assigned to the phonics group, and if they scored at Grade 1 or above they were assigned to the fluency group. Within each group, control students were matched to students in each experimental group, resulting in four groups (Phonics Intervention, Phonics Intervention Control, Fluency Intervention, and Fluency Intervention Control).

The phonics intervention, *Read Well* (Sprick, Howard, & Fidanque, 1998) involved systematic instruction in English phonics and word reading, and also practice reading of decodable text and incidental instruction in vocabulary and comprehension. The fluency intervention, *Read Naturally* (Innot, 1992), included repeated reading of English text with audiotapes, vocabulary and comprehension instruction, goal setting, and monitoring of student progress. The WRMT-R and curriculum-based reading probes were used to monitor the students' progress throughout the intervention. Students in both intervention programs were tutored three times per week, with each session lasting 40 minutes, over a period of 10 weeks.

Students receiving the phonics intervention (*Read Well*) made significantly more progress than matched control students on the WRMT-R Word Identification subtest. The fluency intervention (*Read Naturally*) did not yield improvements in any of the WRMT-R subtests that were used (Word Identification, Word Attack, and Passage

Comprehension). The two intervention groups were not compared because placement of students was determined by reading ability level (i.e., those students needing more help were placed in the *Read Well* group). A limitation of this study is that although the *Read Well* program emphasized phonics, the intervention included practicing a passage, a fluency technique. Therefore, students in the *Read Well* program received somewhat of a combined intervention, while students in the *Read Naturally* program only received only a fluency intervention. Another limitation was that matched controls were students receiving no extra reading instruction, making it hard to determine if the positive results of the interventions were due to their components or from extra reading instruction time.

Malloy and colleagues (2007) examined the effects of several reading fluency strategies on five English language learners ranging from first the fifth grade by first utilizing a brief experimental analysis (BEA) procedure to identify the intervention likely to improve each student's performance best. The BEA used in this study systematically applied one instructional intervention at a time, followed by a brief reading assessment to determine which intervention (or combination of interventions) provided the greatest increase in oral reading fluency (ORF). Five interventions were examined in this study: Contingent Reward (CR), LPP, RR with error correction, Key Words (KW) with error correction, and Incremental Rehearsal (IR) with error correction. A Baseline condition was also included for comparison. After each intervention condition, instructional (the passage the student had just practiced), maze (i.e., the same as the instructional passage, except that every seventh word was removed and replace with a choice of three words),

and generalization passages (i.e., a passage developed using 80% of the words from the instructional passage) were administered to each student. During the CR intervention students were told that they could earn a highly motivating reward if they increased their fluency rate from an earlier Baseline condition. The LPP condition involved the examiner reading the passage while the student followed along. After the passage was modeled, the student read the passage aloud with the examiner immediately correcting any errors in the student's reading. During the RR with error correction condition, students read the selected passage three times while the examiner provided immediate error correction. During the KW with error correction condition students were asked to circle up to five words of which they didn't know the definition. The student then read the passage one time while the examiner provided immediate error correction. After the reading, the examiner wrote the five selected words on a white board, read each word, had the student repeat each word, provided the definitions, and used each word in a sentence. Finally, the IR with error correction condition, students were asked to read a passage and choose five words for which they didn't know the definition, as was done in the KW condition. Then the student read the passage again with immediate error correction. Afterwards, the first word on the student's selected list was written on a white board, defined, and used in a sentence. The student was then asked to repeat the word, define it, and use it in a sentence. The first word was then moved to begin the list of "known words." Next, the second selected word was written on the board, defined, and used in a sentence by the

instructor. Then the student was to repeat both the first and second word, define them, and used them in sentences. This procedure continued for all five selected words.

During the BEA, Baseline and intervention conditions were administered once to each individual in order to examine which conditions were most effective for each student. Conditions were presented from least to most intensive support with NTC being first, followed by CR, LPP, RR, KW, and IR. Following the BEA, an alternating treatments design was implemented comparing the most effective intervention for each individual student to a NTC condition. Two conditions were administered per day, 4 days a week, over the course of 19-24 calendar days.

RR was found to be the most effective intervention for two students, IR was found to be most effective for two students (note that for one student IR was paired with CR because of difficulty in determining the most effective intervention during BEA), and KW was found to be most effective for the final student. The alternating treatments design showed that the selected intervention increased the reading rates of four of the five students over time. The fifth student was receiving the IR/CR combination. Based on BEA results, the examiner added in the RR intervention as well, and reading rate significantly improved for this student.

Oral reading fluency: Interventions in Spanish. Another study (De la Colina, Parker, Hasbrouck, & Lara-Alecio, 2001) that offers evidence in support of fluency instruction for English language learners examined the effects of Spanish fluency training using a translated version of Read Naturally (Ihnot, 1997), the fluency building

intervention used in the previously discussed study. Seventy-four Spanish speaking students who qualified in the ESL category of either beginner or non-English speaking participated in the study. Students were included in the study if they were able to read 30 to 60 words correct per minute of a Spanish story, or knew beginning sounds and were able to read at least 50 Spanish sight words. The study was setup using a multiple-baseline design across groups. The intervention included students repeatedly reading passages along with an audiotape. After practicing with the audiotape, students then read independently while self-timing themselves for one minute and graphing the progress that their WCPM for each reading. Students were able to move to the next story when they met the met their fluency goal (i.e., a pre-determined number of WCPM), had 3 or fewer errors, read with appropriate expression, and were able to answer 3 of 4 comprehension questions (De La Colina et al., 2001). The intervention lasted 45 minutes and occurred three days per week.

The findings from this study are limited to Spanish reading because the results of the intervention on English reading were not measured. Most students, regardless of length of study participation, improved in Spanish oral reading fluency compared to baseline, marked by a sudden increase in performance that corresponded to the onset of treatment. Improvements in reading comprehension were also found across groups.

In a similar study, Begeny and Yeager (2009a) implemented a fluency intervention in Spanish for six Spanish-speaking, Costa Rican, second-grade students. The students were selected for the intervention because of teacher recommendations and

their performance on reading AIMSweb (2002) Spanish CBM passages. Students were selected for use if their performance on these passages fell between the 25th and 50th percentile for age-based norms according to the AIMSweb Curriculum Based Measurement (Spanish) Growth Table for words read correctly per minute (AIMSweb, 2007).

An alternating-treatments design was used to evaluate the effectiveness of two different treatment packages. Both packages included the same basic components, but one was implemented in a one-on-one setting, while the other was implemented in a small-group setting. A baseline condition was also included to compare the effectiveness of each intervention package with a no intervention condition. The components of the intervention involved LPP, RR, PD, and a brief comprehension component (procedures similar to those describe above in Begeny and Ross, 2009). The intervention occurred three times per week for 8 weeks.

Results of the study indicated that both interventions resulted in more WCPM in Spanish on trained passages than the NTC procedure. However, there were no meaningful differences between the two intervention conditions. Immediate gains after receiving the 1/1 and SG condition were 19.91, and 19.39 respectively. In a nearly identical study that included the lowest performing students from a 3rd grade, Costa Rican classroom, Begeny and Yeager (2009b) obtained the same general results. Taken together, these studies offer additional support for the application of reading interventions developed in English to application in Spanish.

CHAPTER 2: THE PRESENT STUDY

Purpose and Hypotheses

This study combined the existing literature on previously mentioned fluency building techniques, while also attempting to add to the relatively small research-base of reading interventions for English language learners. More specifically, the aim was to examine the relative effects of the combination of multiple intervention strategies (i.e., RR, PD, LPP, and a brief vocabulary intervention) when implemented at a one-on-one (1/1) versus small group (SG) level, and against a no-treatment control (NTC) condition. During the NTC condition students did not receive fluency training, but did work one-on-one with an adult on a math worksheet and were required to read a pre-intervention and post-intervention passage. The study followed a similar protocol to the Begeny and Ross (2009) study described above, but because Begeny and Ross found that the longer intervention sessions improved students' reading fluency best, the present study evaluated the aforementioned intervention package when implemented in a "longer" (i.e., 18-20 minutes) version. Unlike the Begeny and Ross study, however, a brief vocabulary intervention component was integrated within this study due to the lack of English language learners' vocabulary knowledge compared to their English speaking peers.

Differences in WCPM gains between the one-on-one, small-group, and no-treatment control (NTC) conditions were calculated. There were several research questions addressed using these gain scores. First, gains made in the 1/1 and SG

conditions were compared to those made in the NTC condition at WCPM-post-testing, and second, at WCPM-retention-testing. Based on previous research showing that fluency-building techniques are effective for English-speaking students, it was hypothesized that the 1/1 and SG condition would also be associated with larger gains than the NTC condition at both WCPM-post- and WCPM-retention-testing for English language learners.

Third, differential gains between the 1/1 and SG conditions were examined. It was hypothesized that the 1/1 condition would be associated with larger WCPM gains than the SG condition at both WCPM-post- and WCPM-retention-testing. Although Begeny and Ross (2009) found no differences between the two conditions, it was suspected that individualized instruction may be more effective for the English language learner population.

Fourth, differences in vocabulary gains between 1/1 and SG conditions were also examined. There were no hypotheses for which condition would be more effective for vocabulary gains because of the lack of research regarding the use of this particular instructional technique in small-group and one-on-one instructional settings. Fifth, and finally, students' overall reading improvements from pre- to post- intervention were assessed with commonly used standardized reading assessments. This was done to obtain exploratory data regarding the transfer effects of receiving approximately 200 minutes of similar interventions over the course of nine weeks. Previous fluency-based interventions have been shown to have overall transfer effects to other reading measures (Begeny &

Martens, 2006; Denton et al., 2004; Therrien, 2004) and thus it was hypothesized that students in this study would also demonstrate reading improvements on the standardized assessments used.

CHAPTER 3:

METHOD

Participants and Setting

Student participants. Participants included five second-grade students from one rural school in the Southeast. Students will henceforth be referred to by their pseudonyms: Sofia, Carlos, Miguel, Maria, and Javier. Each student's first language was Spanish and each received English as a Second Language (ESL) services as part of the English Language Learner program at their school. The following criteria were used to select student participants.

First, students were required to score in the "At-risk" (below 52 WCPM) or "Some Risk" (52 to 67 WCPM) category of the second grade, Middle of Year, Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS) oral reading fluency (DORF) benchmark passages (Good, & Kaminski, 2002). It should be noted that one student (Maria) did not fall in either of these categories but was still included in the study due to teacher concerns with her level of reading fluency. Second, students must have earned a composite score above 70 on the Rapid Naming Composite of the Comprehensive Test of Phonological Processing (CTOPP; Wagner et. al, 1999) and the Basic Reading Skills composite of the Woodcock-Johnson Tests of Achievement, Third

Edition (WJ-III; Woodcock et. al, 2001). This stipulation was required because students reading two standard deviations below the mean on these measures would not be as likely to benefit from the type of fluency-based interventions implemented in this study (e.g., students may require more intensive instruction in decoding and/or rapid naming if basic word reading and/or processing abilities are substantially below age-level; Begeny & Martens, 2006).

Trainers. Across the duration of the project, a total of thirteen graduate and undergraduate psychology students served as the experimenters (i.e., trainers) in this study and were responsible for implementing intervention procedures and assessing student performance. During one-on-one (1/1) intervention sessions (described below), each student met individually with a trainer. During the small group (SG) intervention sessions (also described below), one of three specifically trained members of the research team (i.e., someone who has had extra training sessions and practice working with small groups) served as the trainer for the group on specific days. After each intervention session, the trainers monitored students' reading progress with curriculum-based measurement procedures. All trainers were instructed on relevant intervention procedures (via procedural checklists) and each trainer demonstrated mastery of the procedures prior to the beginning of the project. Mastery of procedures was demonstrated by successful completion of a written and oral examination. Students had to pass the test with no errors in order to be qualified to implement the intervention. Further, during all phases of the study, all trainers' implementation integrity was monitored approximately

25% of the time via a procedural checklist (see Appendices A and B). A percentage of steps completed correctly was calculated for each intervention session. The procedural integrity goal was 90% or higher. If integrity was low, extra training sessions and one-one-one meetings to discuss individual performance were put into place immediately to ensure the integrity of the project.

Assessment Materials

To add descriptive data about potential intervention effectiveness, assessment measures were administered pre and post-intervention and included DIBELS Oral Reading Fluency (DORF) Benchmark Passages, the CTOPP, the Letter-Word Identification and the Word Attack subtests (comprising the Basic Reading Skills Composite) and the Reading Vocabulary subtest of the WJ-III, the Gray Oral Reading Test, fourth edition (GORT-IV), the Test of Word Reading Efficiency (TOWRE), an experimenter-developed vocabulary assessment, and an experimenter-developed intervention acceptability assessment. As noted above, the DORF passages and CTOPP were also used as screening measures to ensure students are appropriate for receiving the intervention described in this study. The CTOPP, The Basic Reading Skills Composite of the WJ-III, the Reading Vocabulary subtest of the WJ-III, and the TOWRE have been designated as having “sufficient evident” for use with second grade students according to the Oregon Reading First Center (2007).

The Dynamic Indicators of Basic Early Literacy Skills™ 6th Editions (DIBELS) oral reading fluency (DORF) benchmark passages. In order to measure students’ oral

reading fluency, the three DIBELS benchmark passages (Good & Kaminski, 2002) identified for use halfway through the second grade year were utilized. As with the fluency-based screening probes described previously, probes were administered according to the DORF directions outlined by Good & Kaminski. Participants had not read any of these passages prior to this study. Student's performance was assessed by calculating WCPM and WIPM. Previous research has found sufficient psychometric properties for DORF used with reading (Shinn, 1989). This type of measurement has also been shown to be as reliable and valid for use with English language learners (Baker & Good, 1995), and has been used with this population in recent intervention studies (Gunn, Smolkowski, Biglan, Black, & Blair, 2005; Linan-Thompson, Vaughn, Hickman-Davis, & Kouzekanani, 2003; Ramirez & Shapiro, 2006; Ramirez & Shapiro, 2007).

Comprehensive Test of Phonological Processing (CTOPP). In order to determine a general level of participants' rapid naming abilities, two subtests from the CTOPP were administered (Rapid Letter Naming and Rapid Digit Naming). These subtests comprise the CTOPP's Rapid Naming Composite score. Scores from each of these subtests are converted into standard scores that have a mean of 10 and a standard deviation of 3. The combined standard scores of these subtests determine the CTOPP Rapid Naming Composite score, which has a mean of 100 and a standard deviation of 15.

According to the CTOPP technical manual (Wagner et al., 1999), Rapid Letter Naming is made up of 72-items and measures the speed with which a student can name randomly arranged letters (i.e. b, f, s, n, p) on two pages. The student is instructed to start

naming letters on the page, going in order, until all of the letters have been named. After completing the first page, the student is instructed to do the same on the second page. The student's score is the total number of seconds taken to name all the letters on both pages. The average internal consistency of this subtest (taking into account all age-levels) is .85. The other subtest, Rapid Digit Naming, is identical to the Rapid Letter Naming subtest, except that it asks students to name randomly arranged numbers (i.e., 2, 7, 4, 9, 5). The student's score is the total number of seconds taken to name all the numbers on both pages. The average internal consistency of this subtest is .87, and the average internal consistency of the Rapid Naming composite is .80. With respect to the validity of the CTOPP, there is evidence suggesting adequate criterion-related validity for the two subtests described above. Specifically, the Rapid Letter Naming and Rapid Digit Naming subtests correlated from .52 to .70 on the Word Attack and Word Identification subtests of the Woodcock Reading Mastery Test-Revised (Woodcock, 1987) (Wagner et. al, 1999).

Basic Reading Skills Composite of the Woodcock-Johnson Tests of Achievement, Third edition (WJ-III). Two subtests from the WJ-III were used for screening the students before and after the intervention: Letter-word Identification (LWI) and Word Attack (WA). LWI involves the child identifying isolated letters and words, and the WA involves the child pronouncing phonically regular pseudowords, with initial items requiring the child to pronounce sounds for single letters. Together, these subtests comprise the Basic Reading Skills Composite of the WJ-III and this measure will be used

to evaluate students' basic, overall reading abilities. Across a 1-year interval, the test-retest reliabilities of the LWI and WA subtests for 5- to 19- year olds are .91, and .87, respectively (McGrew & Woodcock, 2001). Scores on the Basic Reading Skills composite of the WJ-III were compared to those from other similar tests and sufficient validity correlations were obtained. For example, there was a .66 correlation when comparing the Basic Reading Skills composite to the Reading Composite of the Kaufman Test of Educational Achievement (KTEA, Kaufman & Kaufman, 1985), and a .82 correlation when comparing it to the Reading Composite of the Wechsler Individual Achievement Test (WIAT, Wechsler, 1992) (Ford, Simmons, & North, as cited in McGrew & Woodcock, 2001).

Reading Vocabulary Subtest of the Woodcock-Johnson Tests of Achievement, Third edition (WJ-III). The Reading Vocabulary (RV) subtest of the WJ-III was given to gain insight into the students' vocabulary knowledge. The RV subtest is divided into three sections: Synonyms, Antonyms, and Analogies. The Synonym section involves the child reading a word and providing a synonym, and the Antonym section involves the child providing an antonym to a read word. The Analogy section requires reading three words of an analogy and then providing the fourth word to complete that analogy. The RV subtest has a mean reliability of .87 for 5- to 19- year olds (McGrew & Woodcock, 2001). There are no known published data regarding the validity of the RV subtest alone; however, in combination with the Reading Comprehension (RC) subtest of the WJ-III,

there is a correlation of .62 with the KTEA, and a correlation of .79 with the WIAT for students age 5-14 (Ford et. al, as cited McGrew & Woodcock, 2001).

Gray Oral Reading Test, Fourth Edition (GORT-IV). To measure students' oral reading and comprehension skills the GORT-IV was administered before and after the intervention. The test includes 14 developmentally sequenced reading passages with five comprehension questions for each passage. A student's performance on the test results in five scores: Accuracy; Rate; Fluency (Rate + Accuracy); Comprehension; and a composite score (i.e., the Oral Reading Quotient) comprised of the sum of the Fluency and Comprehension standard score. Coefficient alphas for the Oral Reading Quotient, and the separate Fluency and Comprehension components are all at or above .90 for early primary students. Test-retest reliability for the GORT-IV ranged from .85 to .95 for the four subtest scores and .95 for the Oral Reading Quotient (Wiederholt, & Bryant, 2001). There is a correlation of .43 between the fluency score of the GORT-IV and the Verbal Scale of the Wechsler Intelligence Scale for Children, Third Edition (WISC-III; Wechsler 1991).

Test of Word Reading Efficiency (TOWRE). The TOWRE was administered to evaluate students' ability to read "familiar" words (i.e., sight words) and rapidly sound out words phonetically constructed nonsense words (e.g., *ip*, *bot*). The TOWRE is thus comprised of two subtests, Sight Word Efficiency (SWE) and Phonetic Decoding Efficiency (PDE), and the scores from these subtests make up the Total Word Reading Efficiency composite.

TOWRE test/retest coefficients ranged from .83 to .96, and scorers' inter rater reliability of the TOWRE is reported to be .99 (Torgesen, Wagner, & Rashotte, 1999). Concurrent validity of the TOWRE was examined with subtests of the Woodcock Reading Mastery Tests, Revised (WRMT-R) and are reported to be above .85. Predictive validity was evaluated by comparing scores on the TOWRE with the Gray Oral Reading Test, Third Edition (GORT-III) rate, accuracy, and comprehension scores, and with WRMT-R comprehension scores. Predictive validity coefficients ranged from moderate to high (approximately .55 to .80; Torgesen, et. al 1999).

Vocabulary assessment. A vocabulary assessment was given to test students' knowledge of vocabulary words used in the intervention procedures. During the course of the intervention, students were taught a total of approximately 42 vocabulary words, and 34 of those words were randomly chosen for the vocabulary assessment. Students were asked the definition of each word and their verbal response was recorded.

Intervention acceptability. To evaluate student participants' acceptability of the intervention, each student independently completed a three-item acceptability scale developed for the purposes of this project. These items were modified and adopted from the seven-item Children's Intervention Rating Profile (CIRP; Witt & Elliott, 1985). Students responded to the following items for each of the two intervention conditions, using a 5-point Likert-scale (1 = strongly disagree; 3= neither agree or disagree 5 = strongly agree): 1) I liked doing this reading activity; 2) I think this reading activity helped me become a better reader; and 3) I think this reading activity would be good to

use with other 2nd grade students. In an attempt to obtain more valid acceptability data, a trainer provided a thorough description and examples of how to use the Likert-scale with each of the participants.

Intervention Materials

Reading passages. The reading passages that were used during intervention sessions and for ongoing progress monitoring of participants' performance were developed from first and second grade DIBELS (Good & Kaminski, 2002) progress monitoring materials. Specifically, the first 114 to 130 words from 23 separate passages were entered into the Spache readability generator found on the InterventionCentral (2008) website. Readability levels ranged from 2.37 to 2.95, with an average readability of 2.64 ($SD = 0.17$). The selected portions of each passage were then put into a student copy format and an examiner copy format. As with the benchmarking passages described previously, all DORF reading probes were administered according to the directions outlined by Good & Kaminski (2002) and participants did not read any of these passages prior to this study. The reading passages were used for both intervention purposes (i.e., each component of the intervention will be implemented using the chosen passage for the day) and progress monitoring (i.e., students WCPM scores will be calculated pre- and post- intervention across time).

Vocabulary materials. Vocabulary word lists were generated by selecting 3 of the most difficult words from the CBM reading passages mentioned above using the Spache (1953) readability index. The Merriam Webster Word Central (2007) website was used to

provide definitions, a Google Image Search provided appropriate pictures, and an the Spanish-English translation function of the Dictionary (2008) website provided the equivalent Spanish word for each selected vocabulary word. A 4 x 6 inch index card was developed for each word, with the picture of the word on the front of the card, and the remainder of the information typed on the back.

Experimental Design

An alternating-treatments design was used to assess the effectiveness of two intervention conditions, small-group (SG) and one-on-one (1/1). A no-treatment control (NTC) condition was also included to compare each intervention condition to a no-treatment condition. The experimental design was appropriate because it allowed for the comparison of differential effects of each of the treatment conditions. The comparison of each treatment group to a control group was also beneficial because it allowed for the assessment of whether the treatments do in fact provide better results than no-treatment.

Participants received at least seven sessions of each of the intervention conditions (with the exception of Sofia who received only six 1/1 sessions because of an absence) and four sessions of the NTC condition. Four NTC conditions were included in order to maximize the number of intervention conditions available to students while still including enough no-treatment comparison conditions. All intervention conditions occurred in the morning hours, and occurred in a pre-determined, counterbalanced order to minimize possible confounding variables (e.g. differences in classroom schedules on particular days of the week, differences in level of attention, and differences in trainer).

To equate for passage difficulty across each of the four conditions, all conditions used passages with comparable readability levels. Based upon the Spache (1953) readability formula, the average readability levels across all passages from each condition were as follows: NTC = 2.70; SG = 2.62; 1/1 = 2.64.

Procedures

Pre-intervention evaluation procedures. At the beginning of each group session, the trainer greeted the students by saying the following, “Today we are going to read some stories together. When you read the stories, I want you to give your best effort! At the end of our time today, if everybody shows their best effort and follows directions, you can earn up to two stars on your chart.” At the beginning of each individual session, the trainer working with an individual student repeated the previous directions, except placing the focus on the individual instead of “everybody.” During the very first session (and repeated in subsequent sessions as a reminder), the trainer showed students their “star chart” (described in detail below), explained thoroughly how the star chart will be used (e.g., what the stars represent and how they will allow students to later earn a small prize), and then allowed students to view the possible prizes (e.g., pencils, stickers, baseball cards, plastic jewelry) they could choose after earning enough stars on their chart.

Following these introductory directions, each student worked one-on-one with a trainer and was asked (as described in the RR section of Appendix A) to read the passage they read in the most previous session. This component of each condition was for

assessment purposes only, and represents an evaluation of students' oral reading fluency following exposure of that passage approximately two days earlier via one of the three conditions (1/1, SG, NTC) used in this study (i.e., the retention-intervention assessment). Students also completed a vocabulary retention-intervention assessment at this time which evaluated students' vocabulary knowledge of the words that they were taught in the previous session (approximately two days earlier). The student was then asked to read the selected passage for the day (pre-intervention assessment), and was given a vocabulary pre-intervention assessment for the day. The vocabulary intervention pre- and post-intervention assessment procedures involved the trainer asking the student the definition of the 3 selected words for the day and writing down his or her response verbatim. A detailed outline of the procedures of each component can be found in Appendixes A, B, and C.

Condition procedures. The condition schedule consisted of implementing one of the three possible conditions per day, approximately every other day of the school week across 8 weeks. A calendar of the intervention conditions is available in Appendix D. The two intervention conditions (1/1 and SG) integrated each of the following intervention components (RR, PD, LPP, and comprehension,) in varying ways (described in detail below).

No-treatment control. During NTC conditions, students completed all pre-intervention conditions as usual. However, no intervention was included for the NTC passages because of the nature of this no-treatment condition. However, as Appendix C

details, to account for possible confounds (e.g., time spent with trainer, time spent out of class, etc.) students were given math fluency worksheets to work on independently for the same amount of time that an intervention session would last. After the completion of the worksheets, students completed all post-intervention conditions.

Listening passage preview. During the 1/1 conditions of the LPP procedure, the trainer read the passage aloud at a pace slightly faster than the student reads (approximately 80 words per minute). The student also had a copy of the story and followed along silently using his or her student copy of the passage. Students were asked to point to the words in the story as they were read to demonstrate that they were following along. Additionally, the trainer paused from reading the story to call on the student to read the next word in the passage approximately 5-7 times during its reading. This portion of the intervention lasted 1-1.5 minutes and occurred twice during the intervention.

The same LPP procedures were followed for the SG condition with the exception that the trainer called on alternating students to read the next word of the story during the 5-7 times that the trainer paused during the reading of a passage.

Repeated reading. During the one-on-one (1/1) conditions, RR included the student reading the passage out loud for one minute while the trainer kept track of words read incorrectly (i.e., mispronunciation, hesitation of more than 3 seconds, substitution, and transpositions of words). If the student came to a word that he or she did not know,

the trainer told the word to the student after 3 seconds. The RR condition took approximately 1.5 to 2 minutes to complete and occurred 4 times during the intervention.

The same procedures were followed during the small-group (SG) implementation of RR, except that during this condition the trainer randomly selected one student from the group to serve as the “group leader” for each reading of the passage. This student then read the passage aloud and the other students were instructed to read along, reading only slightly softer than the group leader.

Retell. During the 1/1 conditions students were asked to tell everything they remembered about the story in order, responding for 30-45 seconds. During the SG conditions the students were asked to say a small portion of what they remembered from the story, starting with things that happened in the beginning of the story, and continuing in the sequence of events that occurred in the story. This acted as a reminder for students that there should be a focus on the meaning of what is being read. This phase of the intervention took 30-45 seconds.

Phrase drill. During the 1/1 conditions, PD included the trainer choosing phrases for the student to practice that he or she had difficulty with during the most recent RR. Four phrases were selected. On any occasion when a student read all words in a passage correctly, the trainer selected some of the more difficult phrases in the passage for practice (e.g., phrases within the passage the student may have read correctly, but less fluently). The trainer read a particular phrase, and then prompted the student to read the

phrase three times, providing frequent verbal praise for the student's performance. This phase lasted approximately 1 minute and occurred twice during the intervention.

During SG conditions, PD also lasted approximately 1 minute and occurred twice during the intervention session. During PD, four phrases that were considered most difficult were chosen from a passage and written on a whiteboard before beginning the intervention, and the students sat in a semicircle around the whiteboard. When prompted by the trainer, the students chorally responded to the presented word. The trainer used frequent praise for accurate responses and effort.

Vocabulary. During the vocabulary component of the 1/1 condition students were taught the definition of three of the words in the passage. Trainers pointed to each word in the passage and repeated the word. Next, they flipped to the appropriate vocabulary note card and pointed to the same word (or root word) that was typed on the card above the picture. The trainer then pointed out that the picture represents the word, gave the Spanish equivalent of the word, and read the definition to the child. Students were asked to repeat the definition of each word. If the child was unable to repeat the definition, the trainer read the definition to the child again and asked him or her to repeat it again. If the child was still unable to repeat the definition the trainer moved on to the next portion of the intervention. This portion of the intervention lasted 2-2.5 minutes and occurred once during the intervention.

During the vocabulary component of the SG condition, three words were also focused on for instruction. Trainers pointed to the word written on a whiteboard, read the

Spanish equivalent, and read the definition of the word. Students were also shown an illustration of the definition of the word using the vocabulary note cards that are used in one-on-one conditions. Students were asked to chorally repeat the definition of each word.

Reward. Across all conditions (including the NTC condition), each session was ended by praising the students (either individually or as a group) for their effort, paying attention, following directions, and not acting out, and telling them how many stars they earned on their star chart. Most students received two stars for each session completed. However, one student (Carlos) exhibited occasional oppositional behavior and received only one star during those days. The chart consisted of 15 boxes across a row, and when an individual received a star in that 15th box, they were able to select a prize from the prize box, and subsequent stars the students earned were placed on the following row of the chart. Also, two to three shaded boxes were intermittently located on each row of the chart. When a student earned a star on a shaded box, he or she was able to select a ticket from the “bonus bag”. Each ticket in the bonus bag listed a bonus number of stars the student could earn on their chart ranging from one to five bonus stars, with proportionately more tickets representing a smaller number of bonus stars (e.g., there were five “one bonus star” tickets, and only one “five bonus stars” ticket). There was also one ticket labeled “Prize Box.” If this ticket is selected, the student was allowed to select a prize. Because the goal of the study is to evaluate the intervention components

previously mentioned, the reward contingency was included as part of the NTC procedure to prevent confounding effects of its use.

Post-intervention evaluation procedures. Conditions were concluded by having each student work one-on-one with a RA and being asked (using the CBM administration procedures noted above) to read the passage they had practiced during the current session for one final time.

Acceptability procedures. Midway through the study, students were asked to rate the acceptability of the intervention conditions of the study. Acceptability was assessed one time for each of the two intervention conditions.

Combining intervention components. The components of the intervention followed the same order for both the 1/1 and SG conditions. The intervention began with LPP, followed by RR, Retell, PD, Vocabulary Instruction, RR, LPP, RR, PD, and RR. Each intervention condition lasted approximately 13 minutes. Pre-intervention and post-intervention evaluation procedures took 4 minutes and 1.5 minutes respectively. Appendix E includes scripted protocols for all conditions.

Data Analysis

The primary research goal for this study was to examine the differential effects of an intervention package presented in a 1/1 versus a SG format. Gains in WCPM and vocabulary knowledge were monitored and compared for both intervention conditions as well as a NTC condition (detailed descriptions of the analytic strategies are provided below). A secondary goal was to examine the effects of students having approximately

200 minutes of intervention sessions over the course of nine weeks on standardized test scores.

For each passage, the following gain scores were calculated: (a) WCPM post-intervention assessment minus WCPM pre-intervention-assessment (henceforth referred to as WCPM-post); (b) WCPM retention-intervention assessment minus WCPM pre-intervention assessment (henceforth referred to as WCPM-retention); (c) Vocabulary score post-intervention assessment minus Vocabulary score pre-intervention assessment; (henceforth referred to as vocab-post) (d) Vocabulary retention-intervention assessment minus Vocabulary score pre-intervention assessment (henceforth referred to as vocab-petention). These gain scores were examined at the individual session level using graphical analyses and at the mean condition level using standard error of measurement estimates and randomization tests for small-n designs, described below. Also, pre- to post-intervention gains for standardized tests were analyzed using a standard deviation method, described below.

Graphical analysis. To analyze the data at the individual session level, visual analysis of gain scores plotted across sessions was used to examine both WCPM and Vocabulary gains. This is the most common method of data analysis with small-n designs. According to specific criteria developed by Franklin, Gorman, Beasley, and Allison (1997), each graph was analyzed using three principles of visual inspection: the central location of the data, the variability amongst the data, and trend location within

each group of data when appropriate. For instances where there was clear differentiation between conditions, percentage overlap scores between conditions were calculated.

Standard error of measurement analysis. To analyze WCPM gain scores at a mean level across conditions, the expected standard error score was used. According to data reported in the Christ & Silbergitt (2007), for a typical 2nd grade sample with high levels of experimental control, one can assume 6-7 WCPM attributed to standard error of measurement (SEM) on any given assessment. In accordance with the t-distribution, the SEM and a critical score of 1.65 was used to calculate a significant WCPM gain score for a one-tailed test. Therefore, $1.65 \times 2 \times 7$ results in a gain score of 23.1 being considered a significant gain 95% of the time. Although researchers have differing opinions about the use of t-tests with data from the same individual, some suggest that it is an appropriate way to compare changes within in an individual (e.g., WCPM gains from pre- to post-testing and retention-testing) (Busk & Marascuilo, 1992) . This level of analysis was the most accurate way to make use of the SEM data reported by Christ & Silbergitt (2007) and can be used to gain an understanding of trends in the data. This level of analysis was not used with vocabulary data, as the vocabulary portion of this study was new with no previous research regarding SEM scores.

Randomization test analysis. Randomization tests for single-case designs were used to analyze the WCPM and Vocabulary gains across conditions. Randomization tests are statistical tests whose validity is based on the random assignment of units to treatments (Bulte' and Onghena, 2008). Using permutations of the order of the data,

these tests determine whether the same results would have been obtained if the data were assigned to rearranged placements (Busse, Kratochwill, & Elliott, 1995). Randomization tests are nonparametric, and consequently are not based on distributional assumptions or assumptions about the homogeneity of variances or the independence of residuals (Arndt Cizadlo, Andreasen, Heckel, Gold, & Leary, 1996; Hooton, 1991; Ludbrook, 1994; Recchia & Rocchetti, 1982; Wilson, 2007).

The key to using randomization tests is that treatment conditions must be randomly assigned. More clearly, the experimenter decides which days are available to work with participants, and then randomly assigns treatment conditions (in this case 1/1, SG, and NTC) to those chosen times. This helps to make randomization tests accurate without having a random sample of participants (Edgington, 1980; Todman & Dugard, 1999). As mentioned above, randomization tests were used to examine WCPM and Vocabulary gains.

Standard deviation analysis. Students' overall reading improvements from pre- to post- intervention were assessed to obtain exploratory data regarding the transfer effects of receiving approximately 200 minutes of a small-group and one-on-one fluency-based intervention over the course of nine weeks. Differences between the pre- and post-test measures for the DIBELS benchmark passages, the experimenter-developed vocabulary test, the Rapid Naming composite of the CTOPP, the GORT-IV, the TOWRE, and the Basic Reading Skills composite and Reading Vocabulary subtest of the WJ-III were examined. When examining standardized test scores (CTOPP, GORT-IV,

TOWRE, WJ-3), those scores that improved at least one half of a standard deviation from pre-testing were considered significant. For composite scores which use a standard score system (mean = 100; standard deviations = 15), an improvement greater than or equal to 7.5 was considered significant. For subtest scores, using a scaled score system (mean = 10, standard deviation = 3), an improvement greater than or equal to 1.5 was considered significant.

CHAPTER 4:

RESULTS

Reading Fluency

Graphical analysis. Figure 1 displays WCPM-post-intervention assessment WCPM gain scores for each participant. For Sofia and Miguel, when examining the gain scores from pre- to post-intervention assessment plotted across time by student, the 1/1 and SG condition were associated with higher gain scores than NTC. In Sofia's case, there was no overlap between NTC and SG or 1/1 for WCPM-post-test gains. The 1/1 and SG conditions outperformed NTC in Miguel's case as well, with NTC gains not overlapping at all with SG gains, and only 14.29% with 1/1 gains at WCPM-post-testing. For both Sofia and Miguel, there was substantial overlap between the 1/1 and SG conditions, suggesting no difference between the gain scores of the two conditions. For Maria, the 1/1 and SG conditions also appear to be associated with more WCPM gains at WCPM-post-testing than NTC during the first 14 intervention sessions (Figure 1), but not for sessions 17 and 18 in which her gains were very small or negative,

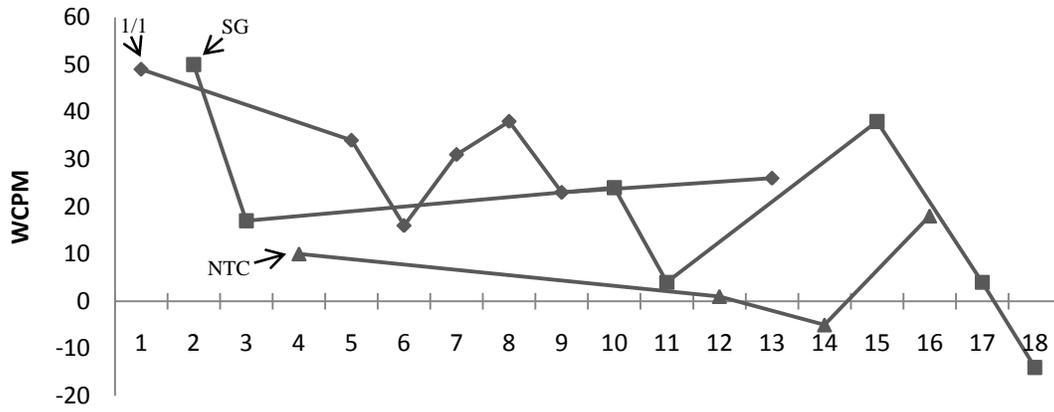
meaning that she read the passage faster during pre-testing. For Javier the 1/1 condition was associated with more WCPM gains at WCPM-post-testing, with no overlap between the NTC gain scores. However, there was considerable overlap between his SG and NTC gain scores. Carlos's data were the most variable at WCPM-post-testing with substantial overlap between the three conditions, suggesting no difference between the gain scores of the three conditions at WCPM-post-testing. It should be noted that there were significant behavior management issues in Carlos's case in which he was reluctant to participate in the program. As most of the trainers did not have formal training in behavior management for students with behavior problems, Carlos's behavior may have contributed to the variability in his data.

Figure 2 describes WCPM gains from pre-test to retention-testing for each student. Consistent with the WCPM-post-test data, the 1/1 and SG conditions outperformed the NTC condition for Sofia and Miguel at retention-testing as well. For Sofia, the NTC and SG gain scores did not overlap and there was only a 16.67% overlap between NTC and 1/1 conditions. The SG condition outperformed the NTC condition at retention-testing for Miguel, with 28.57% overlap between the two conditions. There was more overlap (42.86%) between the 1/1 and NTC conditions for Miguel, signifying a smaller effect of the 1/1 condition at retention testing.

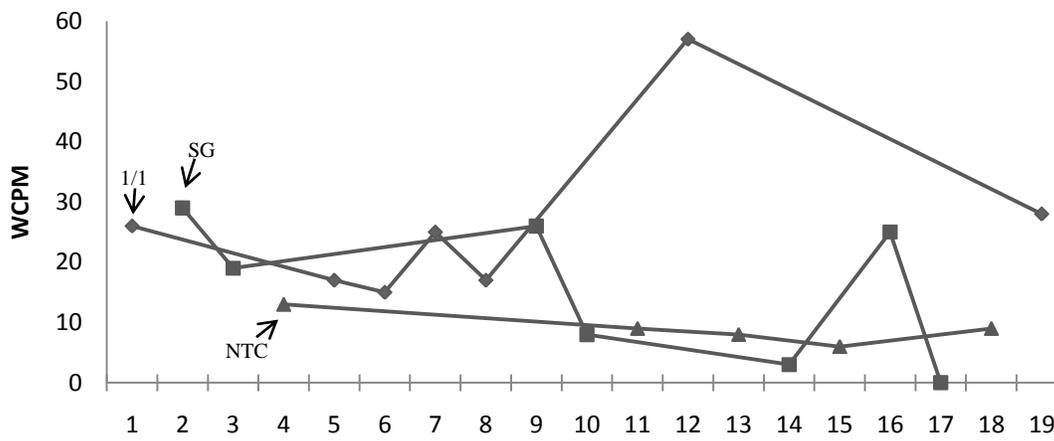
As with WCPM-post-testing, the 1/1 condition was associated with higher gain scores than NTC at retention-testing for Maria, with only 33.33% overlap between the two conditions. However, there was significant overlap between NTC and SG, signifying

Figure 1. WCPM gain scores from pre- to post-testing.

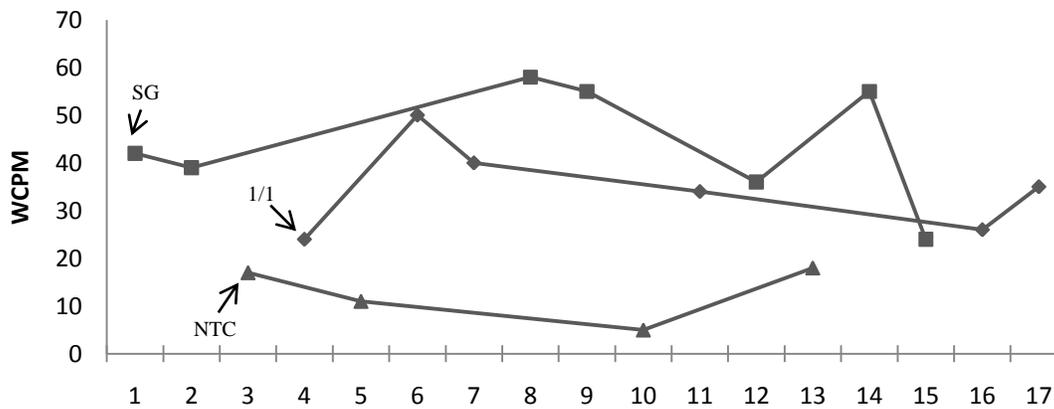
Maria



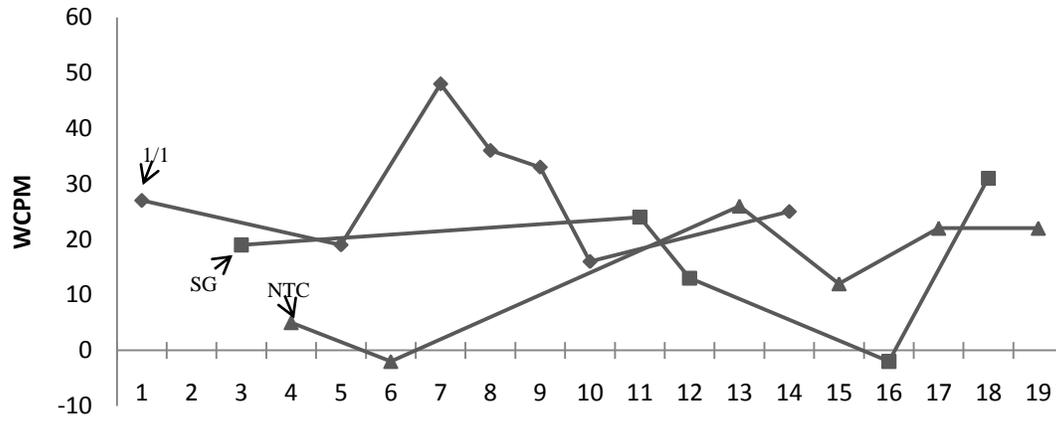
Javier



Sofia



Carlos



Miguel

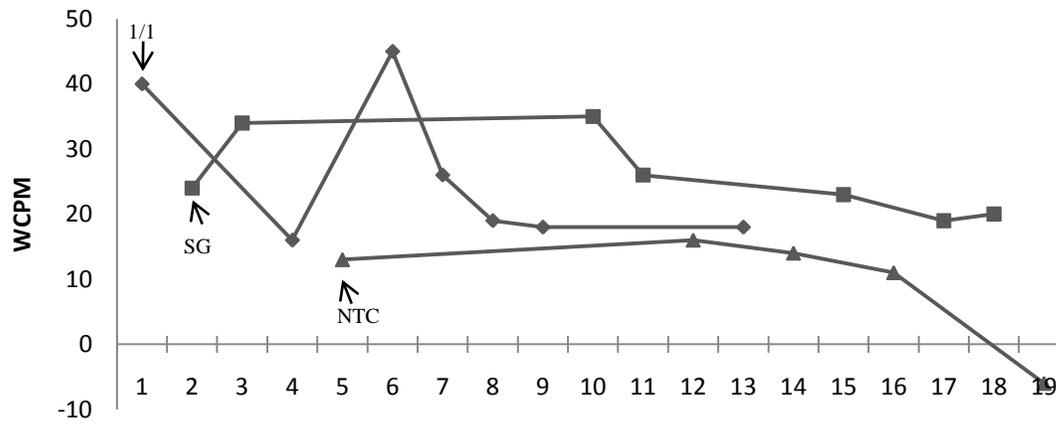
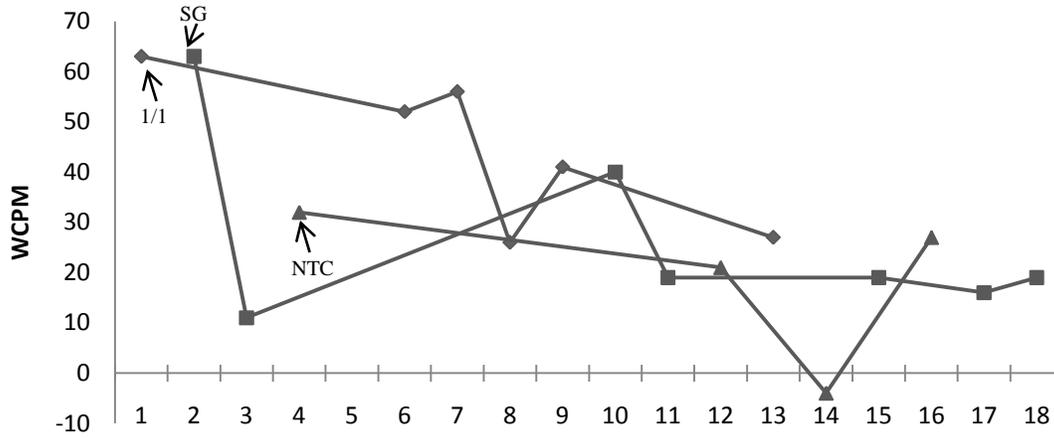
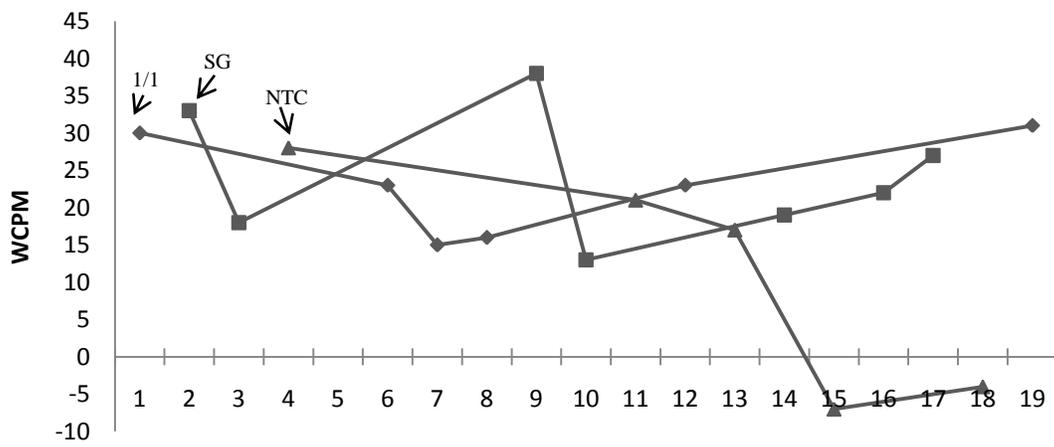


Figure 2. WCPM gain scores from pre- to retention-testing.

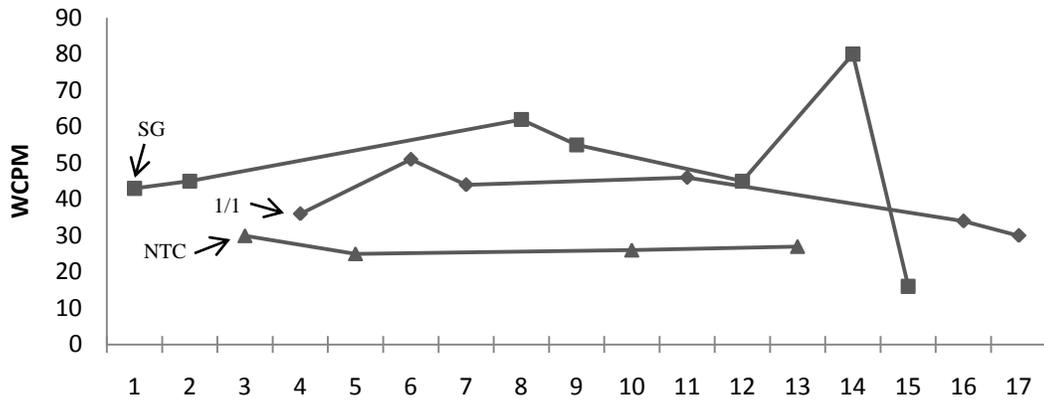
María



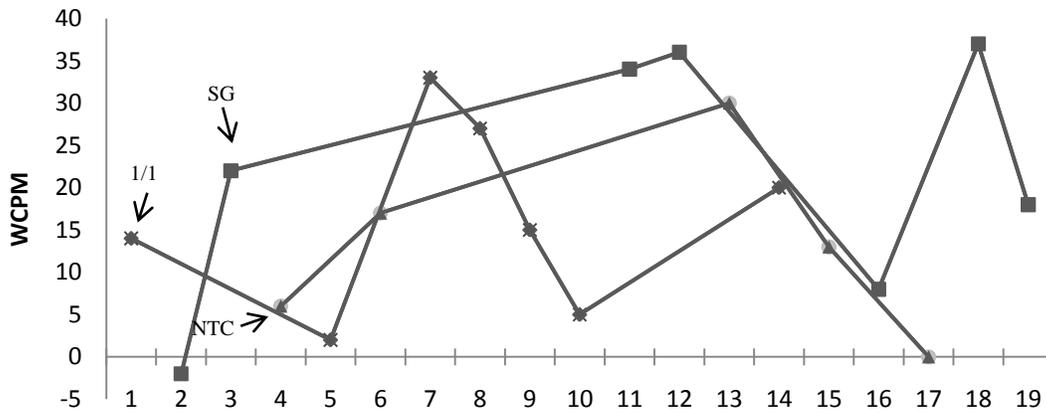
Javier



Sofia



Carlos



Miguel

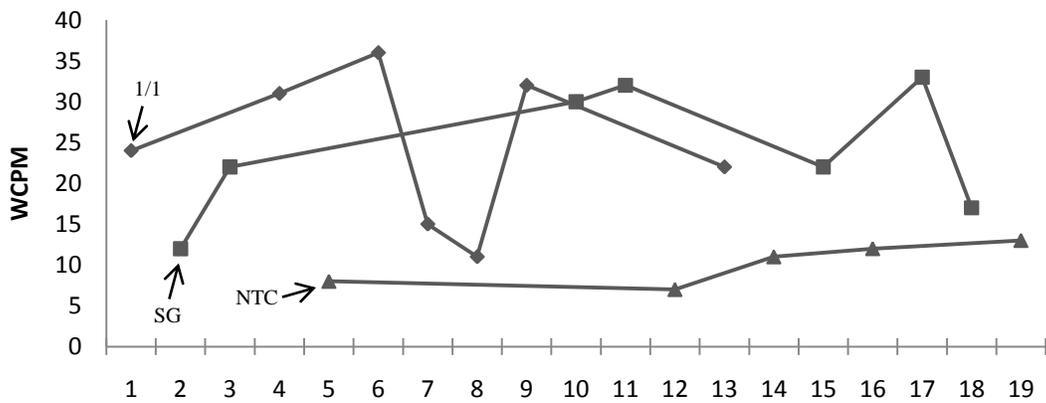


Table 1.
Mean WCPM Gains across Conditions

	Pre-Post Test NTC	Pre-Post Test SG	Pre-Post Test 1/1	Pre-Retention Test NTC	Pre-Retention Test SG	Pre-Retention Test 1/1
Maria	6.00 (10.10)	17.57 (21.89)	31.00* (10.77)	19.00 (15.98)	26.71* (18.41)	44.16* (15.43)
Javier	9.00 (2.55)	13.55 (11.88)	26.43* (14.42)	11.00 (15.60)	24.29* (8.86)	23.00 (6.72)
Carlos	12.60 (11.61)	17.83 (11.37)	29.14* (10.92)	13.20 (11.43)	21.86 (15.02)	16.57 (11.15)
Sofia	12.75 (6.02)	44.14* (12.46)	34.83* (9.52)	27.00* (2.16)	48.43* (19.67)	40.17* (8.06)
Miguel	8.50 (8.91)	25.86* (6.36)	26.00* (11.79)	10.20 (2.59)	24.00* (7.98)	24.43* (9.22)
Mean Across All Students	9.77 (2.89)	23.79* (12.22)	29.49* (3.63)	16.08 (7.01)	29.06* (10.96)	29.67* (11.87)

Note. Std. deviations shown in parentheses, *=gain score >23.1. NTC = No Treatment Control, SG = Small Group, 1/1 = One-on-One

Table 2.

WCPM Randomization Test Results

	Pre-Post			Pre-Retention		
	1/1 vs. NTC	SG vs. NTC	1/1 vs. SG	1/1 vs. NTC	SG vs. NTC	1/1 vs. SG
Maria	25.00**	11.57	13.48	25.16*	7.71	17.45*
Javier	17.43**	6.71	10.45	12.00	13.29	-1.29
Carlos	16.54*	5.23	11.31	3.37	8.66	-5.29
Sofia	22.08**	31.39*	-9.31	13.17**	22.43**	-9.26
Miguel	16.40**	16.26**	0.14	14.23**	13.80**	0.43

Note. * $p \leq .05$, ** $p \leq .01$, NTC = No Treatment Control, SG = Small Group, 1/1 = One-on-One

no difference between the gain scores of these two conditions for Maria. There was substantial overlap in condition gain scores at retention-testing for Javier or Carlos.

SEM Analysis. Table 1 reports relative mean gain scores across each condition. When examining these scores, the standard error of measurement approach was used, and mean gain scores greater than 23.1 are indicated with an asterisk. The SG condition was associated with significant mean gains at WCPM-post- and retention- testing for Sofia and Miguel and at retention-testing only for Maria and Javier. The 1/1 condition was associated with significant mean gain scores at WCPM-post-testing for all students, and at retention-testing for Maria, Sofia, and Miguel. The NTC condition was associated with a significant mean retention score for Sofia, however, the score was much lower than the mean gains for the SG and 1/1 conditions.

Randomization test analysis. Mean gain scores across all sessions, per condition, were evaluated using randomization tests (Table 2). Findings indicated that the 1/1 condition had significantly higher WCPM gains than the NTC condition at WCPM-post-testing for all participants. At retention testing, gains for the 1/1 condition were significantly better than NTC for three participants (Maria, Sofia, and Miguel). The SG condition had significantly larger WCPM gains than the NTC condition at WCPM-post- and retention-testing for Sofia and Miguel, but not for the other participants. The 1/1 condition significantly outperformed the SG condition at retention-testing for Maria, but not for the other participants or conditions. Table 3 provides a summary of WCPM findings across all levels of analysis.

Table 3 continued

Note. For Graphical and Randomization analysis, ✓ indicates a significant improvement from the No Treatment Control condition. For SEM analysis, ✓ indicates significant improvement from WCPM-Pre-Test score. SEM = Standard Error of Measurement, IM = WCPM-Immediate-Testing, RET = WCPM-Retention-Testing.

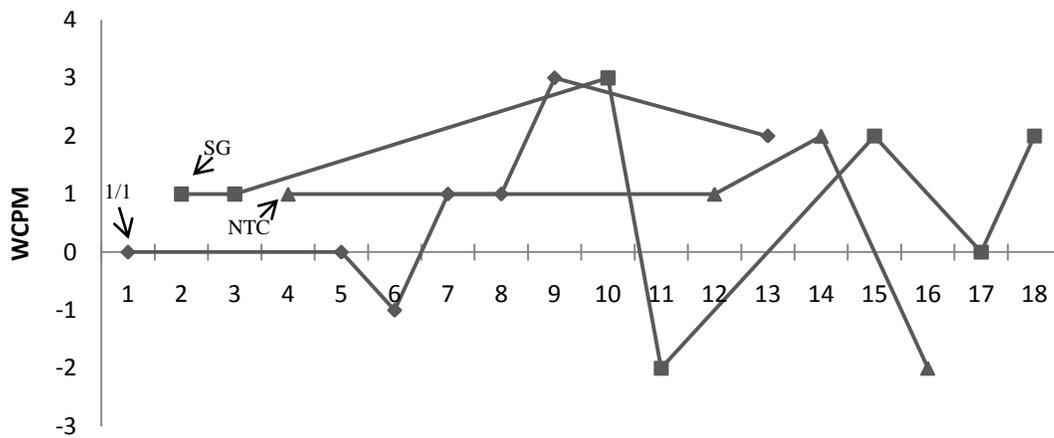
Vocabulary

Graphical analysis. Figure 3 (vocab-pre-post gains) and Figure 4 (vocab-pre-retention gains) graphically depict each participant's scores across conditions. Across all participants, conditions, and for both vocab-post- and retention-testing, scores were highly variable. For most participants, there was 80-100% of overlap across the three conditions. Given the very high levels of variability and overlap across conditions and participants, a more detailed description of these data will not be provided here. Instead, in an attempt to explain these highly variable and overlapping data, a detailed discussion will be forthcoming.

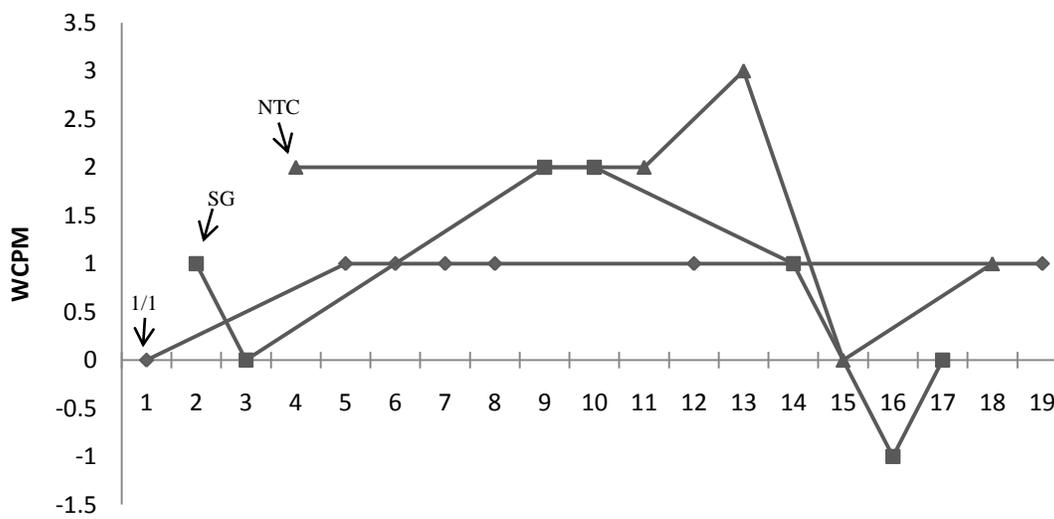
Mean level analysis. Table 4 reports relative mean vocabulary gain scores across conditions. When examining the mean vocabulary gain scores across conditions for each student, the NTC condition proved most effective at vocab-post-testing, with the highest gain scores for three students (Javier, Sofia, and Miguel). The SG condition was most effective for Maria and Carlos. At

Figure 3. Vocabulary gain scores from pre- to post-testing.

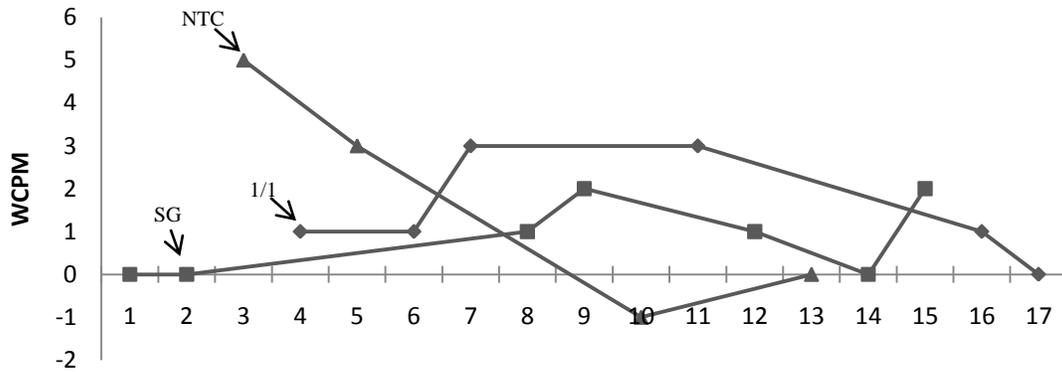
Maria



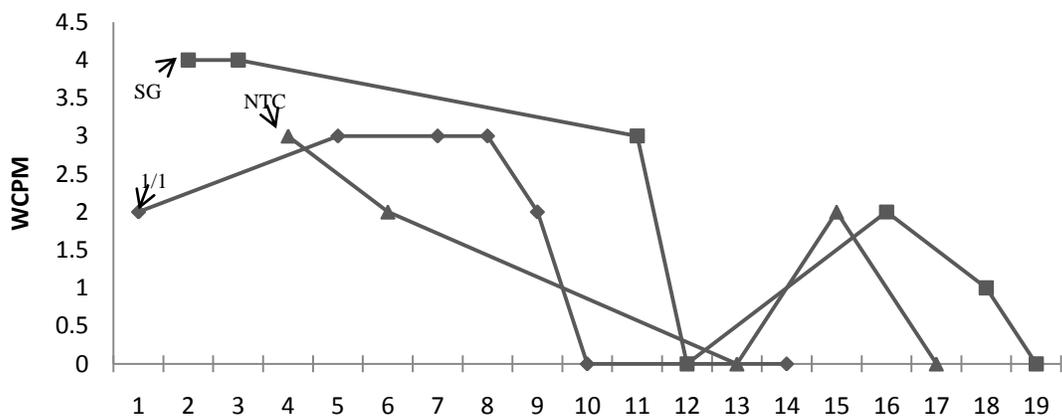
Javier



Sofia



Carlos



Miguel

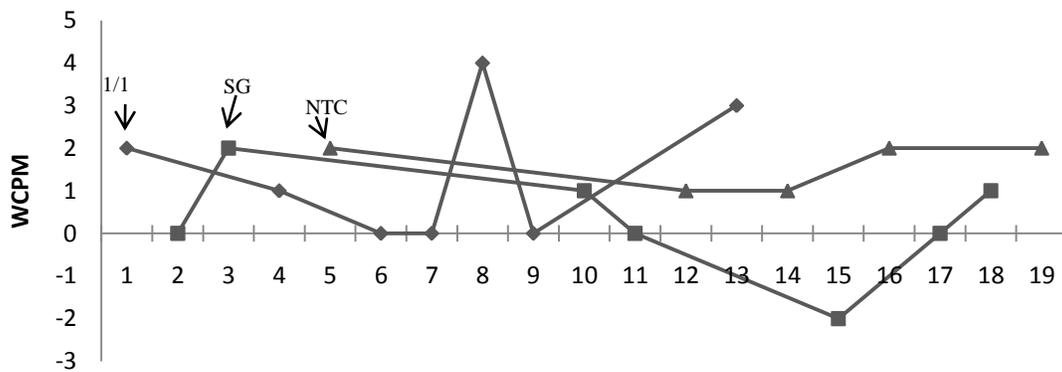
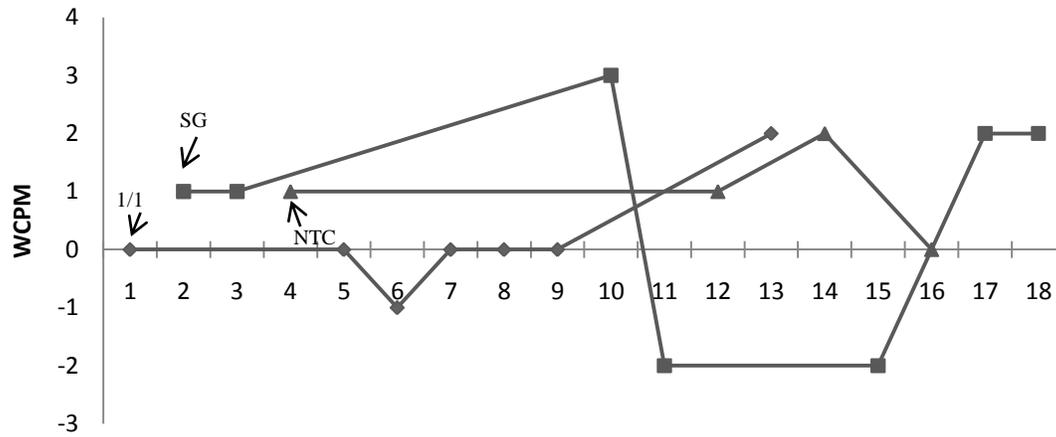
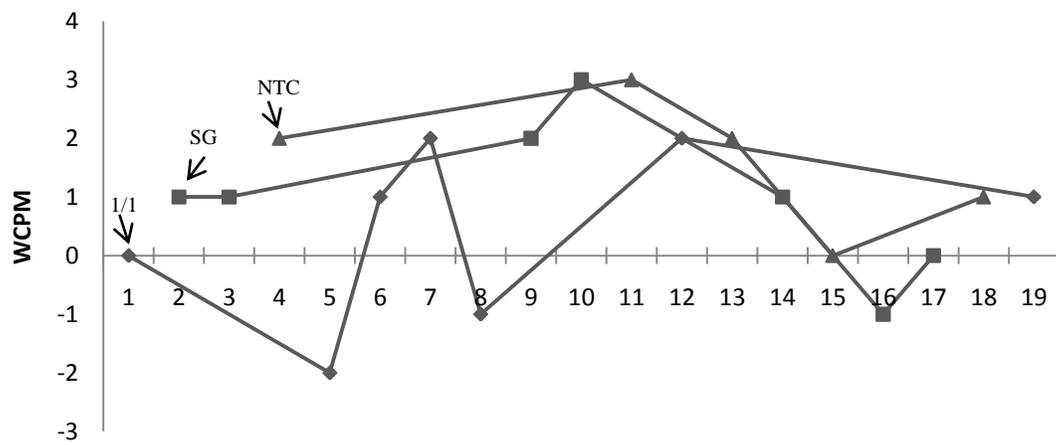


Figure 4. Vocabulary gain scores from pre- to retention-testing.

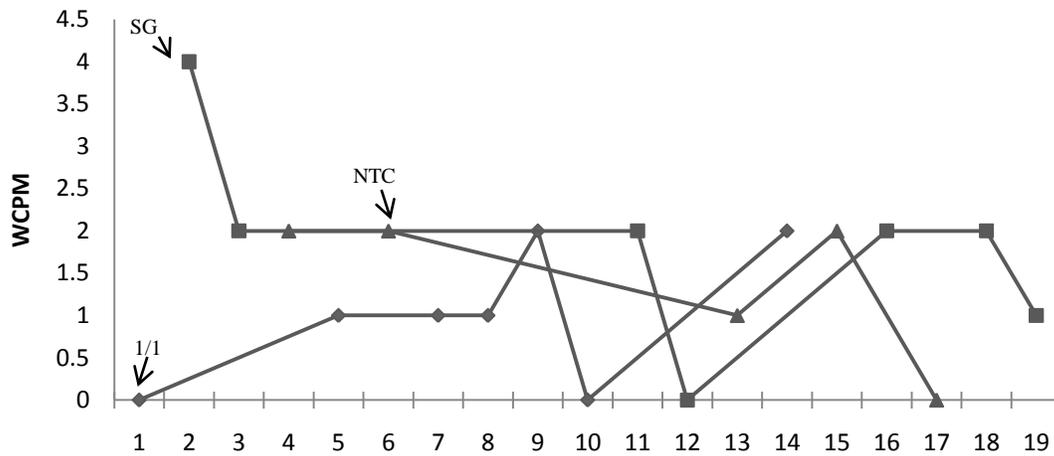
Maria



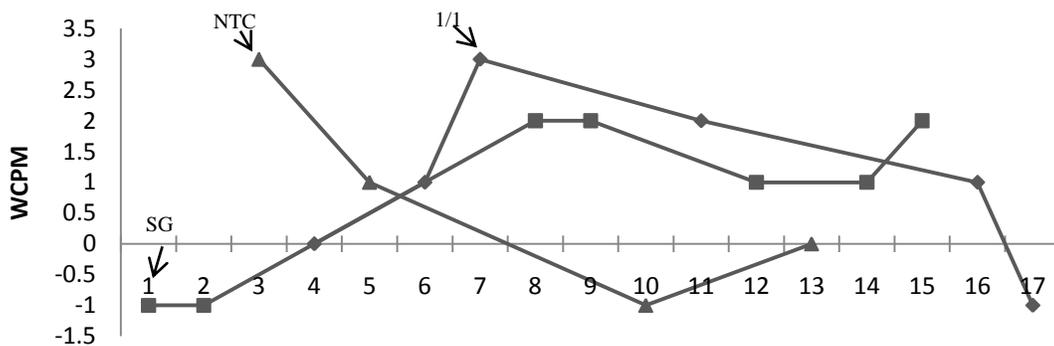
Javier



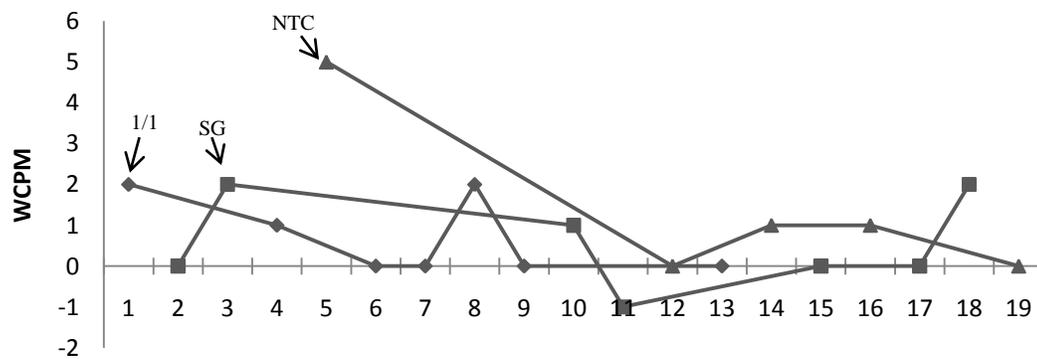
Sofia



Carlos



Miguel



vocab-retention testing, the NTC condition was also most effective, this time for Maria, Javier, and Miguel. The SG condition was most effective for Carlos and the 1/1 condition for Sofia.

Randomization test analysis. Randomization tests were used to analyze mean differences in vocabulary gain scores by individual. The two intervention conditions did not significantly differ from the NTC condition or from each other for any individual.

Standardized Tests

Table 5 describes standardized test scores at pre- and post-testing for all students. When examining standardized test scores (CTOPP, GORT-IV, TOWRE, WJ-3), those scores that improved at least one half of a standard deviation from pre-testing were considered sizeable (a score of 1.5 for scaled scores or 7.5 for standard scores). Javier and Sofia made substantial improvements on the Fluency portion of the GORT-IV, with Sofia also improving her score on the Comprehension portion and Oral Reading Quotient composite (Table 5). Maria, Javier and Carlos made sizeable improvements on the Sight Word Efficiency portion of the TOWRE and the Total Word Reading Composite, with Javier also improving on the Phonemic Decoding portion. Maria and Carlos made substantial improvements on the Rapid Digit Naming subtest of the CTOPP and Carlos made an improvement on the Rapid Naming Composite. Finally, Maria and Miguel made sizeable increases to their Word Attack subtest score of the WJ-3. For the End of Year DIBELS benchmarking passages, a score of less than 70 indicates that a student is at risk for reading failure and a score of 70-89 indicates that a student is at some risk for

Table 4.
Mean Vocabulary Gain Scores across Conditions

	Pre-Post Test NTC	Pre-Post Test SG	Pre-Post Test 1/1	Pre-Retention Test NTC	Pre-Retention Test SG	Pre-Retention Test 1/1
Maria	0.50 (1.73)	1.00 (1.63)	0.86 (1.35)	1.00 (0.82)	0.33 (1.97)	0.11 (0.78)
Javier	1.60 (1.14)	0.71 (1.11)	0.86 (0.38)	1.60 (1.14)	1.00 (1.29)	0.43 (1.51)
Carlos	1.40 (1.34)	2.60 (1.67)	1.86 (1.35)	1.40 (0.89)	1.86 (1.21)	1.00 (0.82)
Sofia	1.75 (2.75)	0.86 (0.90)	1.50 (1.22)	0.75 (1.71)	0.86 (1.35)	1.00 (1.41)
Miguel	1.60 (0.54)	0.29 (1.25)	1.43 (1.62)	1.40 (2.07)	0.57 (1.13)	0.71 (0.95)
Mean Across All Students	1.37 (0.50)	1.09 (0.88)	1.30 (0.44)	1.23 (0.35)	0.92 (0.58)	0.65 (0.38)

Note. Randomization tests yielded no significant differences between conditions for participants, Std. deviations shown in parentheses,

NTC = No Treatment Control, SG = Small Group, 1/1 = One-on-On

Table 5. *Standardized Test Pre- and Post-Test Scores*

	GORT-IV			TOWRE			CTOPP			WJ-3				DIBELS	Vocab
	Fl	Comp	ORQ	SWE	PDE	TWR	RDN	RLN	RNC	LWI	WA	RV	BRC		
Maria															
Pre	9	4	79	90	85	85	10	10	100	100	84	90	92	84 (low)	19
Post	9	5	82	106*	88	96*	12*	9	103	97	98*	89	97	86 (some)	26
Javier															
Pre	7	9	88	85	91	86	8	8	88	99	102	80	100	46 (at-risk)	25
Post	9*	7	88	94*	99*	96*	9	9	94	95	96	83	95	64 (at-risk)	33
Carlos															
Pre	6	5	73	89	97	92	9	10	97	90	103	92	95	59 (some)	22
Post	6	5	73	102*	101	102*	12*	10	106*	91	97	87	93	77 (some)	27
Sofia															
Pre	5	5	70	86	87	84	8	9	91	91	91	85	90	46 (at-risk)	17
Post	7*	9*	88*	84	88	89	8	9	91	86	93	88	88	68 (some)	33
Miguel															
Pre	7	10	91	90	93	90	8	9	91	97	96	88	96	60 (some)	24
Post	8	8	88	93	94	92	8	9	91	99	104*	91	101	73 (some)	34

Table 5 Continued

Note. * = at least ½ std. deviation increase from pre-test, GORT = Gray Oral Reading Test- fourth edition, Fl = Fluency, Comp = Comprehension, ORQ = Oral Reading Quotient, TOWRE = Test of Word Reading Efficiency, SWE = Sight Word Efficiency, PDE = Phonemic Decoding Efficiency, TWR = Total Word Reading Efficiency, CTOPP = Comprehensive Test of Phonological Processing, RDN = Rapid Digit Naming, RLN = Rapid Letter Naming, RNC = Rapid Naming Composite, WJ-3= Woodcock Johnson Test of Achievement - Third edition, LWI = Letting Wording Identification, WA = Word Attack, RV = Reading Vocabulary, BRC = Basic Reading Composite, Dynamic Indicators of Basic Early Literacy Skills, at-risk = at-risk for reading failure as indicated by DIBELS benchmarking procedures, some = some risk for reading failure as indicated by DIBELS benchmarking procedures, low = low risk for reading failure as indicated by DIBELS benchmarking procedures, Vocab = experimenter developed vocabulary test.

failure (Good & Kaminsky, 2002). At post-testing, four students were at some risk according to DIBELS benchmark scores (Maria, Sofia, Carlos, and Miguel), and one student was at risk (Javier). Sofia made improvements from pre-testing and moved from the at-risk category to the some risk category. Unfortunately, Maria moved from the low-risk category to the some-risk category. The remaining three students remained in their initial categories. For the experimenter-developed vocabulary test which included a

random sample of vocabulary words that were included in either the SG or 1/1 conditions students made gains ranging from 5 to 16 words from pre- to post-testing.

Acceptability

Table 6 includes students' reports of the acceptability of the study assessed at one point mid-way through the study. On average, students reported that they liked the 1/1 condition and all but Carlos reported that they liked the SG condition as well. All students reported that they thought the 1/1 condition helped them become better readers and that the 1/1 condition would be useful for other 2nd graders. Four of the students reported that the SG condition helped them become better readers, with Carlos reporting that he thought the condition was somewhat helpful to him. All students reported that the SG condition would be useful for other 2nd graders.

Procedural Integrity

Procedural integrity was evaluated by giving each trainer a hard copy of the procedures for each intervention condition. Trainers used these copies while working with students to remind themselves of the steps in each condition. Integrity was monitored by tape-recording a sampling of pre-intervention, intervention, and post-intervention sessions for the 1/1 condition, and pre-intervention and post-intervention sessions for the SG and NTC conditions. Trainers then exchanged their tapes with another trainer immediately following the session, listened to the tapes, and checked off the steps that the trainer completed correctly on a worksheet that included all the steps of the intervention (Appendices A, B, and C). The trainers that led the SG intervention sessions were

Table 6.

Student Acceptability Ratings

		SG			1/1		
		I think doing this reading activity helped me become a better reader.	I think this reading activity would be good to use with other 2 nd graders.	I like doing this reading activity.	I think doing this reading activity helped me become a better reader.	I think this reading activity would be good to use with other 2 nd graders.	
Maria	5	5	5	5	5	5	
Javier	5	5	4	5	4	5	
Carlos	1	3	4	5	5	5	
Sofia	5	5	5	5	5	5	
Miguel	5	5	5	5	5	5	
Mean Across Participants	4.2	4.6	4.6	5	4.8	5	

Note. SG = Small Group, 1/1= One-on-One

observed by another trainer in real time on the day of the intervention, and again steps completed correctly were checked-off on a procedural worksheet. Overall, 7 1/1 sessions were evaluated, 8 NTC sessions were evaluated, and 3 SG sessions were evaluated. The average percentage of steps completed correctly was 100% for each condition.

CHAPTER 5:

DISCUSSION

Many Hispanic, English Language Learners living in the U.S. have significant difficulty learning to read. In 2007, 50% of Hispanic 4th grade students read below a basic level, which was significantly different from the 22% of White, non-Hispanic peers reading below the basic level (Lee, Grigg, & Donahue, 2007). Little research has explored the effectiveness of reading fluency interventions for English language learners attending U.S. schools. The main purpose of this study was to evaluate the comparative effects of a reading fluency intervention presented in a one-on-one (1/1) versus a small group (SG) format, and to compare both intervention conditions to a no-treatment control (NTC) condition. The rationale for investigating the effectiveness of each intervention package (1/1 and SG) was two-fold. First, each intervention package included components that were supported by research for students whose first language is English, and I therefore wanted to investigate the effectiveness of each package with English language learner populations. Second, I wanted to investigate the differential effectiveness of the intervention presented in a 1/1 versus SG format, which offers information about the versatility of the intervention. As a teacher, school psychologist, or

other educator involved with developing and/or implementing supplemental reading programs for early learners, having knowledge of both small-group and 1/1 interventions is important in order to fit the needs of a particular student, as well as to work with the available time and resources within a school.

Primary Findings

As part of this study, the comparative effects of the 1/1, SG, and NTC conditions on reading fluency improvements (as measured in WCPM gains) at both a WCPM-post-test (immediately after intervention) and a WCPM-retention-test (approximately 2 days after intervention) were investigated using three different analytical methods: visual analysis, SEM analysis, and randomization test analysis.

Gains at WCPM-post-testing. First, visual analysis of WCPM gains plotted linearly over time suggested that, at WCPM-post-test, the 1/1 condition was associated with higher WCPM gains than the NTC condition for all but one participant (Carlos). As mentioned earlier, Carlos exhibited oppositional behavior throughout the program, which may have heavily influenced the variability in his scores across all conditions, and as a result, reduced the visibility of the 1/1 condition demonstrating improvements compared to the NTC. Similar results were found when examining the mean gain scores using SEM analysis, with the 1/1 condition being associated with significant mean gain scores for all students at WCPM-post-testing. Lastly, using the randomization test analysis, the 1/1 condition was associated with significantly higher gains than NTC at WCPM-post-testing

for all participants. In the case of Carlos, it appeared that when his scores were averaged by condition, the 1/1 condition significantly outperformed the NTC.

Identifying that the 1/1 condition resulted in improvements for nearly all students is consistent with previous research showing that the combination of these intervention strategies implemented in a 1/1 format results in improvements in reading fluency (Daly et al. 1998; Eckert et al. 2002; Begeny & Ross, 2009) for most, but not necessarily all students.

Visual analysis comparing gain scores from the SG condition to scores from the NTC condition at WCPM-post-testing showed that three students (Sofia, Miguel, and Maria) performed substantially better as a result of the SG intervention. Similar to results of visual analysis, SEM analysis showed significant gains for Sofia and Miguel at WCPM-post-testing. Randomization test analysis revealed that SG gains are significantly larger than NTC gains at WCPM-post-testing for Sofia and Miguel as well. The fact that the SG condition was effective for some students is again in line with the relatively small body of research showing that using fluency-based intervention strategies in a SG setting is useful for improving students' reading fluency (Begeny & Martens, 2006; Daly et al. 2007).

Gains at WCPM-retention-testing. The second question addressed by this study was the degree to which each intervention condition was associated with retention WCPM gains (measured 2-3 days after intervention). The ability to retain WCPM gains is important for the maintenance, generalization, and application of basic reading skills

(Bonfiglio, Daly, Martens, Lin, & Corsaut, 2004). Visual analysis showed that the 1/1 condition consistently outperformed the NTC condition at WCPM-retention-testing for three students (Sofia, Miguel, and Maria). SEM and randomization test analyses demonstrated that significant WCPM-retention gains for the same three students. These findings are in line with previous research showing that students who received 30 minutes of a reading fluency intervention three times per week for 7-8 weeks improved not only with immediate post-test gains but also on gains measured 2-3 days later (Martens, Eckert, Begeny, Lewandowski, & DiGennaro, 2007).

Visual analysis revealed notable gains for the SG condition when compared to the NTC condition at WCPM-retention-testing for two students (Sofia and Miguel), and the randomization test resulted in the same findings for these two students. SEM analysis showed that the SG condition was associated with a significant mean gain score for four students (Sofia, Miguel, Maria, and Javier). Begeny & Silber (2006) analyzed WCPM retention gains for a small group intervention that used similar intervention strategies as this study for students whose first language was English. They reported WCPM retention gains across participants. The results of this study indicate that the SG condition resulted in WCPM retention gains being made for some but not all English language learners when analyzed at an individual level. It is interesting that Maria and Javier did not make significant gains at WCPM-post-testing, but did at WCPM-retention-testing. The reason for significant retention gains for these two students could be a result of reading the

passage an additional time during the actual testing procedure (i.e., students received one more repeated reading of the passage during this time).

It should be noted that SEM analysis showed significant WCPM-retention gains for Sofia in the NTC condition. (mean gain score = 27). However, her mean gain scores at WCPM-retention testing for 1/1 (mean gain score = 40.17), and SG (mean gain score = 48.43) were much higher. These findings seem to suggest that the initial WCPM-pre-test passage served as good practice for Sofia, so much so that she was able to significantly improve during the second post-testing reading during the NTC condition.

Overall, the relationship between each student's immediate and retention WCPM gains scores was consistent. In approximately 1/3 of cases mean scores decreased slightly from WCPM-post-testing to WCPM-retention-testing (with a decrease of 1-3 WCPM across all students and conditions except one, Carlos, in which the mean difference was -12.17 from 1/1 WCPM-post-testing to 1/1 WCPM-retention-testing). In approximately 2/3 of cases the mean WCPM-retention-test gains were slightly higher (2-14 WCPM) than the WCPM-post-test gains. This is a notable finding because it suggests that the immediate strength of intervention does not seem to dissolve over the course of a few days for English language learners. In fact, in many cases, including the NTC conditions, WCPM scores increased from WCPM-post- to WCPM- retention-testing. Similarly, Begeny et al. (2008) found that retained gains were similar to immediate gains when examining the effects of students receiving RR or LPP in a small group setting. The findings that at least some WCPM gains were made in the NTC condition for all students

from WCPM-post- to WCPM-retention-testing suggests that students benefit from the extra practice of reading the passage during testing, and illustrates the likely benefits of repeated reading.

Differential gains in the 1/1 versus SG conditions. The third question addressed by the study was the differential effects of the 1/1 and SG condition on WCPM gains. Visual analysis showed high overlap between the two conditions at both WCPM-post- and WCPM-retention-testing. The results of the randomization tests showed no significant differences in gain scores between the 1/1 and SG conditions at WCPM-post- or WCPM-retention-testing, except for Maria, whose mean 1/1 gain score outperforms her SG mean gain score at WCPM-retention testing. However, when considering the data discussed above that compared each intervention condition to the NTC condition, the 1/1 condition consistently outperformed the NTC condition whereas the SG condition outperformed NTC for some but not all students. These data suggest that the 1/1 condition, compared to the SG condition, is more reliable as an effective intervention when compared to a NTC. In a meta-analysis that compared intensive 1/1 and SG interventions for reading fluency, researchers suggested no significant differences in outcomes between 1/1 and SG reading interventions (Elbaum, Vaughn, Hughes, & Moody, 2000). However, average scores across groups of students were evaluated and interpreted in this study—individual differences between 1/1 and SG intervention effectiveness were not evaluated. The present study is unique in that it examined individual student data and can therefore directly compare the effectiveness of the 1/1

and SG interventions at an individual level. Based on this analysis, approximately half of the students seemed to benefit equally as a result of the SG or 1/1 intervention, but the other half of students benefitted more from the 1/1 condition when comparing intervention gains to NTC gains.

Overall WCPM findings. Overall, data from two analytic strategies (randomization and SEM analysis) suggested that the 1/1 condition was associated with significant WCPM gains for all five students at WCPM-post-testing and three students at WCPM-retention-testing. Visual analysis suggested that the 1/1 condition was effective for all students except Carlos at WCPM-post-testing and three students (Sofia, Miguel, and Maria) at WCPM-retention testing. For the SG condition, SEM analyses suggested that significant WCPM gains were made for two students (Sofia and Miguel) at WCPM-post-testing and for the same two students, plus two additional students (Maria and Javier) at WCPM-retention-testing. Randomization testing reported that the SG condition significantly outperformed the NTC condition for two students (Sofia and Miguel) at WCPM-post- and retention-testing. Finally, visual analysis pointed to notable SG WCPM gains for three students (Sofia, Miguel, and Maria) at WCPM-post-testing and two students (Sofia and Miguel) at WCPM-retention-testing. None of the analytical techniques found noteworthy differences between outcomes associated with the SG vs. 1/1 condition, with the exception of Maria for whom a randomization test reported the 1/1 condition outperforming the SG condition at WCPM-retention-testing.

There are several factors that may have influenced a larger number of students demonstrating significantly better performance between the 1/1 and NTC conditions compared to the SG and NTC conditions. During the 1/1 condition, the phrase drill and the fill-in-the-blank portion of listening passage preview is tailored to one particular child. Therefore, phrases the child missed in the previous reading were practiced during the phrase drill portion of the 1/1 condition versus choosing general phrases ahead of time for the SG condition. Also, a student was asked to provide more words when the teacher paused from the listening passage preview reading during the 1/1 condition versus taking turns with other students during the SG condition. During the repeated reading component of the SG condition, students read along with an alternating student leader versus reading the passage individually, as in the 1/1 condition. During the SG repeated reading portion (compared to the 1/1 repeated reading), students may not have put forth as much effort to read each passage correctly because they could rely somewhat on the fact that other students were reading the passage as well. Of course, the trainer made a point to remind all students to follow along and read along with the lead student. However, there may have been weaker contingencies for students to read the passage well in the repeated reading portion of the SG condition.

Although these are only minor differences between the intervention conditions, they represent slightly more individualized instruction, which may have led to the differences in results. Another factor to consider when comparing the two conditions is the effect that the students had on each other in the SG condition. In general, there were

more distractions (e.g., multiple students in a small room, socializing between students) in the SG setting that could have interfered with students receiving full benefit of the intervention. The teacher needed to manage behavior for multiple children in the SG setting, rather than only one child. In particular, Carlos portrayed significant behavior problems during both the 1/1 and SG conditions. However, his behavior was likely a distraction to students in the SG setting, which possibly led to some students making smaller WCPM gains in the SG condition when compared to the 1/1 condition. This observation illustrates the importance of teachers being able to successfully manage all students' behavior when working with small groups of students. Also, the reward procedure was different in the SG condition versus the 1/1 condition. In the SG condition students received stars for the behavior of the group as a whole, whereas in the 1/1 condition they received stars for their own personal behavior. This may have led students to monitor their own behavior less during the SG condition because they knew that their reward would be based on the group's behavior versus solely their own. In the future, it may be useful to change the SG reward procedure to match that of the 1/1 condition and reward students for their personal behavior.

Vocabulary gains. The fourth question addressed in this study was the degree to which each condition influenced gains in vocabulary scores. Vocabulary instruction consisted of showing students the specific word and a corresponding picture of the word, reading the definition of the word and having the students successfully repeat the definition, and telling students the Spanish pronunciation of the word. This method of

vocabulary instruction was used because of research showing that making definitions meaningful to students result in more retention of definitions (Carlo et al., 2004; Perez, 1981; Vaughn-Shavou, 1990). I therefore thought that in addition to telling students the definition of a target word, showing a picture of the word and giving the Spanish pronunciation would assist in making the word meaningful to them. Unfortunately, vocabulary gain scores were highly variable across students and conditions; therefore, no solid interpretations can be drawn about the relative effectiveness of one condition over another. Graphical analysis of the means for each condition showed that the effectiveness of each condition varies drastically for each participant at vocab-post and retention-testing, with the NTC condition even outperforming the 1/1 and SG conditions for some students. A possible reason for the variation in vocabulary scores is that the experimenter-developed vocabulary measure may not have had the necessary psychometric properties to be a valid measure of vocabulary knowledge. For example, the measure only took into account gains in vocabulary scores and not pre-existing vocabulary knowledge (e.g., a student who learned the definition of “robin” from vocab-pre- to post-testing received points, whereas a student who already knew the definition of “robin” at pre-test did not receive points). Unfortunately, the sample size in this study was too small to adequately evaluate psychometric properties of the self-developed vocabulary assessment.

Because vocabulary gains were made during the NTC condition, it is possible that students were using context clues from reading the story (during their “pre-test” initial

assessment) to make predictions about the definition of words. It appears that, at least for some passages, learning vocabulary by using context clues from the story was more effective than hearing scripted definitions of the words. These data support previous research with ESL students, showing that context-embedded vocabulary instruction is sometimes more effective than definitional instruction of vocabulary terms (Markham, 1989).

Other factors may have also led to the variable data and lack of improvements resulting from the intervention conditions. For instance, students may have lacked the specific vocabulary needed to define particular words. Students' expressive vocabulary was measured, meaning that they were asked to produce the actual definition of each chosen word. Perhaps measuring their receptive vocabulary, or their ability to understand spoken words (usually measured by students choosing pictures that represent specific words), would have led to different results. In developing this study, however, the expressive vocabulary assessment was administered because expressive vocabulary scores in early grades are directly related to word identification skills in later grades for English Language Learners (Lindsey, Manis, & Bailey, 2003). Word identification skills are directly related to reading fluency, and therefore, using an expressive vocabulary measure seemed appropriate because of the reading fluency focus in this study.

Another factor that may have influenced students' vocabulary performance was the students' focus on memorizing the exact definition of the words being taught to them. Specifically, several trainers observed students trying to memorize definitions of words

instead of providing more general word meanings, the latter of which would have also led to points earned in the vocabulary assessment. This attempt to memorize definitions led to some confusion as students were observed trying to re-state definitions exactly as they were taught to them. In the future it would be useful to explain to students that they do not need to restate definitions exactly as they were read to them, but to explain the definition in their own words.

Finally, the short length of the vocabulary component may have resulted in lack of student gains. The vocabulary component was only completed one time during the intervention conditions and lasted only 2.5 minutes. The remainder of the intervention was focused on reading fluency. In the future, an intervention focusing solely on vocabulary may be more useful in improving vocabulary knowledge.

Standardized test gains. The last question addressed in this study was the degree to which students made improvements on standardized test scores from pre- to post-testing. Students made a variety of notable gains on standardized tests from pre- to post-testing. Although gains cannot be attributed solely to this fluency intervention (as students were also receiving their regular classroom curriculum), they give indication of positive student progress that was made during the time that students were receiving intervention as part of this study.

Maria, Javier, and Carlos made substantial improvements on the Total Word Reading (TWR) Composite of the TOWRE. Two students (Javier and Sofia) made improvements on the Fluency subtest of the GORT-IV, and two students (Maria and

Miguel) made improvements on the Word Attack portion of the WJ-3. These results are in line with WCPM gains for Sofia and Miguel, as they made substantial WCPM gains in both 1/1 and SG conditions. Maria, Javier, and Carlos also made substantial WCPM gains in the 1/1 condition, and therefore their gains on fluency-based standardized tests might be expected. Some students made improvements on subtests not directly related to fluency. For example, two students (Maria and Carlos) improved on the ability to rapidly name digits, as measured by the Rapid Digit Naming subtest of the CTOPP. Also, Sofia made improvements on her Reading Comprehension score of the GORT-IV. This may indicate that because Sofia is reading more fluently she is now able to focus more on comprehending the passage at hand.

Unfortunately, clear interpretation of the standardized test gains in this study is confounded by a number of factors. First, gains cannot be shown to be a result of receiving intervention because of the small number of students in the study, preventing the use of inferential statistics to analyze the data. Also, the lack of a control group that received ESL services and the same regular education curriculum prevents identification of student gains that were made as a result of receiving the interventions from this study versus receiving the combination of the interventions with other school-based instruction. Similarly, any gains in standardized test scores cannot be differentiated to be a result of either the 1/1 or SG condition, but must be viewed as a result of receiving approximately 200 minutes of similar intervention over 9 weeks. Finally, with all forms of testing there

is the possibility that errors could be made in measuring a student's performance. Errors in measurement could result in an inaccurate increase or decrease in scores.

The examination of DIBELS Benchmark scores showed that all students made WCPM gains from the winter benchmark to the spring benchmark. With the exception of Maria, all students read 13-22 more words correct in one minute in their spring assessment compared to their winter assessment. Although Carlos, Javier, and Miguel remained in their initial reading categories, Sofia improved from the at-risk category to the some-risk category. According to Hasbrouck and Tindal (2006) second grade students at the 50th percentile should improve their WCPM scores at an average rate of .85 words per week between winter and spring assessments (approximately 20 weeks). Because this study was only 9 weeks, students' words gained per week (WGPW) scores were calculated and compared to the expected gains for students reading at the 50th percentile. Four of the five students' WGPW scores exceeded those expected for students at the 50th percentile (Javier = 2 WGPW, Sofia = 2.4 WGPW, Carlos = 2 WGPW, Miguel = 1.44 WGPW). This provides very promising data that speaks to results that would have been obtained had the study continued for a longer period of time. Consequently, a limitation of the study is that it lasted only 9 weeks. If students had participated in intervention over a longer period of time, larger gains in DIBELS and standardized test scores may have been made. Maria made gains of .22 words per week. Although her scores were the highest at both pre- and post-testing (84 and 86 WCPM

respectively), more gains would have been expected over the course of the study, given that she initially began the study at a percentile ranking between 50 and 75.

Implications for School Practitioners

Although there were important limitations of this study (e.g., intervention implementation for only 9 weeks, limitations with some reading measures, limitations to external validity due to specific sample used), the findings from this study offer important implications for school-based practitioners selecting to use reading fluency interventions with Spanish-speaking English language learners who struggle with reading fluency. First and foremost, both intervention conditions demonstrated promise as an effective method for improving English language learners' reading fluency. Given the lack of research in this area, this finding should be useful for educators who need to address reading fluency deficits for this increasing population of students.

This study also offers direction for educators' efficient use of time and resources when needed to address reading fluency deficits for Spanish-speaking, English-language learners. More specifically, our study should help practitioners determine whether a more time and resource efficient SG intervention would be preferable to a 1/1 intervention.

The SG intervention in this study was consistently effective for two of the five English language learners at-risk for reading failure. However, the small group package utilized less time and resources because it can be implemented with several students at once. Research has suggested that teachers prefer interventions that do not require time intensive one-on-one instruction time (Witt, Elliott, & Martens, 1984). The small group

format may be used as a suggested starting point for educators who need to assist struggling readers but who may also have limited time and resources to implement an individualized intervention. The SG intervention could easily fit into the curriculum of an ESL classroom; as such classes usually consist of small groups of students.

Considering that the SG intervention described in this study is likely to be (a) more preferable than a 1/1 intervention because implementation across several students requires less time and resources, but (b) may only be effective for *some* Spanish-speaking English language learners, this situation requires educators to balance their educational decision-making between intervention effectiveness and implementation feasibility. As one means to address this type of decision-making, educators are encouraged to start with a more time and resource efficient implementation strategy (such as the SG intervention described in this study) and then monitor each student's progress with that intervention over at least two to three weeks. If data show that the student reliably makes improvements that are commensurate with the goals for that student, the more resource efficient strategy may be suitable enough to address that student's educational needs. However, if the student is not making adequate progress, the educator would likely need to implement a more intensive intervention to address the student's learning needs. Employing this methodology with students similar to those who participated in the present study, educators should first identify English language learners that are in need of a fluency-based reading intervention. Second through fourth grade students would be a suitable grade level target. As recommended by Hasbrouck and Tindal (2006), students

in need of such intervention would also be those who are identified by (a) CBM benchmark procedures as reading fewer than 10 WCPM above the 50th percentile score and/or (b) the student's teacher as having reading fluency difficulties.

Educators should then form a reading intervention group of 3 to 6 students, carefully considering the characteristics of each student in the group. Efforts should be made to include students in the group who are on similar reading levels. Also, Students who consistently act out or display oppositional behaviors should be carefully considered for inclusion in the group. Within the current study, the SG condition would have possibly had more positive overall results had behavior problems been kept to a minimum. If a group includes a student who exhibits behavior problems, it is important that the educator implementing the intervention be successful with his or her behavior management skills. Next, the SG intervention should be implemented and students' fluency gains should be monitored over the course of approximately 5-6 sessions. Luckily the intervention packages in this study have a built-in progress monitoring system, in that WCPM scores before intervention (with the WCPM-pre-test) and after intervention (with the WCPM-post- and WCPM-retention-test) can be monitored. If a student does not appear to be making expected progress, the next step would be to implement the more intensive, 1/1 condition with the student.

As a classroom or ESL teacher will likely have time constraints on their ability to implement the 1/1 intervention, teaching assistants and school volunteers could be utilized for implementation purposes. Progress should again be monitored over time in

this condition as well. The use of this system of intervention fits very well with the movement towards a Response to Intervention (RTI) model within U.S. school systems. An RTI model promotes the use of decision-making methods that use gradual increases or decreases in intervention intensity to demonstrate need for initial or ongoing special services (Barnett, Daly, Jones, & Lentz, 2004). During the RTI process a student's response to an evidence-based intervention is monitored as well as the intensity (e.g., time and resources) required to implement the selected intervention. The combination of these two things should be taken into account when determining a student's special education eligibility (Barnett, et al. 2004).

Future Directions

Designed more along the lines of an efficacy study, this study benefitted by having a group undergraduate and graduate students participating in the project. However, implementation of these procedures by these volunteers is not an option within the context of most schools. Therefore, it is important for teachers, school personnel, and school volunteers to learn the types of interventions used in this study and implement them with integrity. Future research should evaluate the effects and procedural integrity of teacher-implemented fluency-based interventions with English Language Learner populations. Because the focus of this study is on English language learners, training ESL teachers may be the most logical direction to go first, as they work with small groups of English language learners throughout the day.

In order to make the intervention more versatile, developing passages for different grade levels would be appropriate. Because DIBELS passages are increasingly being used for progress monitoring in schools, developing separate intervention passages is necessary to ensure that progress monitoring assessment passages are not inappropriately used for intervention purposes.

In order to use this intervention accurately within an RTI model, research needs to focus on average weekly or monthly WCPM gains for English language learners. There is little research to suggest appropriate WCPM gains for this population, but it is likely that they are smaller than those of peers who speak English as a first language (Ramirez & Shapiro, 2006). Without these data it is difficult to make decisions as to whether or not a student is adequately responding to an intervention.

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APPENDICES

Appendix A. Steps for One-on-One Condition

Pre-Intervention Evaluation Procedures (4 minutes)

- Students read passage from the previous session individually. (1 minute)
- Students are given the vocabulary post-test from the previous session individually. (1 minute)
- Students read the new passage for the day individually. (1 minute)
- Students are given the vocabulary pre-test for the new passage individually. (1 minute)

Intervention (13 minutes)

- Trainer models fluent oral reading of story while student follows along with his/her finger. Trainer asks student to fill in the blank 7-9 times during the story. (1 minute)
- Student reads story after trainer provides directions. (1.5 minutes)
- Trainer asks student to say what he/she remembers about the story. (0.5 minutes)
- Trainer implements phrase-drill error correction on all incorrectly read words. (1 minute)
- Student reads story after trainer provides directions. (1.5 minutes)
- Trainer implements vocabulary instruction on selected words. (2.5 minutes)
- Trainer models fluent oral reading of story while student follows along with his/her finger. Trainer asks student to fill in the blank 7-9 times during the story. (1 minute)
- Student reads story after trainer provides directions. (1.5 minutes)
- Trainer implements phrase-drill error correction on all incorrectly read words. (1 minute)
- Student reads story after trainer provides directions. (1.5 minutes)

Post-Intervention Evaluation Procedures (1.5 minutes)

- Student reads the practiced passage final time. (1 minute)
- Trainer provides ENTHUSIASTIC praise and feedback on student's reading and praises effort as applicable. One to two stars are earned as applicable. (0.5 minutes)
 - Student earns stars for behaving and reading with effort.

Appendix B: Steps for Small-Group Condition

Pre- Intervention Evaluation Procedures (4 minutes)

- Students read passage from the previous session individually. (1 minute)
- Students are given the vocabulary post-test from the previous session individually. (1 minutes)
- Students read the new passage for the day individually. (1 minute)
- Students are given the vocabulary pre-test for the new passage individually. (1 minute)

Intervention (13 minutes)

- Trainer models fluent oral reading of story while students follow along with their fingers. Trainer calls out students' names to fill in the blanks 7-9 times during the story. (1 minute)
- Students read story chorally at the same pace and in "quiet voices" with the student "leader" guiding the reading by reading in a slightly louder voice. Trainer makes sure all students are reading together. (1.5 minutes)
- Students take turns saying one thing they remember about the story. (0.5 minutes)
 - Teacher calls on students randomly and asks each student to say one thing he/she remember about the story. Students should try to tell what happens in order.
- Students chorally respond to difficult words and phrases in the story, which are written on the board. (1 minute)
- Students read story chorally at the same pace and in quiet voices with the student leader guiding the reading. Trainer makes sure all students are reading together. (1.5 minutes)
- Trainer implements vocabulary instruction on selected words. (2.5 minutes)
- Trainer models fluent oral reading of story while students follow along with their fingers. Trainer calls out students' names to fill in the blanks 7-9 times during the story. (1 minute)
- Students read story aloud at same pace and in quiet voices with the student guiding the reading. Trainer makes sure all students are reading together (1.5 minutes)
- Students chorally respond to difficult words and phrases in the story, which are written on the board. (1 minute)
- Students read story chorally at same pace and in quiet voices with the student leader guiding the reading. Teacher makes sure all students are reading together. (1.5 minutes)

Post-Intervention Evaluation Procedures (1.5 minutes)

- Students break and read the practiced passage a final time. (1minute)
- Trainer provides ENTHUSIASTIC praise and feedback on student's reading and praises effort as applicable. One to two stars are earned as applicable. (0.5 minutes)
 - Students earn stars for behaving and reading with effort.

Appendix C. Steps for No-Treatment Control Condition

Pre-Intervention Evaluation Procedures (4 minutes)

- Students read passage from the previous session individually. (1 minute)
- Students are given the vocabulary post-test from the previous session individually. (1 minute)
- Students read the new passage for the day individually. (1 minute)
- Students are given the vocabulary pre-test for the new passage individually. (1 minute)

Math Worksheet Procedure (13 minutes)

- Students are given a 2nd grade math worksheet to work on independently.

Post-Intervention Evaluation Procedures (1.5 minutes)

- Students read the passage a final time individually. (1 minute)
- Trainer provides ENTHUSIASTIC praise and feedback on student's reading and praises effort as applicable. One to two stars are earned as applicable. (0.5 minutes)
 - Student earns stars for behaving and reading with effort.

Appendix D: Calendar of Intervention

February 2008

Monday	Tuesday	Wednesday	Thursday	Friday
4	5	6	7	8
11 P 1.1 1/1	12	13 P 1.2 SG	14	15 P 1.3 SG
18 Teacher Workday	19 retention	20 P 1.4 1/1, A	21	22 P 1.5 SG
25 P 1.6 NTC	26	27 P 1.7 1/1	28 retention	29

March 2008

Monday	Tuesday	Wednesday	Thursday	Friday
3 NCSU Spring Break	4	5	6	7
10 P 1.8 SG	11	12 P 1.9 1/1	13	14 P 1.10 NTC
17 P 1.11 1/1, A	18	19 P 1.12 SG, A	20 retention	21 Holiday
24 Clayton Spring Break	25	26	27	28
31 P 1.13 NTC				

April 2008

Monday	Tuesday	Wednesday	Thursday	Friday
	1	2 P 1.14 SG	3	4 P 1.15 NTC
7 P 1.16 1/1	8	9 P 1.17 SG	10	11 P 1.18 1/1
14 P 1.19 SG	15	16 P 1.20 1/1	17	18 P 2.3 NTC
21 P 2.6 1/1	22	23 P 2.7 SG	24 retention	25 NCSU last day of class
28	29	30		

Note. P = passage number; SG = small group condition; 1/1 = one-on-one condition; NTC = no-treatment control condition; A = acceptability assessment.

Appendix E: Scripted Protocols

One-on-One Protocol:

- **Listening Passage Preview:**
 1. Say to the student, **“Now I am going to read today’s story to you. Please follow along with your finger, reading the words to yourself as I say them. Sometimes I will stop reading to make sure that you are following along. If I call your name, you need to tell me the next word in the story. If you read the correct word, this will show me you are putting in your best effort and this will help you earn a star at the end of the day.”**
 2. Read the passage at a comfortable reading rate and with good expression until the stopping point indicated on the examiner copy of the passage. Make sure the student is following along with his finger and prompt student to do this (if necessary).
 3. While reading each passage you will stop on 5-7 words. Call on the student to tell the next word that is to be read. At the end of the reading, praise the students for following along, as applicable.

- **Repeated Reading:**
 1. Present the student copy of the reading passage to the student.
 2. Say to the student, **“Here is a story that I would like you to read. When I say ‘Begin’, start reading aloud at the top of the page and read across the page. Try to read each word. If you come to a word you don’t know, I’ll tell it to you. Do you have any questions? Be sure to do your BEST reading.”**
 3. Say, **“Begin!”** and start the stopwatch when the student says the first word.
 4. If the student hesitates on a word for more than 3 seconds, say the word.

- **Phrase-Drill:**
 1. Say to the student, **“Now we are going to practice some of the words that you missed.”**
 2. Point to the first error word, say the word, and then say, **“Read after me, <say the 2-5 word phrase containing the error word>. Again. Again.”** In essence, allow the student to read the phrase three times. Make sure that the student points to the words being read.
 3. Praise the student for every two to three sets of phrase drills.

- **Retell:**
 1. Say to the student, “**Now I would like you to tell me everything you remember about the story, in order.**”
 2. If necessary, give prompts to student to help him remember parts of the story.

- **Vocabulary Instruction:**
 1. Say to the student, “**Now we are going to learn the definitions of some of the words in the passage.**”
 2. Point to the word printed on the vocabulary card, and say, “**This word is <selected word>.**”
 3. Say, “**This word means <read the definition of the word printed on the back of the vocabulary card>.**”
 4. Then say, “**In Spanish <selected word> means <say the Spanish equivalent printed on the back of the vocabulary card>.**”
 5. Show the student the picture illustrating the selected word, saying, “**Here is a picture of <selected word>.**”
 6. Next ask the student to repeat the definition of the selected word. If the student has trouble remembering the definition, read the definition to him again and ask him to repeat it again.
 7. Repeat instructions for the remaining vocabulary words.

Group Protocol:

- **Repeated Reading:**
 1. Say to the group, “**Now we are going to practice reading the story out loud. (Student’s name) will be the leader for this reading. (Student’s name) will read the story as the rest of you follow along, and read just a little quieter than (Student’s name). Be sure to do your best reading.**”
 2. Be sure to keep track of which students have been student leaders and alternate between each student.

- **Listening Passage Preview:**
 1. Say to the group, “**Now I am going to read today’s story to you. Please follow along with your finger, reading the words to yourself as I say them. Sometimes I will stop reading to make sure that you are following along. If I call one of your names, you need to tell me the next word in the story. If you read the correct word, this will show me you are putting in**

your best effort and this will help your team earn a star at the end of the day.”

2. Read the passage at a comfortable reading rate and with good expression until the stopping point indicated on the examiner copy of the passage. Make sure the students are following along with their fingers and prompt students to do this (if necessary).
 3. While reading each passage you will stop on 5-7 words. Call on student to tell the next word that is to be read. At the end of the reading, praise the students for following along, as applicable.
- **Phrase-Drill:**
 1. Before beginning the group session, have 7-8 of the harder phrases in the story written on a whiteboard.
 2. Say to the group, **“Now we are going to practice some of the words that you may not have seen before.”**
 3. Point to the first word, say the word, and then say, **“Read after me, <say the 2-5 word phrase containing the error word>.** Then move to the next word and repeat the directions for every word on the list. Next, randomly pick phrases throughout the list, and ask students to read them chorally when you tap on the whiteboard next to the selected phrase.
 4. Praise the group for every two to three sets of phrase drills.
 - **Retell:**
 1. Say to the group, **“Now I would like each of you to tell me a little part of what you remember about the story, in order.”**
 2. Choose a student to begin the retell portion and call on each student to recall a portion of the story. If necessary, give prompts to students to help them remember parts of the story.
 - **Vocabulary Instruction:**
 1. Say to the group, **“Now we are going to learn the definitions of some of the words in the passage.”**
 2. Point to the first vocabulary word written on the whiteboard and say, **“This word is <selected word>.”**
 3. Say, **“This word means <read the definition of the word printed on the back of a vocabulary card>.”**
 4. Then say, **“In Spanish <selected word> means <say the Spanish equivalent printed on the back of a vocabulary card>.”**
 5. Show the students the picture illustrating the selected word, saying, **“Here is a picture of <selected word>.”**

6. Next ask the group to chorally repeat the definition of the selected word. If the students have trouble remembering the definition, read the definition to them again, and ask them to repeat it again.
7. Repeat instructions for remaining vocabulary words.

No-Treatment Control Protocol:

- **Math Worksheet:**
 1. Give the math worksheet to the student and say, **“Today I would like for you to work on the math problems on this worksheet. Do the best that you can, and if you don’t know an answer just skip that problem and go to the next item. Do you have any questions**