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Instructional Factors Predicting Student Outcomes for Fourth-Grade Struggling Readers

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FLORIDA STATE UNIVERSITY

COLLEGE OF EDUCATION

INSTRUCTIONAL FACTORS PREDICTING STUDENT OUTCOMES FOR
FOURTH-GRADE STRUGGLING READERS

By

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For the four beautiful ladies in my life. To Gabrielle, for your unconditional love for me that always warms my heart. To Maya, for your boundless energy and determination which helps inspire me. To Olivia, for your care and concern for others that reminds me of what is truly important. Finally, to Shannon, my encourager and supporter, my best friend, and the love of my life. Thank you for your belief in me and for your sacrifices to help make this dream a reality.

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ABSTRACT

Within RTI models, Tier 1 instruction represents an important foundation for the prevention and remediation of reading difficulties, but has largely been ignored in previous RTI research. This study examined the amount, type, and quality of core reading instruction provided to fourth-grade struggling readers. Further, this research sought to examine whether specific elements of Tier 1 and/or supplemental reading instruction received, predicted growth in fourth grade students' reading skills. A total of 110 students, receiving school-based reading instruction in 22 classrooms, in four school districts located in two states/sites participated. Tier 1 reading instruction was observed and coded for instructional dimensions, including reading components, grouping, and quality. In general, reading comprehension and vocabulary were the most prevalent components of instruction, while limited time was allocated to word-level reading skills. Several significant differences in time allocated to overall instruction and components of instruction were noted between sites. Overall, there were few unique Tier 1 instructional predictors of student achievement at the end of the year, and the best predictor of student performance at the end of fourth grade was initial status in the fall. Further, students receiving supplemental reading instruction outperformed those students receiving only Tier 1 on measures of oral reading fluency. Implications for classroom instruction and future research are discussed.

CHAPTER ONE

INTRODUCTION

The history of the field of learning disabilities (LD) in this country can be traced to near the turn of the 20th century when school attendance became compulsory for all students, including those with reading difficulties (for a review see Hallahan & Mock, 2003). However, as described by Hallahan and Mock, the next five to six decades were marked by attempts to understand and define the construct of LD; although Samuel Kirk did not officially coin the term *learning disability* until 1962. The passage of Public Law (PL) 94-142, the Education for All Handicapped Children Act (EAHCA), in 1975 and its accompanying guidelines brought about an operational definition of LD focused on a significant discrepancy between a student's intellect and academic achievement. The apparent lack of consensus over this definition of LD developed shortly after the original EAHCA was signed into law and only intensified in subsequent decades and continues today (e.g., Fletcher et al., 2002; Francis, Fletcher, Shaywitz, Shaywitz, & Rourke, 1996; Morris, 1988; Ysseldyke, Algozzine, & Epps, 1983).

The debate surrounding the identification of students with a learning disability often centers around the inadequacy of the IQ-achievement discrepancy model, which was widely adopted as a result of the federal definition's focus on *unexpected* underachievement (U.S. Office of Education, 1977). Opponents of this model point to research suggesting that students identified as LD based on an IQ –achievement discrepancy and students with poor reading achievement without such a discrepancy differ only negligibly on reading-related skills (Hoskyn & Swanson, 2000; Stuebing et al., 2002) and on reading outcomes following instruction/intervention (Fletcher et al., 2002). As an alternative to the IQ-discrepancy model, a focus on prevention and intervention –specifically, student response to high-quality instruction-

prior to any determination of special education eligibility has been recommended (e.g., Bradley, Danielson, & Hallahan, 2002; President's Commission on Excellence in Special Education, 2002). The influence of such recommendations was clearly evident with the specific inclusion of Response to Intervention (RTI) in the re-authorization of the Individuals with Disabilities Education Act (IDEA) in 2004.

RTI is an educational service delivery model grounded in a series of empirical research literature integrating research, practice, and policy (Justice, 2006). An RTI framework includes universal screening of all students, a school-wide tiered level of service delivery, progress monitoring, and data-based decision making throughout the process (Johnson, Mellard, Fuchs, & McKnight, 2006). According to the National Center on RTI:

(RTI) integrates assessment and intervention within a school-wide, multi-level instructional system to maximize student achievement... With RTI, schools identify students at-risk for poor learning outcomes, monitor student progress, provide evidence-based intervention and adjust the intensity and nature of those interventions depending on responsiveness.

Although the impetus behind the proliferation of RTI models can be traced to concerns and dissatisfaction with traditional approaches for the identification of learning disabilities, at its core RTI is a system of prevention aimed at ameliorating the reading difficulties of students with demonstrated risk for poor reading outcomes (Lembke, McMaster, & Stecker, 2010). In general, the RTI model is a systematic framework designed to change the trajectory of reading outcomes for struggling readers at all reading levels with a primary goal of prevention of later academic difficulties. The aim of this dissertation study is to examine aspects of reading instruction and intervention that influence response to intervention for fourth-grade struggling readers.

Research Support for Response to Intervention Model

Within a tiered-model of service delivery such as RTI, core, general education reading instruction is designated as Tier 1. Tier 1 instruction represents a critical first line of defense in preventing and/or ameliorating reading difficulties and thus, should be able to meet the needs of most students (Fuchs, Fuchs, & Stecker, 2010; Johnson et al., 2006; Vaughn, Wanzek, & Fletcher, 2007). However, Tier 1 instruction should also be differentiated in order to address the reading difficulties some students may exhibit and may include flexible instructional groupings and/or focus on specific components of reading to meet student needs (Vaughn, Wanzek, Woodruff, & Linan-Thompson, 2007).

Despite receiving high-quality, differentiated Tier 1 instruction, some students will continue to exhibit skill deficits that require more intensive support. It has been suggested that between 20-30% of students may require Tier 2 instruction (Harn, Kame'enui, & Simmons, 2007); a figure supported in several recent intervention studies (e.g., O'Connor et al., 2013; Ritchey et al., 2012). In an RTI framework, Tier 2 involves the provision of supplemental reading instruction within small homogeneous groups targeting areas of specific need. Such instruction should ideally allow for more opportunities for practicing specific skills while receiving frequent feedback and support (Gersten et al., 2009; Stein, Leinhardt, & Bickel, 1989). In an attempt to help practitioners better understand and implement RTI, a practice guide was developed through the Institute of Education Sciences (Gersten et al., 2009). This guide suggests a fairly strong evidence base for Tier 2 intervention, specifically recommending Tier 2 interventions provide intensive, systematic instruction on up to 3 foundational skills within small groups that meet 3-5 times weekly for 20-40 minutes. For those students unresponsive to Tier 2 supplemental intervention, intervention for students is further intensified via smaller group size,

increased time and duration of intervention, and/or more explicit, systematic instructional focus (Vaughn, Denton, & Fletcher, 2010). This level of intervention is considered Tier 3 support and may include special education and related services. Presently there exists a relative dearth of empirical evidence supporting specific practices for Tier 3 instruction and how it differs from Tier 2 support (Gersten et al., 2009). It has been estimated that through a collaborative, multi-tiered system of instruction whereby students with or at-risk for reading difficulties are afforded the necessary instruction and intervention (Tier 1 and 2), less than 5% of students would continue to exhibit reading difficulty/disability that require the most intensive levels of intervention (Tier III) in order to remediate (Lyon, 2002; Torgesen, 2000).

Prior to the 2004 IDEA regulations and subsequent implementation at the school level, several studies examined the potential efficacy of a multi-tiered framework for preventing and ameliorating reading difficulties in the early grades. The provision of differentiated, core reading instruction and small-group and/or individual reading intervention, for students identified as at-risk for reading difficulty in kindergarten and first grade resulted in significantly better word identification and decoding skills than for students only receiving core reading instruction (Dickson & Bursuck, 1999; Harn et al. 2007; Mathes et al., 2005; O'Connor, 2000; Simmons, Kame'enui, Stoolmiller, Coyne, & Harn, 2003). Studies of multi-tiered reading programs with students in kindergarten, first, and/or second grade have also demonstrated significant reductions in the number of students (66 – 90%) considered at-risk for reading difficulties (Dickson & Bursuck, 1999; Simmons et al., 2003; Vaughn, Linan-Thompson, & Hickman, 2003). Extending outcomes longitudinally, O'Connor et al. (2005) reported that two-thirds of a cohort of students initially identified at-risk in kindergarten demonstrated average reading achievement at the end of third grade. Further, while the remaining one-third of these

students were eventually identified for special education, overall rates of special education eligibility also decreased over the four years in comparison to a historical control.

In the decade that has now passed since the reauthorization of IDEA and the resulting emergence of RTI, such processes are now ubiquitous in schools across the country. Berkeley, Bender, Peaster, and Saunders (2009) reported that 47 states had, or were in the process, of developing RTI models while Hauerwas, Brown, and Scott (2013) found that 17 states required the collection and analysis of response to intervention data as part of the evaluation process for specific learning disability eligibility and eight states expressly prohibit the use of a severe discrepancy model. Of note, although a majority (45/50) of states have specific guidance documents on using RTI for eligibility purposes, only 27 of these discuss using RTI as an instructional model (Hauerwas et al., 2013). Given the proliferation and widespread adoption of RTI models, it is essential to examine the potential efficacy of such models in practice. In an early meta-analysis of research related to RTI practices, Burns, Appleton, and Stehouwer et al. (2005) found strong effect sizes (ES) for field-based implementation ($ES = 1.38$). The 11 field-based studies reviewed included existing large-scale regional and statewide applications of problem-solving models in Iowa, Minnesota, Ohio, and Pennsylvania (see Fuchs et al., 2003 for discussion of these approaches). While these models all involved the identification of student's area of difficulty, the implementation of instructional intervention strategies, and progress monitoring, all of which align with an RTI framework, it should be noted that they do not all explicitly utilize a multi-tiered service delivery model. Within field-based models, ES for systemic outcomes such as reduction in special education referrals ($ES = 1.73$) were stronger than effects on student achievement outcomes ($ES = .62$) though effects were still moderate.

Across studies that reported such data, on average 2% of students were identified as having a specific learning disability when these models were implemented.

More recent studies have continued to address outcomes from the specific implementation of RTI models in school settings. Mellard, Frey, and Woods (2012) analyzed student outcomes across five elementary schools deemed as effective implementers of an RTI framework. In general, when student reading outcomes from these schools were compared with the respective normative sample on each outcome measure, results were mixed. In the upper elementary grades, particularly fourth grade, effect size estimates of growth from fall to spring for students in these schools were greater than expected for oral reading fluency ($ES = .65 - .87$) and for general reading achievement ($ES = .37 - .58$). In one particular school, students demonstrated scores above the norm in the fall but did not maintain this advantage to spring outcomes, a finding the authors contend may be attributed to a lack of effective Tier 1 instruction that was further supported by a low implementation fidelity score in this area in comparison to other schools. Bollman, Silberglitt, and Gibbons (2007) reported on the effectiveness of a multi-tiered model of instructional delivery focused on a problem-solving approach implemented across an entire district. Over a ten year period, the percentage of students scoring at the lowest level of the Minnesota state reading assessment reduced from 20% to 6%; this was a slight improvement over the state average. Conversely, students passing the state reading assessment increased to 80% from 51%.

VanDerHeyden, Witt, and Gilbertson (2007) investigated the effects of one district's implementation of a systematic RTI model over several years. The particular model, STEEP (System to Enhance Educational Performance), which includes universal screening, performance/skill deficit assessment, individualized intervention, and ongoing assessment to

determine effectiveness, was introduced in five elementary schools sequentially over time allowing for effects to be examined using a multiple baseline across schools design.

Additionally, in one school STEEP procedures were withdrawn near the end of the school year- analogous to a reversal in single case research- in order to determine impact. Results indicated that the number of initial evaluations for special education eligibility decreased from baseline as schools implemented STEEP. When STEEP procedures were withdrawn at one school, the rate of evaluations grew exponentially. VanDerHeyden et al. also examined the cost benefit of this model, finding that while much of the savings from reduction in unnecessary eligibility evaluations was allocated to cover the screening and individual assessments for intervention required in this RTI model, reduction in costs associated with fewer students being placed in special education allowed more available funding for intervention staff and resources.

Longitudinal outcomes for individual students initially identified as at-risk for reading difficulties within an RTI model are also important. Carney and Stiefel (2008) tracked a cohort of elementary students initially referred for Tier 2 intervention within a multi-tiered service approach. Student's outcomes were examined for the three and a half years following referral. Of the students initially referred for academic difficulties, and still present in the school at the completion of the study, nearly 50% were receiving only Tier 1 instruction, while approximately one-third continued with Tier 2 intervention; 17% of the students had been identified as eligible for special education support during this time. The relatively large percentage of students still at-risk or in special education programs was concerning; however, no specific data were provided by Carney and Stiefel about the specific instruction and intervention provided these students. Thus, it is possible that these findings are indicative of low quality instruction or lack of sufficiently intensive interventions. By comparison, in the Bollman et al. (2007) study, rates of

special education eligibility during the time period of district implementation of a multi-tiered model decreased from 4.5% to 2.5% in comparison to the state prevalence decrease from 4.1% to 3.8%.

A more recent longitudinal examination of the effect of RTI on rates of special education determination was conducted by O'Connor, Bocian, Beach, Sanchez, and Flynn (2013). A cohort of students was followed from first through fourth grade and compared to a historical control cohort. By the end of fourth grade, results indicated that 3.4% of students in the RTI cohort were found eligible as LD in comparison to 5% of the comparison cohort. This difference, however, was not statistically significant. O'Connor et al. also found that those students who ultimately were identified as LD in the RTI context were significantly more impaired in reading outcomes ($ES = .64 - .82$) than students identified as LD in the comparison cohort. The authors discuss that such findings lend support to the notion that RTI helped distinguish between students who were truly LD and those that had difficulties related to instructional factors.

While these findings provide encouraging evidence supporting an RTI approach to instruction and intervention for improved reading outcomes and reduction in students identified with reading disabilities, questions remain regarding the feasibility of RTI models in the upper elementary grades and beyond. The majority of the studies to date include findings for students in kindergarten through third grade. Studies that did include students in the upper elementary grades either did not directly report on the specific instruction and intervention provided to students or provided only general descriptions of school-wide implementation across several grade levels (Bollman et al., 2007; O'Connor et al., 2013; VanDerHeyden et al., 2007). It is not surprising that examinations of RTI have been focused on the earliest grades as more has been

learned over the last two decades -and is known today- about reading instruction at this level than at any previous time in history (e.g., National Reading Panel, 2000; Snow, Burns, & Griffin, 1998). This research, having expanded our understanding of key components of early literacy instruction, has also served to direct much of the focus of prevention and early intervention for students' reading difficulties. There is now a wealth of evidence that indicates early identification and intervention for students at-risk for reading difficulties, often as early as kindergarten, has the ability to change students' achievement trajectory (e.g., Denton et al., 2010; O'Connor et al., 2005; Simmons et al., 2011; Torgesen, 2000; Torgesen et al., 1999; Wanzek & Vaughn, 2007).

In recent years however, researchers have suggested the need for modified implementation of RTI models with older students (Vaughn & Fletcher, 2012) and investigations of tiered-models of instruction with students in the middle and high school levels have been initiated (e.g., Graves, Brandon, Duesberg, McIntosh, & Pyle, 2011; Vaughn et al., 2010, 2011, 2012). Graves and colleagues (2011) studied the effectiveness of RTI using Tier 2 interventions with sixth graders in urban, impoverished school settings. Utilizing a quasi-experimental design, students receiving 10 weeks of intervention delivered in three one-hour sessions each week during students' general education English/Language Arts (ELA) courses outperformed a comparison group of peers who only received their regular ELA class, on a measure of oral reading fluency ($ES = .14$). Students with LD receiving Tier 2 outperformed comparison peers with LD on both oral reading fluency ($ES = .52$) and a maze comprehension task ($ES = .89$). Vaughn et al. (2010) also found small, yet significant effects on decoding, fluency, and comprehension ($ES = .16$) when students in middle school were provided with a daily, supplemental reading intervention for an entire school year in addition to enhanced Tier 1

instruction focused on vocabulary development and comprehension strategy instruction. Comparison students received only enhanced Tier 1 instruction in content-area courses. The authors note the relative intensity that may be necessary to see even greater outcomes for students at this level given the intractability of their difficulties and the fact that impairments in language development, memory processing, and attention may be present. Vaughn et al. (2011, 2012) examined this very issue by providing increasingly intensive reading interventions in seventh and eighth grade to those students considered non-responsive to Tier 2 intervention. Generally, small to moderate effects on basic reading skills, fluency, and reading comprehension in relation to students receiving typical school-based services were found, though the ES on one measure of comprehension after the third year of intervention was more than one standard deviation. Nonetheless, mean scores on outcome measures remained below average for these students despite multiple years of reading intervention.

While much can be gleaned from empirical investigations of RTI in the early, as well as secondary grades, in many respects students in the upper elementary grades are caught in the middle. This begs the question of whether instruction and intervention for these students within an RTI model should simply mirror best practices in early elementary or whether students in upper elementary have needs more similar to older students given the shift in focus to reading to learn in these grades (Kamil et al., 2008; Scammacca et al., 2007). Detailed examination of instructional factor influencing students' success in such models may help to inform school-based practice with students in the upper-elementary grades.

Reading Achievement in Upper Elementary Grades

Torgesen (2000) stated, "The ultimate goal of reading instruction is to help children acquire the knowledge and skills necessary to comprehend printed materials at a level consistent

with their general language comprehension skills” (p.1). The transition in schooling from early grades to the upper elementary grades often marks a shift from an emphasis on learning to read to one of reading to learn, or in essence, the shift from acquiring reading skills to application of such skills in order to successfully comprehend increasingly difficult text. Results from the most recent National Assessment of Educational Progress (NAEP; NCES, 2013) suggest that this successful transition is often not being realized. Just over one-third (35%) of all fourth-graders demonstrate what would be considered proficient reading skills; another third of the nation’s fourth-grade students failed to perform at even a basic level of reading.

In absence of such support during the formative years of reading instruction, students exhibiting early deficits in the acquisition of key reading skills are highly likely to demonstrate continued difficulty into later elementary and into secondary grades (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Juel, 1988; Phillips, Norris, Osmond, & Maynard, 2002). Thus, many students with reading difficulties in fourth grade may have longstanding difficulties that were not sufficiently remediated. Meanwhile, others may be exhibiting late emerging reading problems (Catts, Hogan, & Adolf, 2005; Leach, Scarborough, Rescorla, 2003) and/or experiencing what Chall (1983) referred to as the “fourth grade slump”. That is, despite exhibiting adequate decoding and fluency in early grades, they lack sufficient vocabulary knowledge and comprehension strategies when faced with increasingly difficult text. Regardless of the cause, for nearly three-quarters of students who enter the upper elementary grades with reading difficulty, these difficulties are likely to persist into the middle and high school years (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996). Thus, there is a vital need to examine the factors that may influence reading outcomes for those students that enter the upper elementary grades with demonstrated deficits in reading

Core Reading Instruction for Upper Elementary Students (Tier 1)

The National Reading Panel report (2000) served to highlight the need for explicit and systematic instruction in essential components such as phonics, fluency, vocabulary, and comprehension throughout the grades. However, it is clear that the incorporation of such elements in subsequent research and policy was predominately in the early grades, as evidenced by programs such as Reading First (U.S. Department of Education, 2002). Several reports and guidance documents in the last decade have also served to inform effective instruction for older students, including those students in the upper elementary grades (e.g., Boardman et al., 2008; Kamil et al., 2008; Snow, 2002; Torgesen et al., 2007). Specifically, these documents emphasize that effective reading instruction for students beyond Grade 3 includes a focus on (a) advanced word study to aid in the identification of multisyllabic and irregular words, (b) increasing students' reading fluency via frequent opportunities for practice reading of connected text and/or repeated readings, (c) building vocabulary knowledge, and (d) the teaching of cognitive strategies to aid in comprehension of the more complex texts encountered at these grade levels.

The provision of differentiated instruction in small groups as a part of Tier I instruction has also been recommended and shown to be effective for struggling readers in the early grades (Chorzempa & Graham, 2006; Denton, 2012; Hong & Hong, 2009; Taylor, Pearson, Clark, & Walpole, 1999). More specifically, Chorzempa & Graham's (2006) survey of primary grade teachers found that nearly two-thirds reported utilizing homogeneous small-groups in addition to whole group instruction. Ability-based, small group instruction within kindergarten classrooms has demonstrated positive effects on achievement and time spent in such instruction has also been shown to be a mark of effective elementary schools (Hong and Hong, 2009; Taylor et al., 1999). Although such findings pertain specifically to the primary grades, in their IES practice

guide, Kamil and colleagues (2008) also recommend the provision of small-group instruction for struggling readers in the upper elementary grades and beyond.

Despite what has been learned regarding essential components of core reading instruction and the potential importance of Tier 1 instruction on student achievement within an RTI model, the vast majority of studies that have examined RTI implementation either (a) present data from systemic implementation of core principles of RTI without explicit detail regarding Tier 1 instruction, or (b) have been specific examinations of supplemental intervention/instructional programs and methods that would align with Tier 2/3 but include only a cursory, if at all, treatment of Tier 1 instruction. In a recent review of Tier 2 intervention studies, Hill, King, Lemons, and Partanen (2012) found that most studies reported no Tier 1 fidelity-related information. When reported, the information consisted of only a mention of the provision of coaching /professional development to teachers, the specific amount of time allocated for core instruction overall, and/or noted the particular basal reading program utilized absent any direct, quantitative data on what instruction actually occurred in the general education setting. Of note, of the 22 studies reviewed by Hill et al., all involved students in the lower elementary grades. In a brief review of studies published since Hill et al., only one study reported data on direct observations of core reading instruction in the upper elementary grades (Ritchey et al., 2012). However, the authors provided only overall ratings of instructional quality that were not included in any subsequent analyses.

As specific treatment of core reading instruction has often been neglected in recent RTI-related studies, I looked to the previous research examining the instructional practices in upper elementary general education classrooms. Observational studies of general education reading instruction in the upper elementary grades (i.e., Grade 4-5) that included students with reading

difficulty/disability indicate that the range of time allocated to reading instruction in the general education classroom for struggling readers ranged from 41 to 81 min per day. In studies that reported how teachers spent their time during reading instruction, some results suggest the relative percentage of time spent in direct reading instruction was minimal (Allington & MacGill-Franzen, 1989; Haynes & Jenkins, 1996; Thurlow, Ysseldyke, Graden, & Algozzine, 1983) and in some cases up to 20% of instructional time was spent on non-reading activities such as classroom management (Foorman, Carlson, & Santi, 2007; Gelzheiser & Myers, 1991). Thurlow and colleagues (1983) also reported that upwards of 60% of observed time was considered task management, such as students locating instructional materials. Only a few of the reviewed studies presented specific data on how teachers allocate instructional time to various components of reading. Across these studies, the estimated percent of time spent in word recognition, decoding, and structural analysis was 10 to 16%, vocabulary and grammar instruction ranged from 10 to 29 % of reading instruction, and teachers spent 13 to 40% of time on specific reading comprehension instruction (Foorman, Carlson, & Santi, 2007; Gelzheiser & Myers, 1991; Taylor, Pearson, Peterson, & Rodriguez, 2003). However, in some cases the opportunity for students to engage in active oral or silent reading of connected text was limited to less than 10 min per day and represented significantly less time than allocated to typically achieving peers (O'Sullivan, Ysseldyke, Christenson, & Thurlow, 1990; Ysseldyke, Thurlow, Mecklenburg, & Graden, 1984).

When examining the instructional grouping practices of general education reading instruction for students with reading difficulty in the upper elementary grades, the results from these studies vary concerning how time was spent. However, one relatively consistent finding was that whole-group instruction does not appear to predominate in these classrooms, with

several studies reporting that teachers spend equal or lesser amounts of instructional time in whole-group instruction versus engaging small-groups or individual students in reading instruction; percentage of time in whole group formats ranged from 25 to 50% of total reading instruction (Gelzheiser & Myers, 1991; Taylor et al., 2003; Ysseldyke et al., 1984). Conversely, studies varied dramatically in the percentage of individual instruction occurring from roughly 3% (Haynes & Jenkins, 1996; Thurlow et al., 1983) to estimates of close to 50% of instructional time (Gelzheiser & Myers, 1991). Finally, only Ritchey et al. (2012) provided ratings of instructional quality for Tier 1 instruction in fourth grade classrooms. Using a rating scale from 0-3, they reported mean ratings of quality of 2.64, which the authors indicate, represents generally satisfactory Tier 1 instructional quality.

Only three studies specifically investigated the relationship between reading instruction and student outcomes (Haynes & Jenkins, 1996; Taylor, Frye, & Maruyama, 1990; Taylor et al., 2003) and only Haynes and Jenkins reported data disaggregated for students with reading difficulty, although data included Grades 4-6. In examining reading outcomes, the amount of time spent in direct or indirect reading activities did not predict end of year performance above and beyond initial achievement levels.

For students struggling with reading in the upper elementary grades, the above studies highlight the often limited time allocated to direct instruction in reading and the relatively few opportunities these students have to engage in actual reading of text. Despite the existing literature on elementary reading instruction, there are several limitations with regards to students in the upper elementary grades. Most of the available research presented observational data on total instructional time or time spent reading, with only a few studies providing information on allocation of instructional time across the various essential components of reading instruction as

identified in the literature (Foorman, Carlson, & Santi, 2007; Gelzheiser & Myers, 1991; Taylor et al., 2003). Further, only Foorman et al. (2007) and Taylor et al. (2003) presented disaggregated instructional data for students in the fourth grade; however, neither explicitly linked data to student outcomes making it difficult to reach specific conclusions about the relationship of Tier 1 reading instruction and reading achievement for students with reading difficulties in the upper elementary grades.

Another significant limitation of the current literature base on Tier 1 reading instruction for students with reading difficulty in the upper elementary grades is the dearth of studies conducted in this era of RTI implementation. The lack of systematic evaluation of core reading instruction within studies that have focused on RTI is problematic for several reasons. First, while it has been posited that approximately 70-80% of students should be able to exhibit adequate reading achievement with Tier 1, differentiated instruction only (Harn et al., 2007; Vaughn et al., 2007), studies of school-based implementation of RTI reveal this is often not the case (Burns et al. 2005; Carney & Stiefel, 2008; Marston, Muyskens, Lau, & Canter, 2003). Thus, understanding of specific components of Tier 1 instruction that may lead to improved outcomes has the potential to improve instruction and reduce the number of students requiring additional supports. Further, given the mixed results from intervention studies, inclusion of data from core reading instruction may allow for examination of whether high-quality Tier 1 instruction moderates and/or enhances Tier II intervention effects (Hill et al., 2012).

Supplemental Reading Instruction in Upper Elementary

For students with reading difficulties in the earliest grades, there is now considerable evidence for important instructional features and the associated outcomes when intervention incorporates these components, particularly for extensive periods of time (see Gersten et al.,

2009; NRP, 2000; Wanzek & Vaughn, 2007). Although emerging, less evidence is available with regards to efficacious intervention for older students and in many ways, the question is more complex. Reading comprehension, the primary emphasis in the upper elementary grades and beyond, can be influenced by weaknesses or deficits in multiple component skills such as decoding and word identification, fluency in reading connected text, vocabulary, strategies for monitoring comprehension, and prior knowledge (Snow, 2002; Torgesen et al., 2007).

Interventions with older students must take into account the potential for deficits across multiple components that influence reading performance. Recent IES practice guides (Gersten et al., 2009; Kamil et al., 2008) highlight the strong evidence base for providing students with identified reading difficulties explicit and systematic, supplemental reading instruction targeting specific skill deficits within small-groups.

In recent years, several syntheses and meta-analysis have provided important empirical evidence in the area of reading intervention with students beyond third grade (Chard, Vaughn, & Tyler, 2002; Scammacca et al., 2007; Wanzek et al., 2013; Wanzek, Wexler, Vaughn, & Ciullo, 2010). Two of the meta-analyses synthesized reading intervention literature for older students in Grade 4 and above (Scammacca et al., 2007; Wanzek et al., 2013). While Scammacca and colleagues (2007) found an overall effect of nearly one standard deviation across reading outcomes, with generally higher effects for interventions focused on vocabulary and reading comprehension and for students in Grades 4 to 8, Wanzek et al. (2013) found much smaller effects ($ES = .10 - .16$) across outcomes for extensive interventions (i.e., 75 or more sessions) for students in Grades 4 to 9. The number of studies including students in the upper elementary grades in these meta-analyses was five and one, respectively, in the Scammacca et al. and Wanzek et al. reviews. An earlier synthesis, focusing on fluency interventions for elementary

students with LD, found that fluency-based interventions were associated with improvements in student reading rate, accuracy, and comprehension for students through Grade 6 (Chard et al., 2002). Although, the mean effect size results from the 24 studies reviewed by Chard and colleagues were not disaggregated across grade levels.

One recent synthesis that did specifically focus on students in the upper elementary grades was conducted by Wanzek et al. (2010). The authors located 13 experimental or quasi-experimental studies and 11 single subject or single group design studies that investigated reading interventions for a sample of students primarily in fourth and/or fifth grade. Of the experimental and quasi-experimental designs, five targeted comprehension, two targeted fluency, and four targeted phonemic awareness. Two of the experimental design studies were multi-component, targeting phonemic awareness, fluency, and comprehension. Moderate to large effect sizes were calculated for interventions targeting comprehension—indicating that interventions allowing students to generate connections, self-question, and practice self-regulating yielded positive reading outcomes. Instruction targeting fluency yielded mixed results with effect sizes ranging from very low to large—possibly due to the variation among outcome variables. The studies of phonemic awareness interventions yielded small to moderate effect sizes, and the two studies targeting multi-component interventions yielded moderate to large effect sizes; however, the authors recommended confirming such positive effect sizes for multi-component interventions.

Since the Wanzek et al. (2010) synthesis, two additional reading intervention studies have been conducted with students in fourth grade (Ritchey et al., 2012; Wanzek & Roberts, 2012). Examining the relative effects of three intervention conditions, which varied in instructional emphasis, on reading outcomes for fourth-grade struggling readers, Wanzek and Roberts (2012)

not only found minimal differences in outcomes across condition but also there were no significant effects between these researcher-implemented interventions and typical school-based interventions; it should be noted that the comparison, school-based condition was very robust in this study. Similarly, Ritchey et al. (2012) report that a small-group reading intervention focused on expository text comprehension resulted in significant effects favoring the treatment group only on a near-transfer measure requiring students to apply comprehension strategies and not on measures of reading comprehension, basic skills, or fluency. Both studies highlight the need for additional research examining the intensity of instructional supports that may be required to remediate the relatively intractable difficulties encountered by struggling readers in the upper elementary grades.

Overall, these reviews of the extant literature lead to several important conclusions. First, there is a paucity of intervention research involving students with reading difficulties beyond the early grades. Second, most studies involved researcher-delivered interventions with outcomes frequently assessed using researcher-created measures; effects were smaller when interventions were delivered by teachers or school staff. This highlights the need for additional research on the impact of instruction/intervention delivered by school-based personnel and assessing outcomes using normative assessments. Finally, to this point there have been no studies with upper elementary students that examined the influence of supplemental reading interventions while also systematically accounting for the core reading instruction (Tier 1) that students receive.

Summary

RTI models are now in widespread use across this country both as a framework for effective reading instruction to meet the needs of all students and as a vehicle by which students

are evaluated for a possible learning disability (Berkeley et al., 2009; Hauerwas et al., 2013; Torgesen, 2009). There is encouraging evidence for the effectiveness of multi-tiered models of service delivery, such as RTI, in improving student reading performance for students in the early grades (e.g., Burns et al., 2005; Torgesen, 2009) and preliminary support for such models with students in middle school (e.g., Graves et al., 2011; Vaughn et al., 2011, 2012); however, RTI in the upper elementary grades has generally been unstudied. Further, foundational in any multi-tiered model is the provision of high-quality core reading instruction, a factor that has widely been ignored when studying RTI. Finally, investigations of RTI have also neglected to consider the influence of both Tier 1 and supplemental reading instructional factors that might simultaneously influence student achievement.

Purpose of Study & Research Questions

There are two primary purposes of the proposed dissertation study. The first aim of this study is to provide descriptive, observational data on classroom reading instruction for students with reading difficulty in fourth grade general education classrooms. The second specific aim is to determine the extent to which instruction/intervention practices (core reading and reading intervention) influence end of the year student reading outcomes for students with reading difficulties. This dissertation study seeks to extend the extant literature by examining, simultaneously, the influence of aspects of core reading instruction and supplemental reading intervention within an RTI context. Two main research questions will be addressed:

Research Question 1: What amount, type, and quality of core classroom reading instruction occurs in fourth grade classrooms with students with reading difficulties?

Research Question 2: Controlling for initial reading status, what instructional (Tier I and supplemental reading intervention) variables best predict end of year reading achievement for fourth grade students with reading difficulties?

CHAPTER TWO

METHODS

Participants

The sample for the present study was drawn from a cohort of students participating in a larger project investigating the efficacy of a reading intervention for struggling readers in fourth grade. The larger study involved a randomized control trial with struggling readers, defined as performing at or below the 30th percentile on the Reading Comprehension subtest of the Gates-MacGinitie Reading Test (GMRT; MacGinitie et al., 2006), being assigned to treatment or comparison conditions ($n = 221$). For this dissertation study, the 110 fourth grade struggling readers assigned to the comparison condition were included in the sample.

The students in this study's sample come from 22 different reading classrooms, across 10 schools, from four districts in Florida (FL) and Texas (TX). The school district in TX was located in a large, urban metropolitan area. The three districts in FL were located in the Florida panhandle, with two situated in more rural areas and the third within a mid-size city. All but one school utilized the same core reading curriculum at fourth-grade. Gender and race/ethnicity data were available for 108 of the students. Female students comprised 53% of the sample. With regards to ethnicity, 37% of the students were identified as Hispanic. The racial composition of the sample was 46% African American, 34 % multiracial, 18% Caucasian, and 2% Asian. For those students for whom further demographic data were available, 89% (79/89) were considered as low income, 18% (18/101) were English Language Learners or Limited English Proficient, and 20% (18/88) were identified as having a disability, including Specific Learning Disability (8%), Speech/Language Impaired (7%), Intellectually Disabled (2%), and 3% were not specified. A total of 10 students (9% of sample) withdrew from their respective schools during the school

year and thus, 100 students were available for post-test assessment. There were no significant differences in pretest performance on any of the reading variables for students who withdrew in comparison with those students who remained in their school for the entire year.

Measures of Reading Skills

Word reading. Measures of word recognition and decoding on the *Woodcock-Johnson PsychoEducational Test Battery-III* (WJ-III; Woodcock, McGrew, & Mather, 2001) were utilized as indicators of student's basic reading ability. Specifically, data from two subtests, Letter-Word Identification and Word Attack, were used. The Letter-Word Identification subtest includes 76 items increasing in difficulty and students are required to name individual letters, as well as decode and/or identify real words presented. Test-retest reliability for fourth grade was reported as .85, while the mean split-half reliability is .94. The Word Attack subtest, which measures decoding skill utilizing pseudowords, has items that proceed from identification of a few single letter sounds to decoding of complex letter combinations. Test-retest reliability is .81 for fourth grade, while mean split-half reliability is .87.

Fluency. In order to measure student's ability to read connected text with speed and accuracy, student data from the Oral Reading Fluency (ORF) measure from the *Dynamic Indicators of Basic Early Literacy Skills -6th Edition* (DIBELS; Good & Kaminski, 2002) were collected. The ORF measure is a standardized, individually-administered assessment that requires students to read three separate passages aloud for one minute. The total number of correct words read per minute from the passage is considered the oral reading fluency rate. Test-retest reliabilities for ORF with elementary age students range from .92 to .97; alternate-form reliability across passages from the same level was reported as .89 to .94.

Reading Comprehension. Data from two separate measures of reading comprehension were utilized to assess student's ability to read and understand connected text. The *Gates-MacGinitie Reading Tests- Comprehension subtest* (MacGinitie et al., 2006) is a group-administered, norm-referenced test for individuals in kindergarten through adulthood. The Comprehension subtest presents students with multiple paragraph-length reading passages and related multiple choice questions. Passages include both narrative and expository text. Questions address facts, inferencing, and drawing conclusions and students have 35 minutes to complete the 48-items. Test-retest reliabilities are above .85; alternate-form reliability is .86 for the fourth grade level.

Student performance on the Passage Comprehension subtest from the WJ-III (Woodcock et al., 2001) was also be used. This subtest is administered individually and represents a cloze measure wherein students are presented with several sentences that include a missing word(s). Students read the sentences silently and are asked to supply the missing word. Test-retest reliability for Passage Comprehension is .86 for fourth grade. Median concurrent validity correlations were reported as .62 and .79 with the reading comprehension subtests from the

Instructional Variables

To examine student's core reading instruction, data from an adapted version of the Instructional Content Emphasis Instrument-Revised (ICE-R; Edmonds & Briggs, 2003) were utilized. This measure is provided in Appendix C. The ICE-R allows for real-time coding across two instructional dimensions, content and grouping. Specific instructional activities are coded if they last for at least 1 min. Content categories include phonemic awareness (PA), phonics/word recognition, fluency, vocabulary/oral language development, comprehension, spelling, text reading, and non-literacy activities (e.g., other academic instruction, non-instructional time).

Instructional groupings are coded as whole class, small-group, pairs, independent activity/assignment, and individualized instruction. Observers also code student engagement during each instructional activity using a three point rubric (3 = high engagement, 1 = low engagement). Finally, a global quality of instruction rating is assigned on a 4-point Likert scale ranging from weak (rating of 1) to excellent (rating of 4). This global instructional quality variable takes into account teacher's use of direct and explicit language, modeling, providing sufficient opportunities for practice, feedback, constant monitoring and encouragement of engagement, scaffolding of tasks, and pacing.

To collect data on supplemental reading instruction, audiorecordings of this instruction were coded using the adapted ICE-R. Specifically, the instructional content and grouping dimension codes on the ICE-R were used to code each instructional activity. Further, the single, global rating of instructional quality during the supplemental reading intervention was coded in order to align with the same data being collected for Tier 1 instruction. Due to this instruction being audio-recorded, student engagement could not be directly observed and thus, was not coded.

Procedures

In the larger study, consented students were administered the GMRT -4th Ed. Reading Comprehension assessment in the fall of fourth grade (i.e., between the 4th-5th week of school). All students scoring at or below the 30th percentile on this measure were identified as struggling readers. Struggling readers were then rank-ordered within school and randomly assigned to the treatment or comparison condition. Students assigned to the comparison condition received only instruction and supports as would be typically provided by the school/teachers; these 110 students were the focus of this dissertation study.

Following screening, the other fall assessments were administered in a two-week window at the end of September and beginning of October, while spring assessments were administered during a similar two-week window in early May. Assessments were counterbalanced by measure and were administered by trained research assistants (RA). The training process for test administration was twofold. First, the assessment coordinator introduced each measure to the RAs, highlighting administration directions, basal and ceiling rules (if applicable), and scoring procedures. Second, administration and scoring reliability scripts were created for each measure and RAs administered each measure to another RA or assessment coordinator. Assessment staff were required to demonstrate 100% accuracy in administration and scoring. This process was completed prior to pre-testing and again prior to post-testing. Following each assessment, all measures were double-scored by a second RA. Extant assessment data from pre- and post-test measures administered as part of the larger study were collected for only those students in this dissertation study's sample.

To document the type and quality of core reading instruction, each student's general education reading class was observed twice during the school year, once in the fall and once in the spring. Observations were completed in-person by trained research staff using the ICE-R. All observations of general education reading instruction occurred during the regularly scheduled reading block for that teacher at a mutually agreeable time within the observation window. A multiple-step training process was utilized to establish inter-rater reliability for Tier 1 observations using the ICE-R instrument. First, each observer was instructed on the meaning of each code/indicator and provided specific examples. Second, the coding process was modeled by the principal investigator (PI) of the project using a short video segment of reading instruction from another project. Third, each observer practiced coding using several novel video segments

that were subsequently discussed with the PI. Finally, each observer established 90% or higher coding accuracy with PI (i.e., gold standard approach) on a separate video segment of reading instruction. Observers reestablished reliability prior to spring observations with new video segments. Reliability across coders was 96.4% at both the fall and spring times. In order to collect these data for descriptive and analytic purposes in this study, extant observational data from the ICE-R for general education classrooms of students in the present study's sample were accessed from the larger study database.

To document supplemental reading intervention that students received, audio recordings of this instruction occurred at three time points during the schools year (fall, winter, and spring). In order to identify supplemental reading instruction/intervention to be recorded, classroom teachers first completed a brief interview with research staff regarding additional reading support received by each student in addition to their core reading instruction (Tier 1). These interviews were conducted by the assessment coordinator and trained RA either by phone or in-person. Once specific reading intervention instruction was verified, the school staff providing this instruction were contacted to schedule a time to audio record the sessions. Each supplemental reading session recording was coded by this author or trained RAs. Reliability was established using the process outlined above for Tier 1 observations. A random selection of 25% of all recordings were double-coded; inter-rater agreement was 95.2%.

Data Analytic Methods

For Research Question 1, descriptive statistics (means, standard deviations, range) were computed for instructional variables observed and coded during Tier 1 reading instruction. These data are reported separately for each reading component (e.g., time allocated to reading comprehension), each instructional grouping utilized, and for ratings of student engagement and

overall instructional quality. To obtain teacher level means, data were averaged across the two observation time points. Although these 22 teachers were nested within 10 schools, there were an insufficient number of schools to provide adequate power for modeling school-level variability of these instructional variables. Nevertheless, in addition to descriptive data on Tier 1 instructional variables provided across all observations and across individual teachers, the variability of these instructional variables across schools was also calculated for comparison purposes. Further, comparisons of Tier 1 variable means between the FL and the TX sites were conducted to determine any differences between sites. To correct for multiple comparisons of instructional variables between sites the Benjamini-Hochberg correction procedure (Benjamini & Hochberg, 1995) was used. This procedure was specifically chosen as it allowed for the false discovery rate to be maintained at the .05 level, thereby reducing the potential for spurious findings, without severely limiting the power to detect any significant differences.

For Research Question 2, instructional variables from Tier 1 reading instruction and, where applicable, supplemental reading intervention, were used to test various models that best predicted student's end of year reading outcomes in word reading, oral reading fluency, and reading comprehension. To measure the impact of instruction on reading growth during fourth-grade for these struggling readers, student performance in the fall for each of these outcomes was included as a covariate. For student measures of reading, latent variables were created from the observed measures. Latent variables were used to better account for the influence of measurement error that is present when using a single observed indicator. Confirmatory Factor Analysis (CFA) was utilized to assess the adequacy of the proposed latent variables (factors). These proposed latent variables included a word reading factor comprised of Letter-Word Identification and Word Attack from the WJ-III, an oral reading fluency factor that included

three ORF passages, and a reading comprehension factor described by the GMRT Reading Comprehension subtest and the WJ-III Passage Comprehension test. Tests of measurement invariance were conducted to make sure that these factors measured the same constructs over time (Meade & Lautenschlager, 2004). Assessing measurement invariance involves the testing and comparison of nested models with increasing restrictions of model parameters; generally, models assess the level of configural, metric, scalar, and residual variance invariance across time (Meredith, 1993; Vandenberg & Lance, 2000). Multiple indices were evaluated to assess model fit including chi-square, root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis Index (TLI), and standardized root mean square residuals (SRMR). Given that chi-square values tend to be influenced by sample size, RMSEA values below .085, CFI/TLI values greater than .95, and SRMR below .05 indicate excellent model fit (Kline, 2011). In order to explicitly test the difference in fit between models of measurement invariance, the chi-square difference statistic (χ^2_D), was used. All CFA models and tests of measurement invariance were conducted using Mplus v. 7 (Muthen & Muthen, 1998-2012). Because latent factor scores from both fall and spring assessment were utilized, the fall factor scores were constrained to a mean of zero, while the spring factor scores were freely estimated.

Given the nested nature of the data, with students nested in classrooms and classrooms nested in schools, multilevel models were specified to predict end of year performance on each of these latent reading variables (word reading, fluency, and comprehension). Again, as there were only 10 schools, a three-level model would not be adequately powered and, thus, a two-level model was utilized for analyses. For each of the three outcomes, a baseline model with the specific outcome of interest (spring latent factor score) and corresponding covariate, to account for initial status, was specified to determine the variance in achievement growth that could be

accounted for at the student and teacher level. Next, a conditional model was built that included Tier 1 instructional variables (a global rating of instructional quality and time allocated to different instructional components) as Level 2 predictors. Due to the large number of Tier 1 instructional variables being examined as predictors of achievement, these data were reduced by combining variables; namely, a composite variable of instructional time allocated to phonics, word recognition, and spelling (Word Study), a composite variable of time allocated to fluency instruction and text reading (Reading Fluency/Text Reading) and a composite variable of time allocated to vocabulary/oral language and reading comprehension instruction (Vocabulary/Comprehension). Additionally, time allocated for differentiated instruction was also included. The decision to include a category of instruction specific to text reading and oral reading fluency practice was made to align with recommendations for reading instruction for students in Grades 4 and above, which delineate reading fluency instruction from word study instruction (e.g., Boardman et al., 2008; Kamil et al., 2008; Snow, 2002). Within each model, the covariate and all predictors were grand-mean centered at the sample mean for each variable. This initial conditional model allowed for analysis of the main effects of characteristics of Tier 1 reading instruction that predict student outcomes in the spring, after accounting for initial reading status in the fall of fourth grade. Further, adding together all of the instructional time variables is equivalent to the total amount of literacy instruction for a particular teacher/class. Thus, the fitted spring factor score for each outcome (γ_{00}) represents the predicted score for a student at the sample mean for fall performance receiving an average amount of literacy instruction. Coefficients for predictor variables would indicate the effect, either positive or negative, of amounts of instruction, quality of instruction, or fall performance on student achievement. Due to the small sample size relative to the number of variables being investigated and for model

parsimony, the decision was made to remove any non-significant Tier 1 predictors in this model and not to include them in subsequent models.

In a second model, the effect of receiving supplemental reading instruction on student outcomes was examined by assigning a dummy-coded intervention variable (Level 1) to each student. Thus, the resulting coefficient represented the difference in the respective outcome for students who received school-based reading intervention versus those who only received core reading instruction, controlling for both initial status and Tier 1 instruction. Finally, for the students receiving supplemental reading intervention, exploratory analyses were conducted to determine whether the dosage (Warren, Fey, & Yoder, 2007) of specific elements of reading intervention, or instructional quality during this intervention, directly influenced student outcomes. Namely, variables included the global quality rating for the supplemental reading instruction received, as well as student-specific variables representing the number of minutes of intervention received across various dimensions (i.e., Word Study, Reading Fluency/Text Reading, and Vocabulary/Comprehension). These additional instruction variables were grand-mean centered at the sample mean for each variable. Overall, these analyses allowed for determination of which instructional variables best predicted spring reading achievement for fourth-grade struggling readers in this study.

CHAPTER THREE

RESULTS

Research Question 1: What amount, type, and quality of core classroom reading instruction occurs in fourth grade classrooms with students with reading difficulties?

Observations of core reading instruction were unable to be scheduled for one of the teachers due to school policy, thus descriptive data were only available for 21 teachers (and 9 schools). In addition, one teacher could only be observed during the fall due to scheduling conflicts. In total, 41 classroom observations were conducted across all of the participating teachers. The correlations for instructional variables between fall and spring observations ranged from .42 to .68, with the strongest relationships exhibited for total length of Tier 1 ($r = .67$), total number of minutes of reading specific instruction ($r = .67$), and time spent in differentiated instructional activities ($r = .68$).

Instructional Components. Table 1 provides descriptive statistics for the Tier 1 instructional activities. Across observations, the mean length of the Tier 1 instructional block was 74.73 min ($SD = 28.70$), but quite variable, ranging from under one-half hour (27 min) to a maximum of just over two hours (123 min). On average, approximately one hour ($M = 60.95$, $SD = 22.91$) of each Tier 1 reading class was allocated to activities expressly focused on reading instruction. Academic instruction not directly related to reading (e.g., writing, grammar instruction) occurred, on average, for 7.22 min ($SD = 12.58$) while non-instructional activities (i.e., transitions, behavior management, non-academic instruction) were evident for an average of 6.56 min ($SD = 6.83$) of the Tier 1 instructional block. Examination of this nearly 61 min of time allocated specifically to reading-related instruction revealed no evidence of phonological awareness instruction, and minimal instructional time specifically focused on developing

Table 1

Allocation of Instruction during Tier 1 across Observations, Teachers, and Schools

	M	SD	Range
Total Tier 1 Instruction	74.73	28.70	27 - 123
Teacher		26.35	34 - 114.50
School		23.26	44 - 98.50
Total Reading-specific Instruction	60.95	22.91	20 - 114
Teacher		20.98	33 - 109.50
School		16.97	40.5 - 81.60
Differentiated Instruction	14.66	20.93	0 - 78
Teacher		18.26	0 - 62
School		13.69	0 - 37.30
Phonemic Awareness	0	0	NA
Teacher			
School			
Phonics	.07	.47	0 - 3
Teacher		.33	0 - 1.50
School		.25	0 - .75
Spelling	.49	1.98	0 - 11
Teacher		1.36	0 - 5.50
School		.93	0 - 2.75
Fluency	2.32	8.03	0 - 47
Teacher		5.86	0 - 23.50
School		2.56	0 - 6.5
Text Reading	3.29	5.40	0 - 19
Teacher		4.29	0 - 14
School		2.93	0 - 7.5
Vocabulary	9.76	11.15	0 - 40
Teacher		7.81	0 - 26
School		6.06	.25 - 17.83
Comprehension	30.37	16.21	0 - 69
Teacher		11.53	7.50 - 49.50
School		9.49	18 - 47
Other Academic Instruction	7.22	12.58	0 - 38
Teacher		8.03	0 - 23
School		7.12	0 - 21
Non-Instructional Time	6.56	6.83	0 - 26
Teacher		5.34	.50 - 16
School		4.16	.75 - 11.50

phonics and word recognition skills ($M = .07$ min, $SD = .47$), such as the teaching and/or application of letter-sound relationships, word reading practice, or instruction aimed at helping students learn strategies for reading irregular or multisyllabic words. In fact, the teaching of phonics/word recognition occurred during only one observation and the amount of time allocated was three minutes. Similarly, spelling instruction, specifically aiding students to learn and reproduce conventional spelling, was minimal across observations with a mean of less than one minute ($M = .49$, $SD = 1.98$); spelling instruction was evident during 3/41 observations of Tier 1 and the time allocated ranged from 3 to 11 min. On average, fluency instruction, expressly involving students reading aloud to develop speed, accuracy, and intonation, was evident for a little over 2 min ($M = 2.32$, $SD = 8.03$). Student engagement in silent or oral reading of text in the absence of any other specific instruction (e.g., comprehension, fluency) occurred for a mean of 3.29 min ($SD = 5.40$) during the Tier 1 instructional period. The most frequent instructional focus during Tier 1 was comprehension of written or oral text. On average, approximately one-half hour of comprehension instruction ($M = 30.37$, $SD = 16.21$) was observed, although time ranged from no reading comprehension instruction to a high of 69 min of such instruction. On average, nearly 10 min ($M = 9.76$, $SD = 11.15$) was allocated to the development of student's vocabulary and oral language skills.

Differentiated instruction, or the provision of different instructional foci to groups or individual students simultaneously, occurred an average of nearly 15 min ($M = 14.66$, $SD = 20.93$). During observations of Tier 1, instances of differentiated instruction were coded during 17/41, or 41%, of all observations. More specifically, during the 17 observed instances of differentiated instruction, comprehension and vocabulary/oral language instruction were the most frequent components implemented, with means of 30.94 min ($SD = 17.73$) and 17.65 min ($SD =$

16.00), respectively. Text reading activities were utilized on average for 12.00 min ($SD = 12.73$), spelling instruction for 6.47 min ($SD = 18.54$), fluency instruction for 5.00 ($SD = 8.60$), and phonics instruction for .47 min ($SD = 1.54$) during differentiated instructional activities. During differentiated instruction, teachers often had students engage in other academic instruction not directly related to reading, as evidenced by a mean of 15.06 min ($SD = 21.82$).

Figure 1 (see Appendix D) provides a visual depiction of the number of minutes teachers allocated to each instructional dimension during core reading instruction. Correlations among these Tier 1 instructional variable are provided in Table 2. In general, there were few significant relationships among these instructional dimensions. The number of minutes of Tier 1 was positively correlated with the total amount of actual reading instruction and also differentiated instructional time. However, classrooms with longer Tier 1 time were also more likely to spend time in other academic instruction and/or non-instructional time as well as whole group instruction. Ratings of instructional quality were positively and significantly correlated with minutes of differentiated instruction, while significantly and negatively related to minutes of classroom text reading activities.

Site Differences. Once again, due to the large number of comparisons of instructional variables between sites (including in the area of instructional grouping as reported below), the Benjamini-Hochberg correction procedure (Benjamini & Hochberg, 1995) was used. Inspection of the time devoted to specific elements of instruction across teachers revealed differences in the total number of minutes of Tier 1 reading classes in the FL and TX sites. In the FL site observations ($n = 26$), the mean length of Tier 1 was 91.81 min ($SD = 20.72$) compared with 45.13 min ($SD = 10.29$) for the TX sites ($n = 15$). To assess whether differences were significant, a multilevel model (observations nested within teacher) was specified using Tier 1

Table 2

Correlations among Tier 1 Instructional Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Tier 1 Minutes	---														
2. Total Reading	.92*	---													
3. Differentiated Instruction	.79*	.88*	---												
4. Phonics	.14	.22	.22	---											
5. Spelling	.33	.38	.30	-.08	---										
6. Fluency	.20	.38	.27	-.10	-.16	---									
7. Text Reading	-.34	-.40	-.43	-.12	-.19	-.24	---								
8. Vocabulary	.20	.25	.19	.35	.03	.27	-.43	---							
9. Comprehension	.27	.17	-.14	-.11	.23	-.32	.02	-.51	---						
10. Other Academics	.53*	.21	.12	-.02	-.01	-.22	-.01	.09	.25	---					
11. Non-Instruction	.52*	.30	.27	-.15	.12	-.16	-.09	-.14	.31	.26	---				
12. Whole Group	.70*	.53*	.33	.05	.27	-.05	-.29	.27	.37	.60*	.46*	---			
13. Small Group	-.03	.02	.05	.25	-.01	-.17	.08	-.10	.08	-.13	.04	-.37	---		
14. Pairs	.39	.29	.29	-.20	.00	.45*	.08	.02	.21	.33	.26	.20	-.16	---	
15. Independent	-.07	-.19	-.36	-.07	-.08	-.19	.30	-.24	.39	.19	.09	-.22	.09	.03	---
16. Instructional Quality	.29	.33	.51*	-.15	.04	.15	-.52*	.19	-.23	.00	.14	.12	-.16	-.10	-.31

* = coefficient significant at $p < .05$

reading instruction time as the outcome variable and classroom (i.e., teacher) site as a predictor. Results suggested that the difference in total Tier 1 minutes between sites was significant ($\gamma_{01} = 46.54$, $SE = 4.84$, $p < .001$); approximately 91% of the between teacher variance in Tier 1 instructional time was explained after accounting for site. Further comparisons of time allocation for specific dimensions of reading between sites were conducted to provide more detailed examination of teaching practices.

Notably, a significant difference between sites was found for the total number of instructional minutes devoted to reading instruction (FL site $M = 72.46$, $SD = 20.11$; TX site $M = 41.00$, $SD = 10.21$; $p < .001$), however, while 79% of Tier 1 time was spent on actual reading instruction in the FL sites, in the TX sites, 91% of Tier 1 instruction was specifically devoted to reading instruction. This equated to approximately 30 additional min of core reading instruction each day in the FL sites. The mean number of minutes of differentiated instruction was also significantly different (FL site $M = 23.12$, $SD = 22.31$; TX site $M = 0$; $SD = 0$; $p = .003$), accounting for 25 % of instruction in the FL sites and 0% in the TX sites. Further, in comparison to the TX site, observations of Tier 1 in the FL sites revealed significantly greater amounts of time in non-instructional activities (FL site $M = 9.08$, $SD = 7.28$; TX site $M = 2.20$, $SD = 2.54$; $p = .002$) such as time spent in transitions between activities and/or teacher management of student behavior. In the FL sites, nearly 10% of time was non-instructional in comparison to just under 5% in the TX sites. All other Tier 1 instruction variables were not significantly different in terms of the number of minutes allocated during core reading instruction across sites. Descriptive statistics and significance values are provided in Table 3.

Teacher Level. In order to examine the variability in the total number of minutes of Tier 1 reading classes and time spent on specific instructional components between individual reading

Table 3

Comparison of Instructional Variables between the Florida and Texas Sites

	Florida		Texas		p
	M (SD)	Range	M (SD)	Range	
<i>Instructional Activities</i>					
Tier 1 Minutes	91.81 (20.72)	27 – 123	45.13 (10.29)	27 – 59	< .001*
Total Reading Instruction	72.46 (20.11)	20 – 114	41.00 (10.21)	27 – 56	< .001*
Differentiated Instruction	23.12 (22.31)	0 – 78	0 (0)	NA	.003*
Phonemic Awareness	0	0	0 (0)	NA	NA
Phonics	.12 (.59)	0 – 3	0 (0)	NA	.463
Spelling	.77 (2.46)	0 – 11	0 (0)	NA	.243
Fluency	2.58 (9.44)	0 – 47	1.87 (4.94)	0 – 15	.744
Text Reading	1.88 (4.74)	0 – 19	5.73 (5.75)	0 – 15	.049
Vocabulary	10.04 (9.66)	0 – 36	9.27 (13.72)	0 – 40	.069
Comprehension	33.96 (16.83)	2 – 69	24.13 (13.40)	0 – 46	.841
Other Academic Instruction	10.27 (14.33)	0 – 38	1.93 (6.19)	0 – 24	.046
Non-Instructional Time	9.08 (7.28)	0 - 26	2.20 (2.54)	0 - 8	.002*
<i>Instructional Grouping</i>					
Whole Group	48.96 (17.72)	22 - 88	30.07 (13.30)	10 – 56	.002*
Small Group	2.54 (6.45)	0 – 27	2.07 (3.58)	0 – 12	.746
Pairs	7.62 (9.99)	0 – 32	3.53 (7.00)	0 – 18	.215
Independent	9.58 (12.08)	0 – 38	9.47 (9.90)	0 – 24	.976

Note. * = significant after adjustment for multiple comparisons

teachers, the 21 classroom-level means for each component are provided in Figures 2-9. Only those variables that were observed for at least one-half of the teachers are presented.

Observational data revealed that 38% (9/21) of teachers averaged at least 90 min of scheduled Tier 1 time, all at the FL site. Furthermore, when examining actual minutes of reading instruction, only two teachers averaged at least 90 min; approximately one-half (10/21) averaged less than one hour of reading-specific instruction. As noted, differentiated instruction only occurred in the FL site. Of the 11 teachers at the FL site who utilized differentiated instruction, eight averaged greater than 20 min and four averaged at least 30 min of such instruction during Tier 1. Text reading was less often observed among the reading teachers. While 12/21 teachers utilized text reading (absent other instruction) during Tier 1, none averaged more than 15 min and three-quarters (9/12) averaged less than 10 min. All but two teachers engaged in vocabulary instruction with the majority (15/21) averaging at least 5 min daily of instruction focused on oral language development. All 21 teachers employed reading comprehension instruction during Tier 1. Nearly half (9/21) averaged at least 30 min of reading comprehension instruction. Academic instruction other than reading was evident in 14/21 teacher's classrooms during Tier 1 (11/13 in the FL site, 3/8 in the TX site). Further, one-third of the teachers utilized an average of at least 10 min of their scheduled Tier 1 time on instructional activities other than reading. Finally, all teachers spent some time in non-instructional activities with 6/21 averaging 10 min or more. Teacher-level descriptive statistics for all of these Tier 1 instructional components are included in Table 1. For additional comparisons, individual school-level means for time allocated to Tier 1 and for number of minutes spent on individual reading components are presented in Figures 10-16 and school-level descriptives are provided in Table 1.

Instructional Grouping. In addition to examining the specific instructional components during Tier 1, the grouping structure(s) utilized was also investigated. Across all 41 Tier 1 observations, whole class instruction was predominately used. The mean number of minutes was 42.05 ($SD = 18.52$), accounting for 56% of the Tier 1 time. Independent instruction grouping, whereby students work on the same assignment/activity individually, was evident for nearly 10 min ($M = 9.54$, $SD = 11.20$), or 12.77% of Tier 1. Instruction involving pairs of students occurred 8.19% of the time ($M = 6.12$ min, $SD = 9.12$), while small group instruction was observed on average for just over 2 min ($M = 2.37$, $SD = 3.17$), accounting for 3.17% of Tier 1 time. Once again, during the average 74.73 min of Tier 1, just under 15 min ($M = 14.66$), or approximately 20% of the total time, was spent in differentiated instruction, which may involve varied instructional groupings simultaneously. Concerning grouping practices utilized when teachers actually implemented differentiated instruction, small-group instruction was observed most frequently, an average of 30.59 min ($SD = 17.19$). Independent instruction was observed on average for 26.59 min ($SD = 18.87$) during this differentiated instruction time. Instruction in pairs of students during differentiated instruction averaged 8.18 min ($SD = 16.00$), while individualized assignments/activities were much less frequent ($M = 1.12$ min, $SD = 3.20$). Results for instructional grouping during Tier 1 are summarized in Table 4 and Figure 17.

Among the instructional grouping variables, there were no significant bivariate correlations (see Table 2; $r_s = -.37 - .20$). However, the amount of time spent in whole-group instruction was positively related to the total amount of Tier 1 time, total minutes of reading instruction, and minutes spent in other academic instruction and non-instructional activities, with correlations from .46 to .70. Finally, the amount of time spent in paired instructional activities was positively related ($r = .45$) to time allocated to oral reading fluency instruction.

Table 4

Instructional Grouping during Tier 1

Instructional Grouping	M	SD	Range
Whole Group	42.05	18.52	10 – 88
Teacher		13.97	14.50 – 66.50
School		11.72	17.75 – 55.75
Small Group	2.37	5.53	0 – 27
Teacher		3.92	0 – 13.50
School		3.55	0 – 11.50
Pairs	6.12	9.14	0 – 32
Teacher		7.16	0 – 20.50
School		5.20	0 – 14.83
Independent	9.04	11.20	0 – 38
Teacher		7.12	0 – 20.50
School		6.11	0 – 18

Site differences. Because of the aforementioned differences in the total length (i.e., minutes) of Tier 1 reading classes across the two sites, comparisons in the number of minutes spent in the various instructional groupings between sites were further examined through comparison of descriptive statistics and multilevel modeling. Again, these analyses were conducted applying a Benjamini-Hochberg correction for multiple comparisons. Results are provided in Table 3. As noted, observations in the FL school sites revealed, on average, 23.12 min of differentiated instruction, accounting for one-quarter of Tier 1 time, while there was an absence of differentiated instruction in the TX school sites ($p = .003$). The number of minutes allocated to whole class instruction was significantly different across sites ($p = .002$); the mean amount of time in the FL sites was 48.96 ($SD = 17.72$) in comparison to 30.07 min ($SD = 13.30$) in the TX sites. However, whole class instruction constituted two-thirds (66.63%) of Tier 1 in the TX sites and just over one-half (53.33%) of Tier 1 time in the FL sites. The difference in the number of minutes spent in other instructional groupings during Tier 1 reading classes between

sites did not reach statistical significance. On average, the amount of time spent in independent grouping of students during instruction was comparable across the sites (FL site $M = 9.58$ min, $SD = 12.08$; TX site $M = 9.47$, $SD = 9.90$; $p = .98$), although this grouping structure accounted for 10% of instruction in the FL sites and 21% in the TX sites. Observations of teachers in the FL sites revealed twice as much time spent in paired instruction (FL site $M = 7.62$, $SD = 9.99$; TX site $M = 3.53$, $SD = 7.00$; $p = .22$), however this accounted for approximately 8% of Tier 1 instruction across both the FL sites (8.34%) and the TX sites (7.82%). Finally, small group instruction was the most infrequent instructional grouping utilized during Tier 1 across both sites ($p = .75$), with a mean of 2.54 min ($SD = 6.45$) in the FL sites and 2.07 min ($SD = 3.58$) in the TX sites. Small group instruction constituted 2.77% and 4.59% of Tier 1 time, respectively, in the FL sites and TX sites.

Teacher Level. Figures 18-21 show the individual classroom-level means for each instructional grouping format observed during Tier 1 reading classes, with the exception of differentiated instruction, which was previously presented. All teachers utilized whole-group instructional practices during Tier 1, however, only two teachers averaged more than one hour of instruction to the entire class at once. Just over one-half (11/21) of the teachers employed small-group instruction during Tier 1 although none averaged more than 15 min. Similarly, 12/21 reading teachers paired students together for instructional purposes for some period of time, with most averaging between five and fifteen minutes daily. Finally, all but two of the teachers engaged in instructional activities that required students to work independently. In general, independent work was not a large part of instructional time, as 11 of the teachers averaged less than 10 min. Descriptives for these instructional grouping variables at the teacher-level are

presented in Table 4. School-level means are presented in Figures 22-25 for additional comparison purposes, with descriptive statistics provided in Table 4.

Instructional Quality and Student Engagement. Across the 41 Tier 1 observations, instructional quality ratings ranged from 2 to 4, with a mean of 3.27 ($SD = .59$). This mean rating suggested, in general, high average quality of Tier 1 instruction. Meanwhile, student engagement ratings ranged from 2 to 3 with a mean of 2.85 ($SD = .36$), indicative of high student engagement levels during instruction. Further comparisons of descriptive statistics across site revealed few differences in quality or engagement across sites. The mean rating of instructional quality during Tier 1 was 3.31 ($SD = .55$) at the FL site and 3.20 ($SD = .68$) at the TX site. Student engagement was rated high in both sites (FL $M = 2.77$, $SD = .43$; TX $M = 3.00$, $SD = 0$). See Table 5 for ratings of instructional quality and student engagement, both overall and by site.

Table 5

Ratings of Tier 1 Quality and Student Engagement

	Entire Sample		Florida		Texas	
	M (SD)	Range	M (SD)	Range	M (SD)	Range
Tier 1 Quality	3.27 (.59)	2 – 4	3.31 (.55)	2 – 4	3.20 (.68)	2 - 4
Student Engagement	2.85 (.36)	2 – 3	2.77 (.43)	2 – 3	3.00 (0)	NA

Research Question 2: Controlling for initial reading status, what instructional (Tier I and supplemental reading intervention) variables best predict end of year reading achievement for fourth grade students with reading difficulties?

The second research question specifically investigated which Tier 1 and/or supplementary reading instruction variables best predict student reading outcomes in the spring

after accounting for fall reading performance. Results are presented in several sections. First, descriptive data on student reading performance on measures of reading achievement in fall and spring are provided. Second, results from multiple CFAs to establish the latent variable model and test for longitudinal measurement invariance (i.e., fall to spring) are presented. Third, descriptive statistics for the supplementary reading instruction delivered to students in this sample are presented. Finally, multilevel analyses are provided to specifically test for the influence of instructional variables on student outcomes considering initial performance.

Descriptive statistics. Descriptive statistics for student reading performance in the fall and spring are provided in Table 6. The mean scaled score on the GMRT Comprehension measure was 441.16 in the fall ($SD = 17.79$) with an improved, on average, level of performance in the spring ($M = 455.31$, $SD = 23.03$). On another measure of reading comprehension, WJ-III Passage Comprehension, mean standard scores were stable, yet below average across fall ($M = 88.10$, $SD = 10.58$) and spring ($M = 88.97$, $SD = 7.57$). Student's oral reading fluency was also assessed in both fall and spring. In the fall, the sample mean was approximately 85 correct words read per minute ($M = 84.87$, $SD = 27.38$); this overall performance was below the established benchmark of 93 correct words/minute. An improvement of nearly 16 words/minute was noted from fall to spring (Spring $M = 100.42$ words/min; $SD = 32.81$); given the spring benchmark of 118 correct words/min, the sample mean remained below average. Students in the sample exhibited generally average achievement on measures of decoding and word recognition in both fall and spring (Mean standard scores > 95) with a slight decrease in standard scores from fall to spring. Correlations between measures of decoding/word recognition, reading fluency, and reading comprehension are provided in Table 7. Correlations between measures were generally moderate to strong in magnitude, both within and across time periods ($rs = .22 - .93$).

The strongest correlations were evident between the same measure from fall to spring and between measures of the same reading construct (e.g., word reading/decoding measures, fluency measures). The smallest bivariate correlations were evident with the GMRT, possibly due to the fact that it was the only group-administered measure in the test battery. All correlations were statistically significant ($p < .01$).

Table 6

Means, Standard Deviations, and Ranges for Reading Achievement in Fall and Spring

Measure	Fall		Spring	
	M (SD)	Range	M (SD)	Range
Word Reading				
WJ-III Letter-Word ID: SS	96.60 (10.27)	69 – 123	95.15 (9.79)	67 – 118
WJ-III Word Attack: SS	97.07 (10.65)	73 – 124	95.86 (8.83)	75 – 117
Oral Reading Fluency				
DIBELS ORF: median	84.87 (27.38)	23 – 164	100.42 (32.81)	23 – 179
Reading Comprehension				
GMRT: ESS	441.16 (17.79)	380 – 461	455.31 (23.30)	411 – 540
WJ-III Passage Comprehension: SS	88.10 (10.58)	57 – 118	88.97 (7.57)	63 – 113

Measurement Model. To examine the adequacy of the proposed latent factors of word recognition/decoding, reading fluency, and reading comprehension across time, CFA and tests of measurement invariance were conducted. Initially, CFA models for the proposed factor structure were specified for each time period, fall and spring, separately. Evaluation of the fit indices for the fall assessment indicated excellent model fit: $\chi^2 (11) = 19.65, p = .05$; CFI = .988; TLI = .977; RMSEA = .085 (CI [.000-.144]); and SRMR = .029. Similarly, the model fit in the spring was excellent: $\chi^2 (11) = 14.62, p = .20$; CFI = .994; TLI = .989; RMSEA = .057 (CI [.000-.126]); and SRMR = .047.

Table 7

Correlations among Reading Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. WJ-III LWID: Fall	--													
2. WJ-III WA: Fall	.81	--												
3. ORF 1: Fall	.74	.63	--											
4. ORF 2: Fall	.70	.62	.93	--										
5. ORF 3: Fall	.67	.53	.92	.92	--									
6. GMRT: Fall	.37	.40	.35	.38	.31	--								
7. WJ-III PC: Fall	.62	.59	.49	.46	.42	.41	--							
8. WJ-III LWID: Spring	.85	.73	.74	.73	.69	.29	.64	--						
9. WJ-III WA: Spring	.76	.77	.62	.62	.56	.24	.46	.79	--					
10. ORF 1: Spring	.68	.57	.92	.91	.88	.33	.48	.69	.60	--				
11. ORF 2: Spring	.69	.58	.89	.90	.91	.34	.49	.70	.61	.93	--			
12. ORF 3 Spring	.72	.63	.88	.86	.86	.34	.46	.67	.57	.91	.90	--		
13. GMRT: Spring	.39	.35	.43	.39	.44	.37	.41	.37	.22	.39	.41	.39	--	
14. WJ-III PC: Spring	.54	.49	.48	.47	.43	.31	.62	.67	.52	.46	.43	.39	.44	--

Note. All coefficients are significant at the .05 level.

WJ-III= Woodcock-Johnson Tests of Achievement-3rd Ed.; LWID = Letter-Word Identification; WA = Word Attack; ORF = Oral Reading Fluency; GMRT = Gates-MacGinitie Reading Test; PC = Passage Comprehension

After confirming the adequacy of the latent factor models at separate time points, analysis proceeded to evaluation of measurement invariance across time. First, a configural invariance model was specified in which the factor model at both time periods was estimated simultaneously. With the exception of constraints due to model identification purposes, in the configural invariance model all factor loadings, intercepts, and residual variances were freely estimated. Model fit indices revealed adequate fit for this configural model: $\chi^2 (61) = 101.23, p < .001$; CFI = .976; TLI = .965; RMSEA = .077 (CI [.049-.104]); and SRMR = .044. Next, a metric invariance model was specified, which specifically examined the equality of indicator factor loading across time points. All factor loadings were constrained equal across time, while intercepts and residual variances were permitted to vary. In comparison to the configural invariance model, the metric invariance model exhibited significantly worse fit: $\Delta \chi^2 (4) = 34.45, p < .0001$. A review of modification indices suggested that the second ORF passage (ORF2) was a source of some of the model misfit and should be freed. The respecified, partial metric invariance model did not fit worse than the baseline, configural invariance model: $\Delta \chi^2 (5) = 4.2, p = .24$.

Equality of the unstandardized indicator intercepts across time was next examined in a scalar invariance model. All intercepts for individual indicators were constrained equal across time, as were factor loadings with the exception of the ORF2 indicator. Additionally, residual variances were freely estimated and factor means were constrained to zero for the fall time point. This scalar invariance model fit significantly worse than the partial metric invariance model: $\Delta \chi^2 (4) = 22.35, p < .001$. Reviewing modification indices suggested that both the ORF2 and WJ-III Passage Comprehension indicator intercepts were sources of misfit. Thus, the intercepts for these two indicator variables were freely estimated, resulting in a partial scalar invariance model

that fit much better and was not significantly worse fitting than the partial metric invariance model: $\Delta \chi^2 (2) = 1.60, p = .45$. Finally, a residual variance invariance model was specified. The same constraints as noted above, with the exception of the ORF2 loading and intercept and the Passage Comprehension intercept, were specified. Given the freely estimated intercepts for Passage Comprehension and ORF2, their residual variances were also allowed to vary across time. The residual variance invariance model fit significantly worse than the partial scalar invariance model: $\Delta \chi^2 (5) = 13.60, p = .02$. After consulting the modification indices, the GMRT residual variances were allowed to vary between fall and spring, resulting in a model that was not significantly worse than the partial scalar invariance model: $\Delta \chi^2 (4) = 5.0, p = .29$. Overall, these analyses were able to establish the adequacy of the proposed latent factors for reading and further, the partial measurement invariance of this factor structure across time. Table 8 provides model results for the tests of measurement invariance.

Table 8

Model Fit Statistics for Tests of Measurement Invariance

Model	$\chi^2 (df)$	RMSEA (CI)	CFI	TLI	SRMR
Configural Invariance	101.23 (61)	.077 (.049 - .104)	.976	.965	.044
Partial Metric Invariance Model	105.40 (64)	.077 (.049 - .102)	.976	.965	.161
Partial Scalar Invariance Model	107.02 (66)	.075 (.048 - .101)	.976	.967	.158
Partial Residual Invariance Model	112.268 (70)	.074 (.047 - .099)	.975	.968	.230

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residuals; CI = confidence interval.

Further, estimated latent factors were derived from this final measurement model to serve as students' fall (i.e., initial status) and spring (i.e. outcome) performance for each reading construct. A factor determinancy value for each latent factor score was also calculated. This value represents the correlation between the estimated factor score and a student's true score with values closest to 1 suggesting more accurate estimation. For the latent variables in this study, the factor determinancy values ranged from .93 to .99. Descriptives and correlations among these derived latent factors are presented in Table 9. All latent factors were significantly correlated ($p < .01$) with one another both within and across time. Correlations of each latent factor in the fall with the same latent factor in the spring ranged from .88 to .99.

Table 9

Latent Factor Correlations and Factor Determinancy

	1	2	3	4	5	6	Factor Determinancy Value
1. Fall Word Reading	--						.98
2. Fall Oral Reading Fluency	.79	--					.99
3. Fall Reading Comprehension	.88	.68	--				.93
4. Spring Word Reading	.96	.81	.86	--			.98
5. Spring Oral Reading Fluency	.78	.99	.67	.79	--		.99
6. Spring Reading Comprehension	.66	.56	.88	.78	.54	--	.95

Note. All coefficients significant at .01 level.

Additional Reading Instruction. A total of 35 students, or approximately 32% of the sample, were reported as receiving direct, supplemental reading instruction/intervention from a teacher during the school day. This included 31 students in FL and four students in TX. Of these students, 25 received additional reading instruction from their classroom teacher ($n = 7$)

during a designated intervention time in the school schedule while the additional instruction for the remaining nine students involved pull-out from other teachers ($n = 4$) such as a reading specialist or special education teacher. Observational data on additional reading instruction received were available for 33 students.

Findings from observations of additional reading instruction received by students are presented in Table 10. On average, additional reading instruction received by students in the sample was approximately 25 min ($M = 25.15$, $SD = 11.13$) per day, with a range from 10 to 55.50 min. During the additional reading instruction, students most often received instruction related to comprehension of text ($M = 9.14$, $SD = 3.48$) and vocabulary and oral language development ($M = 5.90$ min, $SD = 7.16$). Students engaged in text reading for approximately four and a half minutes during their additional instruction ($M = 4.46$, $SD = 3.14$), while on average, students received phonics/decoding instruction for just over 1 min ($M = 1.37$, $SD = 4.94$) and oral reading fluency practice for just under 1 min ($M = .97$, $SD = 2.91$). Minimal instruction was received in spelling ($M = .22$, $SD = 1.28$) and phonemic awareness ($M = .08$, $SD = .46$). During additional reading instruction, three and a half minutes were spent in other academic instruction and/or non-instruction ($M = 2.95$, $SD = 3.88$ for other academic instruction; $M = .50$, $SD = 1.19$ for non-instruction). In summary, word study skills were addressed for less than 2 min per day ($M = 1.68$, $SD = 6.61$). On average, students read text or practiced oral reading fluency approximately 5 min ($M = 5.43$, $SD = 5.05$) and received vocabulary or reading comprehension instruction for 15 min per day ($M = 15.04$, $SD = 8.48$). When students received additional reading instruction, they were most frequently instructed in small-groups ($M = 22.93$, $SD = 8.70$); this accounted for 91% of instructional time. Independent instruction averaged just over 1 min ($M = 1.44$, $SD = 2.83$), while instruction in pairs of students occurred for less than 1

min ($M = .78$, $SD = 1.95$). The mean quality of additional reading instruction was 3.24 ($SD = .34$), suggestive of high average overall instruction. Student engagement was also rated as high during additional reading instruction ($M = 2.91$, $SD = .22$).

Table 10

Time Allocation during Additional Reading Instruction

<i>Instructional Activities</i>	M	SD	Range
Session Length	25.15	11.13	10 – 55.50
Phonemic Awareness	.08	.46	0 – 2.67
Phonics	1.37	4.94	0 – 27.33
Spelling	.22	1.28	0 – 7.33
Fluency	.97	2.91	0 – 10
Text Reading	4.46	3.14	0 – 9
Vocabulary	5.90	7.16	0 – 24.17
Comprehension	9.14	3.48	2.67 – 18
Other Academic Instruction	2.95	3.88	0 – 9.50
Non-Instructional Time	.50	1.19	0 – 4.83
<i>Instructional Grouping</i>			
Small Group	22.93	8.70	10 – 43.33
Pairs	.78	1.95	0 – 6.83
Independent	1.44	2.83	0 – 8.33
<i>Quality & Engagement Ratings</i>			
Instructional Quality	3.23	.34	2.75- 4.0
Student Engagement	2.91	.22	2.33 – 3.0

Multilevel Analyses. Due to the large number of variables, composite variables of Tier 1 instruction were utilized in the analyses, as were the aggregated time variables for supplemental instruction described in the previous section. Instructional time allocated to word study skills (i.e., PA, phonics, spelling) was less than 1 min per day ($M = .55$, $SD = 1.37$). Instruction focused on text reading and oral reading fluency development averaged nearly 6 min ($M = 5.79$, $SD = 6.38$), while vocabulary and reading comprehension instruction occurred for 40 min per day ($M = 40.07$, $SD = 10.07$). The means and standard deviations for time spent in differentiated instruction and the global quality rating for Tier 1 were previously reported in the Instructional Components and Instructional Quality and Student Engagement sections, respectively. Correlations among the aggregate Tier 1 variables and student outcomes used in the HLM models are provided in Table 11. Only the relationship between Tier 1 instructional quality and the amount of time allocated to differentiated instructional activities was significant ($r = .51$, $p = .001$). None of the predictors were significantly correlated with any of the reading outcomes.

Table 11

Correlations among Aggregated Tier 1 Variables and Student Outcomes

	1	2	3	4	5	6	7
1. Differentiated Instruction	--						
2. Minutes of Word Study	.35	--					
3. Minutes of Text Reading/Fluency	-.04	-.31	--				
4. Minutes of Vocabulary/ Comprehension	-.01	.33	-.35	--			
5. Global Tier 1 Quality	.51*	.00	-.21	-.12	--		
6. Spring Word Reading	.15	-.22	.14	.06	.03	--	
7. Spring Oral Reading Fluency	.14	-.06	.21	.18	.19	.75*	--
8. Spring Reading Comprehension	.28	-.33	.02	-.09	.12	.70*	.58*

Note: * = coefficients significant at the .05 level

Word reading/decoding outcome. As the goal of these analyses was to examine instructional predictors of student's reading growth from fall to spring, a baseline model, which included the spring latent word reading/decoding variable as the outcome and the fall word reading/decoding variable as a covariate (i.e., Level-1 predictor), was specified to account for student's initial status. Based on this model, approximately six percent (5.8%) of the variance in student's growth (i.e., above and beyond initial status) in word reading and decoding skill was across teachers with the remaining 94% attributed to student-level variation. Teacher-level instructional predictors were then added to the model at Level 2, including the number of minutes spent in differentiated instruction, minutes of word-level reading instruction, minutes of text reading and/or oral reading fluency instruction, and minutes spent on vocabulary and reading comprehension instruction. A global rating of instructional quality during core reading instruction was also included in this model. Results are presented in Table 12. With all of these Tier 1 instructional variables in the model, only the rating of instructional quality significantly predicted growth in student's word reading and decoding, although the observed relationship was negative ($\gamma_{05} = -4.65, p = .01$). More specifically, the results indicated that for students at the sample mean of word reading/decoding performance in the fall and receiving the average amount of instructional time across dimensions, every 1 point increase in the rating of Tier 1 instructional quality would result in an estimated decrease of .28 SD units in their spring word reading/decoding latent factor score. In comparison to the baseline model, the inclusion of these Tier 1 predictors accounted for 98% of the variance across teachers and less than 1% of the student-level variance in the outcome. As none of the time allocation variables had a significant effect on the spring outcome, they were removed from further models for parsimony.

Table 12

HLM for Effects of Tier 1 and Supplemental Reading Instruction on Word Reading Outcome

	<i>Model 1: Tier 1 Predictors</i>				<i>Model 2: Intervention Effect</i>			
Fixed Effect	Coefficient	SE	<i>df</i>	<i>p</i> value	Coefficient	SE	<i>df</i>	<i>p</i> value
Mean Word Reading (γ_{00})	6.13	.46	15	< .001	6.20	.60	19	< .001
Differentiated Instruction (γ_{01})	.05	.04	15	.160				
Word Reading/Decoding (γ_{02})	.14	.48	15	.779				
Text Reading/Fluency (γ_{03})	-.10	.10	15	.314				
Comprehension/Vocabulary (γ_{04})	-.01	.05	15	.830				
Instructional Quality (γ_{05})	-4.65	1.57	15	.010*	-2.48	1.35	19	.082
Fall Word Reading slope(β_1)								
Intercept(γ_{10})	.85	.02	83	< .001	.85	.02	82	< .001
Intervention slope (β_1)								
Intercept(γ_{20})					.19	1.07	82	.861
Random effect	<i>SD</i>	Variance	χ^2	<i>p</i> value	<i>SD</i>	Variance	χ^2	<i>p</i> value
Level 2 intercept (u_0)	0.153	.023	12.256	>0.500	.83	.69	19.065	.453
Level 1 (R)	4.55	20.740			4.59	21.06		

Note. Model 1 deviance = 624.79; Model 2 deviance = 616.03

Next, student-level predictors related to additional reading instruction received during the school day were added to the trimmed Tier 1 model (i.e., Tier 1 quality only). Initially, a dummy-coded variable, which denoted whether or not the student received additional reading instruction supplemental to their core instruction, was added to the model. The estimated effect of receiving supplemental reading instruction was not significant ($p = .86$). Further, after accounting for whether students received reading intervention, Tier 1 instructional quality was no longer significant ($p = .08$). Only student's performance in word reading and decoding in the fall significantly predicted spring performance ($p < .001$). Table 12 provides model results.

Although there were no significant differences for students receiving reading intervention, further exploratory analysis was conducted to determine the impact of the dosage of the supplemental interventions. That is, for the students actually receiving intervention, did amount of instruction received in various dimensions of reading (e.g., word reading/decoding, text reading/fluency, and vocabulary/comprehension) and quality of instruction received during intervention predict student's growth in achievement. These student-variables were added to the model with Tier 1 instructional quality. This final model resulted in no significant predictors of word reading/decoding outcome in the spring. See Table 13 for final model results.

Oral Reading Fluency outcome. The specified baseline model, which included fall oral reading fluency as a covariate, indicated 3% of variance was at the teacher-level. Meanwhile, the remaining variance was at the student level. Fall ORF was significant ($p < .001$) in this model. Next, a model was built to include all Tier 1 instructional variables as predictors of spring ORF taking into account initial status. In this model, none of the Tier 1 variables uniquely predicted student outcomes when accounting for the other variables; again, only fall ORF performance was a significant predictor ($p < .001$). Predictors were also entered individually, however all were

Table 13

Final HLM Results for Word Reading

Fixed Effect	Coefficient	SE	df	p value
Mean Word				
Reading (γ_{00})	6.52	0.68	8	<0.001
Tier 1 Quality (γ_{01})	-2.23	1.75	8	0.238
Fall Word Reading				
slope(β_1)				
Intercept(γ_{10})	0.85	0.04	90	<0.001
Supplemental Quality				
slope (β_2)				
Intercept, (γ_{20})	2.26	2.25	90	0.318
Supplemental Word				
Study slope (β_3)				
Intercept (γ_{30})	-0.10	0.10	90	0.343
Supplemental Fluency				
& Text Reading slope				
(β_4)				
Intercept (γ_{40})	-0.13	0.17	90	0.441
Supplemental				
Vocab.& Comp. slope				
(β_5)				
Intercept (γ_{50})	-0.09	0.08	90	0.291
Random effect	SD	Variance	χ^2	p value
Level 2 intercept (u_0)	0.14	0.02	3.958	>0.500
Level 1 (R)	3.45	11.89		

Note. n = 33 for this analysis; Deviance = 174.63

non significant ($ps = .23 - .99$). Of note, the addition of these instructional predictors to the model resulted in increased variance between teachers in comparison to the baseline model. That is, after controlling for time allocated to dimensions of reading during Tier 1 instruction and the rating of quality of core reading instruction, there was more between-teacher variance in student outcomes than when accounting for initial status alone. There was a minimal decrease (1.5%) in student-level variance in the ORF outcome when these Tier 1 predictors were included. As none of the Tier 1 predictors were significant, they were deleted from the subsequent models

for parsimony. The next model was built to examine the effect of receiving a supplemental reading intervention had on student's spring ORF performance, again controlling for initial ORF scores in the fall. Results of the multilevel model indicated that the effect of intervention was significant ($\gamma_{20} = 2.20, p = .04$). In other words, for students at the sample mean in the fall, those who received supplemental reading intervention scored, on average, .07 SD higher on the spring ORF latent variable than those students who did not receive additional reading instruction¹. The inclusion of the intervention variable in the model explained just over three percent (3.2%) of the student level variation in the ORF outcome. Table 14 provides model results for these two conditional models.

Again exploratory analyses were conducted to determine whether the time allocated to specific dimensions of reading during intervention predicted outcomes for those students who actually received reading intervention from the school. However, none of the supplemental reading instruction variables significantly predicted spring ORF outcomes for these students. See Table 15 for a summary of final model results.

Reading comprehension outcome. For the spring latent reading comprehension factor, the initial baseline model, which included only student's fall reading comprehension factor score as a predictor, was specified first. Results indicated that, after accounting for initial status, of the total estimated variance in spring reading comprehension just over three percent (3.3%) was due to between-teacher differences and the remaining represented student-level variation. Next, a model was built that added Tier 1 instructional predictors to the baseline model to determine the effect of instructional time in specific dimensions of reading and the quality of core reading instruction on spring reading comprehension outcome. After accounting for fall reading

¹ A model that included all of the Tier 1 instructional variables and the intervention dummy-coded variable was also estimated and confirmed the obtained findings of a significant effect of receiving supplemental intervention ($p = .005$) even when controlling for Tier 1 instruction.

Table 14

HLM for Effects of Tier 1 and Supplemental Reading Instruction on Oral Reading Fluency Outcome

	<i>Model 1: Tier 1 Predictors</i>				<i>Model 2: Intervention Effect</i>			
Fixed Effect	Coefficient	SE	<i>df</i>	<i>p</i> value	Coefficient	SE	<i>df</i>	<i>p</i> value
Mean Oral Reading Fluency (γ_{00})	11.59	.62	15	< .001				
Differentiated Instruction (γ_{01})	.03	.05	15	.455				
Word Reading/Decoding (γ_{02})	-.44	.60	15	.468				
Text Reading/Fluency (γ_{03})	.16	.13	15	.225				
Comprehension/Vocabulary (γ_{04})	.06	.07	15	.429				
Instructional Quality (γ_{05})	.50	2.07	15	.812				
Fall Oral Reading Fluency slope(β_1)								
Intercept(γ_{10})	1.05	.02	83	< .001	1.06	.02	82	< .001
Intervention slope (β_1)								
Intercept(γ_{20})					2.20	1.07	82	.043
Random effect	<i>SD</i>	Variance	χ^2	<i>p</i> value	<i>SD</i>	Variance	χ^2	<i>p</i> value
Level 2 intercept (u_0)	1.49	2.22	21.362	.125	.88	.77	22.336	.322
Level 1 (R)	4.87	23.74			4.83	23.34		

Note. Model 1 deviance = 643.65; Model 2 deviance = 632.58.

Table 15

Final HLM Results for Oral Reading Fluency

Fixed Effect	Coefficient	SE	<i>df</i>	<i>p</i> value
Mean ORF (γ_{00})	12.95	0.94	9	<0.001
Fall ORF slope(β_1)				
Intercept(γ_{10})	1.08	0.03	90	<0.001
Supplemental Quality slope (β_2)				
Intercept, (γ_{20})	0.44	3.10	90	0.887
Supplemental Word Study slope (β_3)				
Intercept (γ_{30})	0.19	0.14	90	0.180
Supplemental Fluency & Text Reading slope(β_4)				
Intercept (γ_{40})	0.14	0.22	90	0.531
Supplemental Vocab. & Comp. slope (β_5)				
Intercept (γ_{50})	0.16	0.11	90	0.156
Random effect	<i>SD</i>	Variance	χ^2	<i>p</i> value
Level 2 intercept (u_0)	1.55	2.41	7.641	>0.500
Level 1 (R)	4.19	17.58		

Note. $n = 33$ for this analysis; Deviance = 189.78

comprehension, both the amount of instructional time spent in text reading and/or oral reading fluency practice ($\gamma_{03} = -.13, p = .05$) and the quality of Tier 1 reading instruction ($\gamma_{05} = -3.55, p = .01$) were uniquely, but negatively related to student's spring reading comprehension. All other instructional predictors were non-significant while initial reading comprehension status was significant ($p < .001$). To aid with interpretation, the magnitude of the effect was converted to *SD* units. In essence, the findings suggest that for every additional minute of instruction in text reading or oral reading fluency above 5.79 min (sample mean) during Tier 1, a student's spring reading comprehension factor score would be expected to decrease by .02 *SD*. Also, for every one point increase in the Tier 1 instructional quality rating above the sample mean ($M = 3.26$), students spring reading comprehension performance decreased .43 *SD*. This model

accounted for 97% of the teacher-level variance in student outcome and less than 1% of between-student variation (see Table 16).

Next, a model was built to investigate the effect of students receiving supplemental reading instruction on spring reading comprehension outcomes. Initial status was retained in the model, as were minutes of text reading and oral reading fluency instruction during Tier 1 and ratings of the quality of core reading instruction. Results (see Table 16) indicated that the effect of supplemental reading instruction was not significant ($\gamma_{20} = -.211, p = .763$); that is, after controlling for other variables in the model, students who received reading intervention during the school day did not differ statistically from those students who did not receive supplemental instruction on the spring reading comprehension outcome. In this model, which included fewer Tier 1 instructional variables, neither the number of instructional minutes allocated to text reading and oral reading fluency development during core instruction ($\gamma_{02} = -.12, p = .08$) nor rating of instructional quality ($\gamma_{03} = -1.93, p = .08$) remained significant. Student's fall reading comprehension performance was still a significant predictor of spring reading comprehension ($p < .001$). The model, including Tier 1 predictors and student intervention status, explained 62% of the between-teacher variance in spring reading comprehension scores and less than 1% of the student-level variation in the outcome.

Finally, to explore further the effect of the amount of supplemental instruction in specific reading dimensions and the quality of such instruction for those students receiving reading intervention, a model was specified that added these variables to the retained Tier 1 instructional variables and initial status. None of these supplemental intervention variables uniquely predicted spring reading comprehension for those students receiving intervention. A summary of results for the final model are provided in Table 17.

Table 16

HLM for Effects of Tier 1 and Supplemental Reading Instruction on Reading Comprehension Outcome

	<i>Model 1: Tier 1 Predictors</i>				<i>Model 2: Intervention Effect</i>			
Fixed Effect	Coefficient	SE	<i>df</i>	<i>p</i> value	Coefficient	SE	<i>df</i>	<i>p</i> value
Mean Reading Comp (γ_{00})	13.93	.31	15	< .001	14.11	.49	18	< .001
Differentiated Instruction (γ_{01})	.04	.02	15	.072				
Word Reading/Decoding (γ_{02})	-.07	.19	15	.740				
Text Reading/Fluency (γ_{03})	-.13	.06	15	.050*	-.12	.07	18	.076
Comprehension/Vocabulary (γ_{04})	-.04	.03	15	.280				
Instructional Quality (γ_{05})	-3.55	1.22	15	.011*	-1.94	1.03	18	.076
Fall Word Reading slope(β_1)								
Intercept(γ_{10})	.76	.03	83	< .001	.77	.04	82	< .001
Intervention slope (β_1)								
Intercept(γ_{20})					-.21	.70	82	.763
Random effect	<i>SD</i>	Variance	χ^2	<i>p</i> value	<i>SD</i>	Variance	χ^2	<i>p</i> value
Level 2 intercept (u_0)	.13	.02	12.236	>0.500	.44	.20	16.063	> .500
Level 1 (R)	3.91	15.32			3.92	15.40		

Note. Model 1 Deviance = 593.663; Model 2 Deviance = 585.651

Table 17

Final HLM Results for Reading Comprehension

Fixed Effect	Coefficient	SE	<i>df</i>	<i>p</i> value
Mean				
Comprehension (γ_{00})	13.99	.26	7	<0.001
Tier 1 Text Reading & Fluency (γ_{02})	-0.14	.06	7	.049
Tier 1 Quality (γ_{03})	-3.22	.67	7	.002
Fall Comprehension slope(β_1)				
Intercept(γ_{10})	.74	.07	90	<0.001
Supplemental Quality slope (β_2)				
Intercept, (γ_{20})	1.49	1.09	90	.176
Supplemental Word Study slope (β_3)				
Intercept (γ_{30})	-.02	.04	90	.632
Supplemental Fluency & Text Reading slope (β_4)				
Intercept (γ_{40})	-.23	.10	90	.166
Supplemental Vocab.& Comp. slope (β_5)				
Intercept (γ_{50})	.07	.09	90	.444
Random effect	<i>SD</i>	Variance	χ^2	<i>p</i> value
Level 2 intercept (u_0)	0.12	.01	2.399	>0.500
Level 1 (<i>R</i>)	3.17	10.02		

Note. n = 33 for this analysis; Deviance = 168.61

CHAPTER FOUR

DISCUSSION

Students who enter the upper elementary grades with persistent deficits in reading-related skills are at an increased risk not only for continued difficulties with reading throughout the secondary grades but also for academic failure and school drop-out (Francis et al., 1996; National Center for Education Statistics [NCES], 2006). To this end, schools and teachers have a vested interest in providing these students the instruction and supports necessary to improve the trajectory of their reading outcomes. RTI represents a framework for the prevention and remediation of student's reading difficulties with a specific focus on the delivery of differentiated, high-quality core reading instruction within the general education classroom, as well as the provision of supplementary reading instruction that is targeted and intensive enough to meet the particular needs of students (Fuchs, Fuchs, Stecker, 2010; Kamil et al., 2008; Torgesen et al., 2007). With this in mind, the primary objective of this dissertation study was to examine instructional practices during core reading instruction in fourth-grade classrooms and the impact of such practices on reading outcomes for students identified as struggling readers. Further, within an RTI framework, the nature and impact of supplemental reading intervention provided by schools was also investigated.

Observations of Tier 1 and Supplementary Reading Instruction

An initial finding from the observations of Tier 1 reading classes was the degree of variation in the number of minutes of scheduled core reading instruction. Across observations and individual teachers, the average time scheduled for Tier 1 reading instruction in fourth-grade classrooms ranged from approximately one-half hour to two hours. While such disparate amounts of Tier 1 instructional time across teachers in this study was somewhat surprising, the

average length of core reading instructional time across the extant observational studies of upper-elementary reading instruction for students with or at-risk for reading difficulties has also revealed significant variation (e.g., Allington & MacGill-Franzen, 1989; Haynes & Jenkins, 1996; Thurlow, Ysseldyke, Graden, & Algozzine, 1983). More interesting was that over 90% of the variance in the total length of core reading instruction was attributed to site differences. The scheduled Tier 1 reading instructional time in the FL sites was twice as long as in the TX sites despite the fact that the core (i.e., basal) program utilized was the same across schools, with the exception of one school in the FL site. While it might be posited that such differences may be due to the lack of an established expectation for core reading instruction in the upper elementary grades, both states have implemented statewide reading initiatives requiring schools to allocate a minimum of 90 min of core reading instruction daily throughout the elementary grades (Florida Administrative Code, 2011; Texas Education Agency, 2012); none of the teachers in the TX sites and two-thirds of those in the FL sites scheduled an average of at least 90 min of core reading instruction daily. Such discrepancy in time scheduled for Tier 1 reading instruction may be due to the actual time available in the school schedule and/or represent the impact of how teachers choose to allocate time to specific instructional activities across the school day.

Despite the site differences in scheduled Tier 1 reading time, the total number of minutes of instructional time alone does not necessarily articulate how this time is utilized by teachers. Specifically, the extent to which such instructional time is explicitly devoted to reading instruction in order to maximize the time available and increase student engagement, may be more useful to examine (Gettinger, 1985; Greenwood, Horton, & Utley, 2002; Schumm, Moody, & Vaughn, 2000). Previous studies at both the upper elementary level (e.g., Foorman, Carlson, & Santi, 2007; Gelzheiser & Myers, 1991) and younger grades (e.g., Kent, Wanzek, & Al

Otaiba, 2012) demonstrated that frequently a sizeable percentage of the time allocated for Tier 1 reading instruction is not devoted to the actual teaching of specific reading skills. In the present study, results supported this contention as, on average, teachers spent just over 18% of instructional time in activities not considered reading-related instruction (e.g., other academic instruction, transitions, behavior management). More specifically, over half (12/21) of the teachers spent at least 10 min in non-reading instruction during Tier 1, while nearly 30% (6/21) of the teachers averaged more than 20 min. When considering this finding, students received approximately one hour of daily instruction in reading-related skills, on average. It is important to note that the amount of Tier 1 time not utilized for core reading instruction was significantly greater in the FL site classrooms. Nonetheless, even after considering time spent in non-reading activities, the disparity in minutes allocated to reading instruction was approximately 30 min across the sites, which across an entire school year could add up to nearly 90 hr of reading instruction.

The additional half hour of core reading instruction each day in the FL sites was characterized primarily by the implementation of differentiated instructional activities; teachers in the FL sites spent, on average, 23 min engaged in instructional activities whereby different groups of students were engaged in simultaneous instruction with different content emphasis (i.e., instructional centers). The provision of differentiated instruction, such as in instructional centers, has the potential to increase student achievement by allowing teachers to provide more explicit, direct instruction in targeted skill areas (Castle, Deniz, & Tortora, 2005; Chorzempa & Graham, 2006; Connor, Morrison, & Petrella, 2004). For this study, differentiated instruction was coded during Tier 1 observations when the teacher's instruction involved two or more simultaneous instructional activities within the classroom and, therefore, does not necessarily

reflect the degree to which instruction was individualized to specific students or groups of students. In fact, surveys of teachers and observations of general education reading instruction have generally demonstrated infrequent utilization of skills-based, targeted instruction in the classroom (Moody, Vaughn, & Schumm, 1997; Schumm, Moody, Vaughn, 2000). Nevertheless, both time available for instruction and individual teacher preference may reasonably explain the absence of differentiated instruction in the TX sites. With only 45 min available for reading instruction, differentiated instructional activities may be difficult to implement. In addition to the increase in planning required for differentiated instruction, competing demands from managing multiple instructional activities and/or groups and the transitions between such activities has the potential to minimize the direct instruction from the teacher during an already limited timeframe (Hong & Hong, 2009). Further, as has been previously demonstrated, the lack of differentiated instruction may also be due to teachers' general preference for whole-class activities during reading instruction (Schumm, Moody, & Vaughn, 2000).

Examining how reading instruction was allocated to specific instructional components in these fourth grade classes, observational data indicated that a minimal amount of instructional time was allocated to word-level reading skills (i.e., PA, decoding, encoding); in fact, less than one minute each day. Perhaps more surprising than the limited time spent in PA and encoding instruction, was the relative absence of instruction in phonics and structural analysis. Across 41 observations, during only one period of core reading instruction were decoding/word analysis skills explicitly taught. This finding stands in contrast to two recent studies of upper elementary reading instruction that found between 10 to 13 % of time was devoted to the teaching of these more foundational skills (Foorman, Carlson, & Santi, 2007; Taylor et al., 2003). Although the students in this sample represented only a handful of students in each of these teacher's

classrooms, one-third of these students exhibited word reading and decoding skills below the 30th percentile and one-half performed below the 40th percentile, suggesting a need for continued development in word-level skills. Previous research has also suggested that in addition to difficulties with reading comprehension, many students with identified reading difficulties in the upper elementary grades and beyond have deficits in word analysis skills and lack effective and efficient strategies for decoding multisyllabic words (Archer, Gleason, and Vachon, 2003; Catts, Hogan, & Fey, 2003; Leach et al., 2003). Furthermore, practice guides for teaching reading to students beyond the primary grades have recommended that reading instruction for *all* students involve explicit instruction in advanced word-study along with other key skills such as fluency, comprehension, and vocabulary (Kamil et al., 2008; Snow, 2002). Finally, the Common Core State Standards (CCSS, 2010) specifically outline the expectation that by the end of fourth-grade, students should have developed knowledge of syllabication patterns, morphology, and reading multisyllabic words.

What was evident during observations of core reading instruction, as expected, was a strong focus on vocabulary and comprehension instruction. Nearly two-thirds (~ 40 min) of the actual minutes spent on reading instruction were allotted for the development of oral language and vocabulary and/or the teaching of reading comprehension strategies and skills; 50% of all reading instruction involved activities related to developing student's understanding of text. However, this time allocation may actually be an underestimate of the amount of comprehension instruction received, at least for students in the FL sites, as there was a significant amount of comprehension and vocabulary instruction (12.5 and 7.1 min, respectively, across all observations) during differentiated activities and those minutes are not explicitly included in the above data. In comparison to the extant research (e.g., Foorman, Carlson, & Santi, 2007;

Gelzheiser & Myers, 1991; Taylor et al., 2003), this finding represented an increase in core instructional time specifically dedicated to comprehension. The overwhelming focus on vocabulary and comprehension during core reading instruction likely represents the fundamental shift in reading instruction in fourth grade from learning to read to reading to learn. The focus on reading comprehension also serves to meet the increasing demands on students being able to comprehend both literary and informational texts as evidenced in the CCSS (2010). Research has suggested that as students get older, they must develop a greater depth and flexibility in the use of reading comprehension strategies and that being able to purposefully use a variety of strategies for understanding text is a mark of proficient readers (Duke & Pearson, 2002; NRP, 2000; Perfetti, Landi, & Oakhill, 2005). With the adoption of the Common Core Standards, most core (basal) reading programs have now explicitly aligned their instructional strategies and activities with these new standards, and one would expect this alignment to be reflected in the observational findings from Tier 1 classrooms. Given the potential moderating effects of student's vocabulary and lexical quality for the development of reading comprehension, the fact that instructional activities addressing vocabulary and oral language development occurred for just over 10 min each day was also promising (Elleman et al., 2009; Perfetti, 2007).

Instruction provided to the whole-group was the most prevalent instructional grouping strategy observed during core reading instruction in these fourth-grade classrooms, accounting for between 53 to 66% of all instruction. This was not altogether surprising and appeared to support previous observational studies at this level (e.g., Gelzhesier & Myers, 1991; Taylor et al., 2003; Ysseldyke et al., 1984). Nonetheless, one potential concern with extensive use of whole-group instruction is that it may limit direct, explicit instruction as well as opportunities for teacher modeling, scaffolding, feedback and error correction, which are important to skill

development (Duffy et al, 1987; Hattie & Timperley, 2007; Pressley et al., 2001). However, other instructional groupings were evident during core reading instruction, as students engaged in reading activities and tasks both with peers (small-group and in pairs) and independently. Of note, 90% of instructional time in the TX sites involved either whole-group instruction or students working independently (e.g., completing worksheet, silent reading), while students in the FL sites spent approximately one-third of their time in small-group or partner activities. While there are certainly benefits to instructional groupings that allow students to work with peers (Alfassi, 1998; Fuchs, Fuchs, & Kazdan, 1999; Taylor et al., 1999), there is a reality to the amount of instructional planning and time necessary to implement such strategies, which again may have precluded implementation in the TX sites.

Given that one of the essential components of RTI models is the provision of targeted, more intensive levels of reading instruction in addition to high quality, core reading instruction, data were also collected on the amount and type of additional reading instruction received by these struggling readers. The fact that less than one-third of this sample of students with reading difficulties received direct, supplemental instruction/intervention during the school day was somewhat disconcerting, though not without precedent. While Wanzek and Roberts (2012) found that 50% of students in their study's comparison condition received reading intervention(s), in their study of RTI in the primary grades, Wills et al. (2010) noted that only 26% of students with identified reading difficulty in the comparison condition received an intervention provided by the school. It should be noted that the entire sample of students for this study were identified as struggling readers through the larger research project and not by their respective teachers and/or schools, which may account for the reason that some students were not receiving school-based reading intervention. Further, although this sample of students

demonstrated difficulties across multiple reading dimensions including word reading, oral reading fluency, and reading comprehension, which would seem to warrant more intensive support, limited resources available to schools may allow them to serve only the most at-risk students. This rationale appears to be supported in that the group of 35 students receiving reading intervention were relatively more impaired on all measures of reading skill in the fall of fourth grade; more specifically, over 50% demonstrated word-level reading deficits. Limited resources may also account for the minimal pullout reading intervention services and the reason why most intervention was delivered by classroom teachers. Recent surveys have suggested that this is a common service delivery model for schools to provide students with additional reading instruction (Jenkins et al., 2013; Wanzek & Cavanaugh, 2012). One potential difficulty with this model is that frequently teachers are asked to provide such intervention while simultaneously being responsible for the instruction of the rest of the students in the class during this time.

The average length of supplementary reading instruction sessions (approximately 25 min daily) for students in this study appears to align with current and suggested best practices for Tier 2 interventions (e.g., Jenkins et al., 2013; Kamil et al., 2008; Torgesen et al., 2007; Wanzek & Cavanaugh, 2012). Given the word-level reading deficits of students receiving school-based intervention and the fact that Tier I instruction did not seem to address these word-level needs, the lack of targeted phonics instruction during supplementary reading instruction was noteworthy; the majority of intervention time was devoted to text reading, vocabulary development, and comprehension skill instruction. While reading interventions specifically targeting vocabulary and comprehension, as well as multi-component interventions addressing a combination of reading dimensions, have demonstrated promise in remediating reading deficits in older students (Edmonds et al., 2009; Scammacca et al., 2007; Wanzek et al., 2010), explicit,

systematic instruction in foundational skills such as decoding and word study within small groups has also demonstrated positive effects (Swanson & Hoskyn, 1998).

Predictors of Student Response to Instruction

Findings from the baseline multilevel models revealed that in general, only a small amount (3 – 6 %) of the variance in spring outcomes (accounting for initial status) was attributed to between-teacher differences. In contrast, Taylor et al (2003) found that after accounting for initial status, approximately 31 to 46% of variance in oral reading fluency and comprehension outcomes, was between teachers. This marked difference may be due to the fact that the Taylor et al. analyses were aggregated across Grades 2-5 and the fact that in addition to below average readers, their sample also included students of higher ability. Thus, in comparison to the current study, which included only struggling readers at one grade level, in the study by Taylor and colleagues there was a greater amount of variance in student outcomes to be explained and likely greater variation in instructional methods across the grade levels to explain these differences. Nevertheless, I sought to determine whether teacher decisions regarding how they allocated time to specific instructional components influenced growth in achievement. Differences (i.e., amount of minutes) in instructional focus had little effect on student outcomes for fourth grade struggling readers in this sample, with a few exceptions.

Increased minutes of core reading instruction spent in text reading (absent other instruction) and/or oral reading fluency practice was negatively related to student's reading comprehension performance in the spring, after accounting for initial status. Again, on a practical level this result should be interpreted cautiously. For teachers whose time allocation to text reading and/or reading fluency was 1 SD (~ 6 additional min) above the sample mean, the estimated decrease in the spring reading comprehension factor score would be approximately .13

SD. It is important to reiterate that these codes relate to activities involving text reading and/or oral reading fluency practice with no direct comprehension instruction. As teachers make decisions to increase instructional time in one area, such as text reading or fluency practice, less time is available for other instruction- in this case, reading comprehension instruction. Further, though the ability to read connected text accurately and fluently is an important prerequisite for comprehension, it is possible that struggling readers may not be actually engaged in the task due to the complexity of the text, thus diminishing the potential positive effects (Greenwood, Horton, & Utley, 2002; Moje, 2006).

A somewhat unexpected finding was that even though global ratings of Tier 1 instructional quality had a nonsignificant correlation with student outcomes ($r_s = .03 - .12$), there was a negative relationship to both spring word reading and reading comprehension achievement after accounting for minutes of core reading instruction. On a practical level, for students in teacher's classrooms that were rated 1 *SD* higher than the sample mean of instructional quality, this corresponds to an effect of $-.17$ *SD* and $-.25$ *SD* on their word reading and reading comprehension outcomes, respectively. However, the relationships were no longer significant in the subsequent models that accounted for the provision of additional reading instruction. Further examination, however, revealed that there was a significant difference ($p = .026$) in mean ratings of instructional quality for the teachers of students who received supplementary reading intervention ($M = 3.39$, $SD = .45$) in comparison to the teachers of the students who received Tier 1 instruction only ($M = 3.19$, $SD = .33$). Thus, the teachers with the highest ratings of instructional quality in Tier 1 had the lowest performing students (i.e., those receiving additional reading instruction) in their classrooms. Further, given that the provision of additional, supplementary reading instruction was not significantly related to the performance of these

students, in comparison to students who did not receive intervention, these children generally remained the lowest performers in the sample on spring outcomes. Thus, the significant, negative coefficients for instructional quality in relation to word reading and reading comprehension outcomes appear to reflect the artifact of controlling for time allocated to actual instruction in reading. This argument is supported by the fact that when the provision of additional reading instruction is actually accounted for in the subsequent models for each outcome, instructional quality no longer exhibits a significant effect.

To further support this contention, I examined why a similar finding was not exhibited for the oral reading fluency outcome despite the fact that, once again, teachers rated highest in instructional quality taught the lowest performing students (by fall standards). However, in the case of oral reading fluency, receiving additional reading instruction had a significant relationship to student's performance in oral reading fluency in the spring, which, in essence, reduced and/or eliminated the disparity in achievement in comparison to struggling readers who received no such intervention. Therefore, the performance of the students in teacher's classrooms rated as highest in instructional quality was actually commensurate and slightly above ($SD = .07$) students in classrooms with teachers rated lower in quality, leading to the finding of no relationship between Tier 1 quality and student outcomes.

An interesting finding was the lack of significant effect for time spent in differentiated instructional activities. In theory, the provision of differentiated learning activities would allow teachers to tailor their instructional strategies to specifically meet student needs via explicit skill instruction to individual or small groups of students with increased opportunities for practice with feedback, thereby increasing achievement (e.g., Castle, Deniz, & Tortora, 2005; Hattie & Timperly, 2007; Swanson & Hoskyn, 1998). The current study's null finding contrasts with a

recent study by Reis, McCoach, Little, Muller, and Burcu Kaniskan, (2011) that found by replacing some of teacher's whole-group reading instruction with brief, targeted differentiated instruction, students significantly outperformed peers receiving a more traditional basal reading program approach on measures of oral reading fluency and reading comprehension. One reason for the difference may be the specific nature of the differentiated instruction. In the Reis et al. study, differentiated instruction was individualized to each student. In contrast, in the current study, differentiated instruction was coded whenever multiple, simultaneous instructional activities were occurring in the classroom. Thus, no specific data were collected on whether such instruction was actually teacher-led or the degree to which activities were individualized. It appears, however, that the majority of differentiated instruction observed was in the form of reading centers or stations, whereby students rotate through a series of instructional activities, with all students completing the same instructional activity. Despite the recommendations for differentiated instruction during Tier 1 (e.g., Gersten et al., 2009), certainly additional, more systematic research is needed to examine the nature and specificity of differentiated instruction and the effects on student reading achievement.

The provision of additional, explicit reading intervention for these struggling readers had generally mixed results on spring outcomes after accounting for Tier 1 instruction. There were no significant differences on word reading/decoding or comprehension performance in the spring for students who received supplemental intervention in comparison to students who did not receive intervention. However, there was a small effect of receiving supplemental intervention on ORF outcomes. In general, the lack of an effect on word reading and decoding for students receiving intervention appears to be a direct result of the limited amount of supplemental instruction actually devoted to word analysis skills. A previous study of elementary students

identified as having reading disabilities and receiving special education intervention found that even receiving 15 min per day of instruction in word analysis was not sufficient to enhance student outcomes (Swanson & Vaughn, 2010). In this study, students received less than two minutes per day of such instruction, on average.

The lack of a significant effect of supplemental instruction on the reading comprehension outcome, despite the observed focus on the teaching of vocabulary and comprehension skills during intervention sessions, may similarly suggest that the actual instruction delivered during reading intervention may not be intensive enough, in dosage or instructional strategies utilized, to promote significant gains over the course of one school year. In this study, students who received supplemental reading instruction spent approximately 15 min per day in instructional activities targeting comprehension and oral language development over the course of fourth grade, yet Vaughn et al. (2012) found that for students entering middle school with reading difficulties, supplemental instruction for multiple years was required in order to demonstrate improved outcomes in relation to peers. Because instructional activities in the present study were coded broadly (i.e., by general reading dimension), analyses could not be conducted to examine whether specific strategies and practices used during reading intervention were more or less related to reading comprehension outcomes. Previously, Taylor et al. (2003) demonstrated that the use of higher level questioning strategies during comprehension instruction was positively related to student outcomes, while simply teaching comprehension skills that may not be transferable across different kinds of text was actually negatively related to outcomes. While this study did not allow for such detailed analysis of instructional components, further examination of specific instructional methods used during supplemental instruction in the area of

comprehension would be important for understanding their relative impact on student achievement.

In contrast to the finding for word reading and reading comprehension, receiving supplemental reading intervention did have a significant and positive effect on student's ORF performance in the spring, when taking into account initial status. Although supplemental instruction was generally multi-component in nature, the findings for ORF suggest that receiving even a small amount of practice in oral reading fluency and engagement in text reading (mean of approximately 5 min) was effective in increasing oral reading fluency in comparison to struggling readers who did not receive additional instruction. This finding supports the synthesis by Chard et al (2002), which reported that instruction specifically focused on reading fluency for students with reading disabilities resulted in improved performance. It is important to note that on a practical level such differences were quite small as students receiving supplemental intervention had a spring outcome on the ORF latent variable that was only .07 SD higher than their peers. Overall, the mixed findings for the effects of supplemental reading intervention on student outcomes in this study appear to mirror the recent intervention literature with students in the upper elementary grades (Ritchey et al., 2012; Scammacca et al., 2008; Wanzek & Roberts, 2012; Wanzek et al., 2013).

Practical Implications

This dissertation study specifically examined teachers' practices during core and supplemental reading instruction in order to examine how these typical practices influenced achievement for students who entered fourth-grade with reading difficulties, with the ultimate goal of informing future practice. The present findings have several implications for districts, schools, and teachers attempting to support struggling readers in an RTI model, as is required in

both FL and TX. One important aspect schools must consider is the relative intensity of the reading instruction provided to students with reading difficulties, including time, duration, and size of instructional groups (Vaughn, Denton, Fletcher, 2010). Because Tier 1 is considered the foundation to successful implementation of RTI, examining core reading instruction would be an important starting point. In current implementation of RTI across the elementary grades, and as dictated by state policy in the case of these two states, Tier 1 consists of 90 min of core reading instruction daily (Florida Department of Education, 2011; Gersten et al., 2009; Jenkins et al., 2013; Texas Education Agency, 2012). Yet, after accounting for non-reading instruction, only 2 teachers in this study actually provided this amount of reading instruction. At the upper elementary grades, content-area instruction typically increases, often leaving less time devoted to reading instruction. Nonetheless, one potential implication is that school/district literacy leaders must ensure that sufficient time is allocated to core reading instruction within the daily schedule and, further, that the specific time available is dedicated to actual reading instruction. Although much of the instruction at this level would generally be dedicated to meaning-focused activities such as vocabulary and comprehension, this study found a general absence of the teaching of word-level, foundational skills in these fourth grade classrooms. Thus, a second implication is that school leaders in the area of reading instruction must emphasize the explicit teaching of word reading skills during core instruction as best practice suggests that sufficient time is allocated to direct instruction in word analysis and text reading practice, particularly for students with reading difficulties (Kamil et al., 2008; Torgesen et al., 2007).

While ensuring adequate instructional time for reading certainly appears to be a priority based on the current findings, the relative absence of significant instructional predictors related to time in this study and others (Foorman et al., 2006; Haynes & Jenkins, 1996) suggests that

time alone may not significantly improve student achievement. An important implication of these limited findings is that further examination of the specific practices that teachers utilize during reading instruction is warranted. In this study, reading components were examined more broadly and the explicit instructional strategies implemented were not documented. This is particularly important given the increasing demands on critical thinking and higher-level processing of texts across genres and content areas in the Common Core (CCSS, 2010). Students must be able to use a variety of comprehension strategies (e.g., Duke & Pearson, 2002) and, in order to promote student understanding of specific strategies, teachers must be knowledgeable of practices for teaching these critical comprehension skills such as inferencing (Cain et al., 2004; Cromley & Azevedo, 2007) and higher-level thinking and questioning (Knapp, Shields, & Turnbull, 1995; Taylor et al., 2003).

A couple of final implications from the present study involve the provision of supplemental instruction. First, current and recent findings suggest that many students with reading difficulties are not actually receiving additional instruction outside of Tier 1 instruction and may continue to struggle without support for remediating their deficits. Second, for those students receiving supplemental intervention, the present findings suggest that for students entering fourth-grade with reading difficulties, 20-30 min of additional instruction for one school year may not produce the desired impact. In this study, time allocation to specific intervention components was not related to positive student outcomes. Previous research has suggested the need for more intensive interventions for students in the upper grades (Vaughn, Denton, & Fletcher, 2010). There are promising results from studies that have provided either significant amounts of daily reading intervention (50-100 min) and/or for multiple years (Torgesen et al., 2001, 2006; Vaughn et al., 2012). Given the limited time and resources available, this may

require substantial shifts in thinking about models of instructional delivery for reading on the part of educational leaders. For example, schools may consider providing reading interventions outside of the typical school day (e.g., before or after school) and/or school year in order to devote sufficient time and intensity for remediation. Others have proposed regrouping students more homogeneously across classrooms during core reading instruction in order to embed instructional elements typically found in supplemental intervention such as direct, explicit instruction in targeted skills (Johnson & Boyd, 2013). This potential enhancement of Tier 1, coupled with supplemental reading intervention, may provide students with reading difficulties the intensity of instruction necessary to produce the gains required to remediate their deficits.

Limitations and Future Directions

Although this dissertation study serves to add to the observational literature on classroom reading instruction and the impact of specific instructional practices on student achievement for those students with reading difficulties, several limitations must be noted. First, it is possible that the descriptive data of core reading instruction in these struggling readers' classrooms does not fully portray all the reading instruction during fourth grade reading instruction. Given that only the scheduled core reading instruction block (Tier 1) was directly observed, this study did not directly measure reading instruction that all students may have received during other times in the day such as during science or social studies. Thus, it is possible that students received additional reading instruction than what was reported in this study. The description of core reading instruction in this study was also based on two observations across an entire school year. The use of two observations at different time points during the school year (fall and spring) is in line with previous observational studies of reading instruction (Kent et al., 2012; Wanzek, Roberts, Al Otaiba, & Kent, 2014). Further, Al Otaiba and colleagues (2008) specifically found

that literacy instruction was highly stable across observations of teachers and reported no significant differences in time or quality of instructional components when two versus three observations were conducted.

A second limitation is the fact that instructional quality during Tier 1 was measured by a single, global quality rating across all instructional activities. The ICE-R rubric for rating instructional quality consists of observable indicators of teacher behavior (i.e., modeling and scaffolding tasks, providing opportunities for practice, immediate corrective feedback, monitoring of performance, and engagement) during instruction that have been previously noted as effective (e.g., Duffy, 1987; Hattie & Timperley, 2007; NRP, 2000, Pressley et al., 2001). However, it is possible that the current rubric did not adequately capture instructional quality as it relates to how teachers engage students cognitively and linguistically in higher-level tasks required for promoting reading comprehension (Taylor et al., 1999, 2003). It would be particularly important to examine the relationship between teacher instruction in these types of tasks and student outcomes given the predominance of comprehension instruction during Tier 1 observations. Further, there are also other dimensions of teacher quality that were not explicitly included in the ICE-R rubric for instructional quality, such as elements of the emotional climate of the classroom, that have been linked to improved academic outcomes (e.g., Rimm-Kaufman & Chiu, 2007).

Another limitation of the present study was the small sample size of struggling readers. While this was an artifact of drawing the current sample from a larger, existing research project, the small sample limits power to detect relationships among predictors and outcomes and also limits the number and type of analyses to be performed. One specific example from this study was the treatment of level-1 predictors as fixed, rather than random, effects in order to estimate

the specified models. This sample also consisted primarily of students from low-SES and/or minority backgrounds who were identified as struggling readers and, as such, these findings can only be generalized to similar populations of students. While the present findings and that of Haynes and Jenkins (1996) found relatively insignificant effects of specific reading activities on student achievement after accounting for initial status, other studies with more typically-performing students in the lower grades have reported significant instructional predictors as well as interactions between initial status and teacher instruction (Connor et al., 2004, 2014; Foorman et al., 2006). Thus, the field may benefit from a better understanding of whether various dimensions of core reading instruction differentially predict reading achievement and growth in the upper elementary grades for students of different achievement levels.

Finally, the current study only considered instructional predictors and student's initial reading status in the fall of fourth grade to examine the impact on end of year outcomes. While these variables accounted for a large portion of the variance in student outcomes, there was still unexplained student-level variance that could have been accounted for by examining the effect of other student characteristics that might impact a student's response to instruction. In general, several student-level variables appear to be related to whether a student demonstrates adequate response to intervention in younger students, including memory, rapid naming, vocabulary, IQ, and attention/behavior (e.g., Al Otaiba & Fuchs, 2002, 2006; Nelson, Benner, & Gonzalez, 2003; Tran, Sanchez, Arellano, & Swanson, 2011). Further, evidence exists supporting the influence of these skills on reading comprehension in individuals beyond the primary grades (e.g., Cain & Bignell, 2014; Cain, Oakhill, & Bryant, 2004; Hall et al., 2014; Wood, 2008). Thus, in order to further the extant literature on RTI, research that examines both instructional and student-level factors would be warranted.

APPENDIX A

IRB APPROVAL MEMO



Office of the Vice President For Research
Human Subjects Committee
P O Box 3062742
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM (for change in research protocol)

Date: 09/04/2014

To: Jeanne Wanzek

Address:

Dept: FLORIDA CENTER FOR READING RESEARCH

From: Thomas L. Jacobson, Chair

Re: Use of Human subjects in Research

Project entitled: Passport to Literacy: Examining the Effectiveness of the Voyager Passport Intervention for Fourth-grade Students With or At High Risk for Reading Disabilities

The application that you submitted to this office in regard to the requested change/amendment to your research protocol for the above-referenced project has been reviewed and approved.

Please be reminded that if the project has not been completed by 04/08/2015 , you must request renewed approval for continuation of the project.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Barbara Foorman , Chair
HSC NO. 2014.12812

1. Project Title and Identification**1.1 Project Title**

Passport to Literacy: Examining the Effectiveness of the Voyager Passport Intervention for Fourth-grade Students With or At High Risk for Reading Disabilities

Project is: **faculty research**

1.2 Principal Investigator (PI)

Name (Last name, First name MI): Wanzek, Jeanne	Highest Earned Degree: Doctorate
Mailing Address:	Phone Number:
	Fax:
University Department: FLORIDA CENTER FOR READING RESEARCH	Email:
The training and education completed in the protection of human subjects or human subjects records: NIH Other	Occupational Position: Faculty

1.3 Co-Investigators/Research Staff

Name (Last name, First name MI): Schatschneider, Christopher ; Co-Investigator	Highest Earned Degree: Doctorate
Mailing Address:	Phone Number:
	Fax:
University Department: FLORIDA CENTER FOR READING RESEARCH	Email:
The training and education completed in the protection of human subjects or human subjects records: NIH	Occupational Position: Faculty
Name (Last name, First name MI): Petscher, Yaacov ; Co-Investigator	Highest Earned Degree: Doctorate
Mailing Address:	Phone Number:
	Fax:

University Department: FLORIDA CENTER FOR READING RESEARCH	Email:
The training and education completed in the protection of human subjects or human subjects records: NIH	Occupational Position: Faculty
Name (Last name, First name MI): Kent, Shawn ; Research Staff	Highest Earned Degree: Master's Degree
Mailing Address:	Phone Number:
	Fax:
University Department: FLORIDA CENTER FOR READING RESEARCH	Email:
The training and education completed in the protection of human subjects or human subjects records: NIH	Occupational Position: Student

APPENDIX B

SAMPLE CONSENT FORM

CONSENT FORM

Passport to Literacy

My name is Jeanne Wanzek and I am a faculty member from the Florida Center for Reading Research at Florida State University. You are being asked to allow your child to participate in a research study on additional reading instruction. This form provides you with information about the study. The person in charge of this research can answer any questions you have about the study upon request. We ask that you read this form and ask any questions you may have before agreeing to allow your child to take part in this study.

The purpose of this study is to test additional reading instruction to learn more about reading for fourth grade students in order to help students and teachers. Selected fourth grade students will be provided reading tests at the beginning and end of the school year. If your child demonstrates difficulty with reading your child will also be eligible to receive additional reading instruction as part of the study. Not all students will receive the additional reading instruction. Students who are not selected for the additional reading instruction will continue with the usual instruction.

If you agree to be in this study, we will ask your child to do the following things:

- At the beginning of the school year, your child will take a reading test to see if s/he can be in the study.
- If chosen for the study, your child will participate in reading tests given in the fall and spring of fourth grade and the fall and spring of fifth grade.
- If chosen for the study, your child may also receive additional reading instruction during the 2013-2014 school year provided by teachers from the Florida Center for Reading Research at Florida State University (FSU). The instruction will be given in addition to the reading instruction from your child's classroom teacher. Students who are chosen for the study will be randomly selected to receive the FSU instruction or not. The students who are not selected for the additional reading instruction provided by FSU will participate in the testing only and continue to receive any instruction provided by the school.

Some reading lessons will be audiotaped. Student demographic and state assessment data will be requested from the school.

Total estimated time to participate in study is approximately 30-35 minutes each day during school during the 2013-2014 school year. It will also take about two hours total for testing in the fall and spring of the 2014-2015 school year.

Risks of being in the study

- There are no known risks associated with this project.

Benefits of being in the study

- Students will receive additional reading services (reading tests, reading instruction) free of charge. Students may learn skills and strategies to help them read and understand.

Confidentiality and Privacy Protections:

- There is no charge for the extra instruction or testing. The instruction and testing are free. The testing for the study will NOT affect students' grades in their classes.
- Results will be available only to school personnel and the study researchers.

FSU Human Subjects Committee approved on 6/13/2013. Void after 6/11/2014. HSC # 2013.10524

- You will be provided a copy of the results upon request.
- The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate your child with it, or with his/her participation in any study.

The **records** of this study will be stored securely and kept confidential to the extent permitted by law. Only authorized persons from the research team, members of the Institutional Review Board, and the study sponsor have the legal right to review your child's research records and will protect the **confidentiality** of those records to the extent permitted by law.

Voluntary Participation: Your child's participation is entirely voluntary. You can choose for your child to stop participating at any time and your refusal will not impact current or future relationships with FSU or your child's school. To do so simply tell the researcher you wish for your child to stop participation.

The researcher for this study is Jeanne Wanzek. You may reach her at 850-644-9080, or jwanzek@fcr.org. Please feel free to ask any questions you have now, or at any point in the future. If you have any questions or concerns about your child's rights as a research subject, you may contact the FSU Institutional Review Board (IRB) at 850-644-8633 or you may access their website at <http://www.fsu.research.edu>. You will be given a copy of this consent form for your records.

Please enter your child's name, check the appropriate box, sign in the space provided below, and return to your child's teacher as soon as possible.

Your child's name: _____

☐ I give my permission for my child to participate in this study.

☐ I do not give permission for my child to participate in this study.

Your signature: _____ Date _____

Please return to your child's teacher once completed and signed. Thank you for your cooperation.

APPENDIX C

INSTRUCTIONAL CONTENT EMPHASIS INSTRUMENT-REVISED

Coding Form

Dimension A: Content category (1-8)

Dimension B: Instructional Grouping (1-5)

Global Quality Indicator (1-4)

Time	Brief summary of activity	Content		Student Engagement (Tier 1 only)
		A	B	

Global Quality Observation			
4 <i>Excellent</i>	3 High Average	2 Low Average	1 Weak

DIMENSION A Codes

Dimensions/activities should last at least 15 seconds in order to be coded.

<u>Dimension A ↓</u>	<u>Descriptors</u>
1. Phonological awareness	<p>The ability to recognize the sounds in spoken language and how they can be segmented (pulled apart), blended (put back together), and manipulated (added, deleted and substituted).</p> <p>Characterized by:</p> <ul style="list-style-type: none">• Absence of print; based on spoken language• Rhyming• Blending or segmenting sentences/• Syllables• Onset rime• Blending or segmenting phonemes• Isolation tasks• Any other manipulation of sounds, such as alliteration activities, comparison tasks, deletion or substitution of phonemes.
2. Phonics/ Word Recognition	<p>The alphabetic principle (AP) is the idea that letters represent sounds of spoken words and letters can represent sounds in a sequence.</p> <p>Examples include:</p> <ul style="list-style-type: none">• Teaching letter/ sound relationships• Providing opportunities for application of letter/sound knowledge to reading/writing/spelling• Teaching irregular words• Word reading• Other instruction aimed at strategies for reading words telling students words while reading texts.
3. Fluency	<p>Students read aloud to develop speed, accuracy, or intonation. NOTE: The INTENT is on improving how quickly and accurately students read words. The intent is not necessarily understanding what is read. Reading aloud is not necessarily fluency.</p> <p>Examples include:</p> <ul style="list-style-type: none">• Letter or sound naming fluency• Word fluency• Repeated reading of text• Other activities include instruction aimed at developing speed and accuracy, such as students listening to books read aloud with the intent of modeling speed, accuracy and intonation (could be teacher, computer, or books on tape), silent reading with the stated purpose of developing speed or accuracy, or incidental comments made by teacher during reading about reading with more speed.

<u>Dimension A ↓</u>	<u>Descriptors</u>
4. Vocabulary/ Oral language development	<p>Students have the opportunity to develop their print or oral language development. Focus is on listening and speaking to communicate meaning.</p> <p>For example:</p> <ul style="list-style-type: none"> • Children are taught vocabulary words directly • Vocabulary acquisition is embedded in other instructional events • Categorizing words such as naming the items or activities associated with a special place (e.g., beach) • Students use context knowledge to confirm meaning • Vocabulary consists of word lists, story words • Teacher and students engage in discussion about words, books, songs, or relevant topics focused on meaning of words or concepts
5. Comprehension	<p>Instruction focused on understanding the meaning of written or oral text. This includes instruction and practice in using comprehension strategies and demonstration of comprehension abilities.</p> <p>Examples include:</p> <ul style="list-style-type: none"> • Prior knowledge/predicting • Reading comprehension monitoring, including: <ul style="list-style-type: none"> ○ during or after reading, students answer questions generated by teacher or student ○ teacher and students discuss or respond to reading ○ students discuss elements not explicitly found in the text ○ students retell a story ○ students summarize a story's main events ○ students identify the main idea ○ students put story events into a sequence • Listening comprehension monitoring (the focus is comprehension of text read aloud by someone else when students do not have text copy).
6. Spelling	<p>Students are learning to remember and reproduce conventional spelling, (e.g., spelling lists & lessons; if the intent is letter/sound correspondence, it should be coded 2. Phonic/Word Recognition).</p> <ul style="list-style-type: none"> • differs from phonics in that the task of the student is writing or orally spelling words in response to dictated words • study and/or practice of a particular spelling pattern (EX: patterns like "ll" as in "doll") *differs from phonics instruction in its <i>intent, to remember and reproduce conventional spelling</i>

<u>Dimension A</u> ↓	<u>Descriptors</u>
7. Text Reading	<p>Students engage in silent or oral reading, either with class, small group, one-on-one, or individually, with no other category of instruction occurring.</p> <p>Examples include;</p> <ul style="list-style-type: none"> • Supported oral reading or choral reading • Independent silent reading or independent oral reading • Teacher reads aloud, and students listen or read along • Students listen to books read aloud on <u>computer</u> or <u>tape</u> with minimal emphasis on instruction. • Singing or chanting a known pattern or song with text (it is difficult to know if students are really “reading” the text or just singing the memorized words to the song)
8. Other	<ul style="list-style-type: none"> • Non-literacy activities • Transitions • Behavior management • Calendar

Dimension B: INSTRUCTIONAL GROUPING	
* code only formal structures arranged by the teacher, not informal or incidental grouping	
1. Whole class (not to be used for intervention)	<ul style="list-style-type: none"> • the entire class is involved in the same activity or assignment.
2. Small group	<ul style="list-style-type: none"> • class is working in 2 or more groups, with 3 or more students per group • could be teacher working with a group of 2 or more students • although the seating arrangement of the classroom may be affected by group activities, this item relates to student interaction in a group, not seating arrangement
3. Pairing	<ul style="list-style-type: none"> • class is working in groups of 2 • one child acts as a peer tutor to another student • most of the students are working in pairs • students are in groups of two to share notes, tutor, or work on an assignment/activity
4. Independent	<ul style="list-style-type: none"> • students are engaged individually in an activity/assignment like others in the class (help-seeking behaviors may be observed between students but they are not working in a group)

5. Individualized (differentiated)	<ul style="list-style-type: none"> • students work on differentiated assignments • students are not involved in pairing or group activities and are working individually on differentiated assignments • teacher works individually with a student for 5 minutes or more
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ICE-R Quality Indicators and Descriptions

4 <i>Excellent</i>	3 <i>High Average</i>	2 <i>Low Average</i>	1 <i>Weak</i>
Teacher uses language that is direct and explicit.	Teacher inconsistently uses language that is direct and explicit.		Teacher uses language that is indirect and implicit.
Models many examples	Provides some examples.		Provides no models or demonstrations.
Provides sufficient and varied opportunities for practice.	Provides many opportunities for practice with little variation. Practice opportunities do not seem to be based on student need.		Provides insufficient opportunities for practice with no variation.
Provides immediate and corrective and descriptive feedback.	Provides inconsistent feedback.		Provides little feedback that is nonspecific or no feedback.
Adjusts time to meet student needs.	Uses time appropriately, but use does not seem based on student need, yet still seems adequate for given activity.		Demonstrates poor use of time that is not differentiated and unrelated to student need or task difficulty.
Constantly monitors student performance.	Monitors some students or monitors all students for some activities.		Demonstrates lack of monitoring or monitoring very few students.
Encourages high student engagement and time on task.	Encouragement of student engagement and time on task varies.		Does not encourage student engagement and time on task.
Scaffolds tasks and materials to meet student needs.	Uses scaffolding inconsistently and does not always tailor it to student needs.		Scaffolds inappropriately or insufficiently.
Uses appropriate pacing, including wait time.	Uses inconsistent pacing that varies between appropriate at times to “too fast” or “too slow” and provides insufficient wait time.		Demonstrates poor pacing, either too slow or too fast with no wait time provided.

Note: Teachers must meet most of the observable indicators to be coded in a particular category (i.e. If a teacher is rated as excellent in 3 categories, and high average in 1, the overall rating would be excellent. However, if the behavior that is rated as average is the most salient or frequently observed behavior for a particular lesson or activity, the overall rating for that category should be adjusted.). Remember to base ratings only on observable behaviors relative to lessons and activities.

Rules for Determining Quality Indicators

Use the following guidelines for assigning quality indicators for each instructional event or activity.

1. The majority determines the quality rating
 - Rating should be based on observable behavior using professional judgment, not inferences.
 - The framework for thinking about teacher quality is based on the assumption that a teacher who falls into the “Excellent” category is one who addresses the needs of a struggling reader.
 - A rating of high average, low average or weak represents the degree to which a teacher deviates from this standard. For example, a teacher who is rated low average may be an effective teacher for most students, but is not addressing the needs of struggling readers.
2. Assignment of “Low Average” or “High Average”
 - Low average: Some indicators under “weak” are present, but the majority fall under “average.”
 - High average: Some indicators under “excellent” are present, but the majority fall under “average.”
 - Special consideration: If a teacher meets a majority (5) of indicators under “weak” and all others under “excellent,” the teacher’s rating would be “low average” for that event.
3. Assignment of “Weak” or “Excellent”
 - To clearly assign either of these extreme ratings, almost all (or super majority) of indicators must fall within the excellent or weak range.
 - Considering how closely the teacher meets the needs of a struggling reader makes the distinction between excellent and high average.
4. Situation: All indicators fall within “average” column
 - Professional judgment should be used to determine whether to rate as low or high average.
 - Remember to keep the struggling reader in mind.

- If the teacher has farther to go to meet the needs of the struggling reader, rate as low average.

Indicators of Engagement

**count students as engaged if they are following along or focused on activity, but not necessarily vocally participating.*

- 3 High engagement** = almost all students are actively engaged in learning activity (reading, writing, listening, talking about a relevant topic)
- 2 Medium engagement** = most students are actively engaged in learning activity (reading, writing, listening, talking about a relevant topic)
- 1 Low engagement** = More than half staring out the window, engaging in idle chatter, fiddling with materials, inappropriately moving about the classroom

APPENDIX D

FIGURES

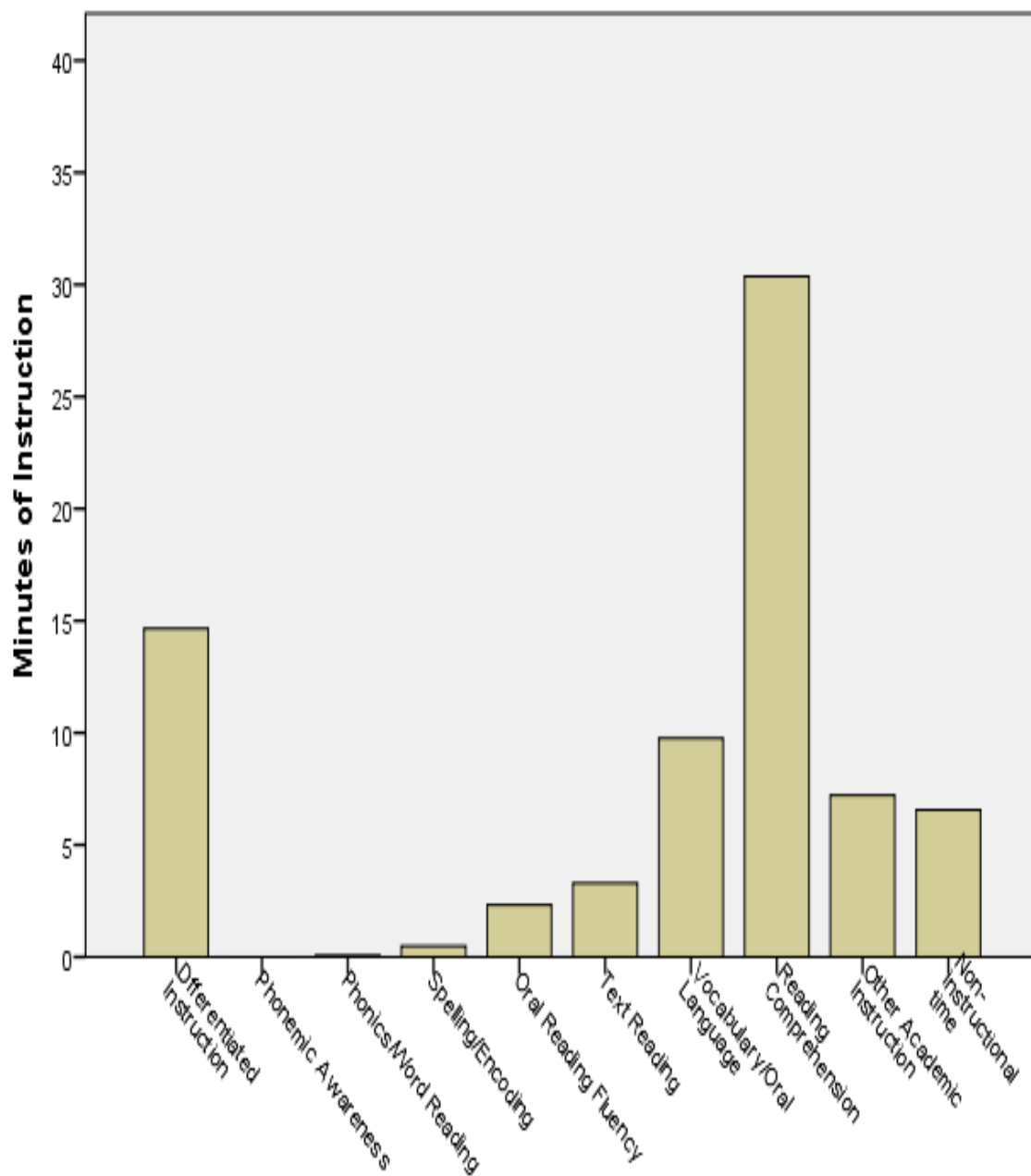


Figure 1. Allocation of Tier 1 reading instruction in fourth grade classrooms.

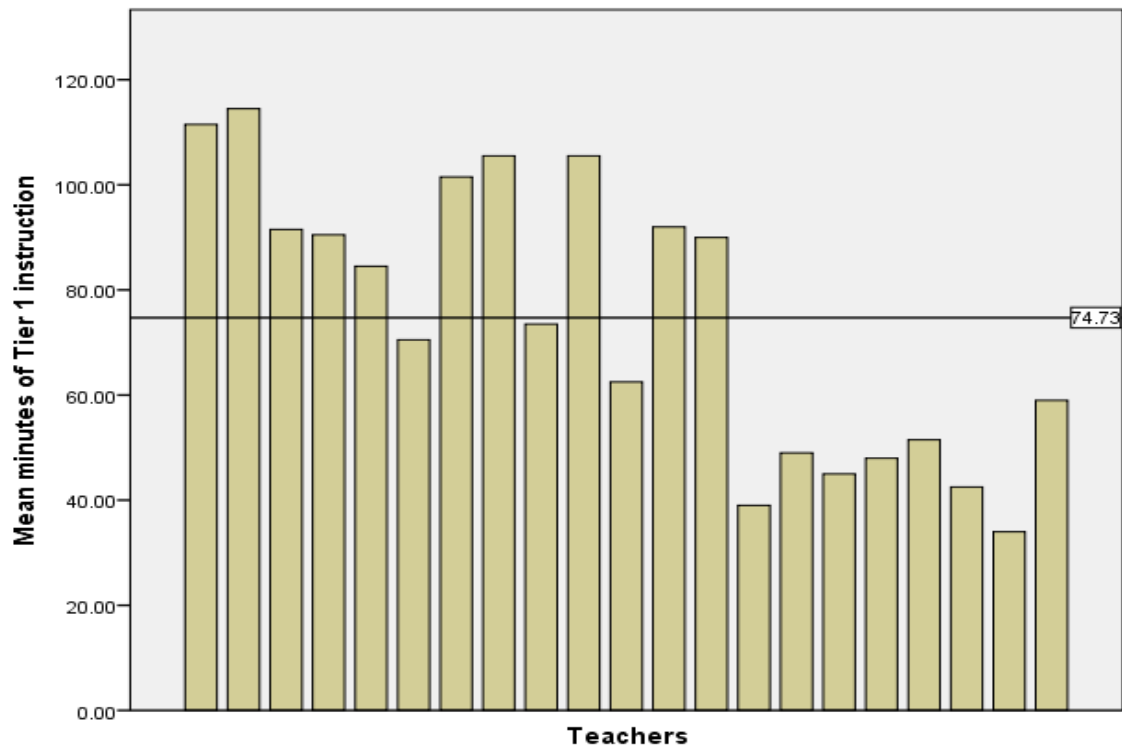


Figure 2. Distribution of classroom means for Tier 1 reading instruction.

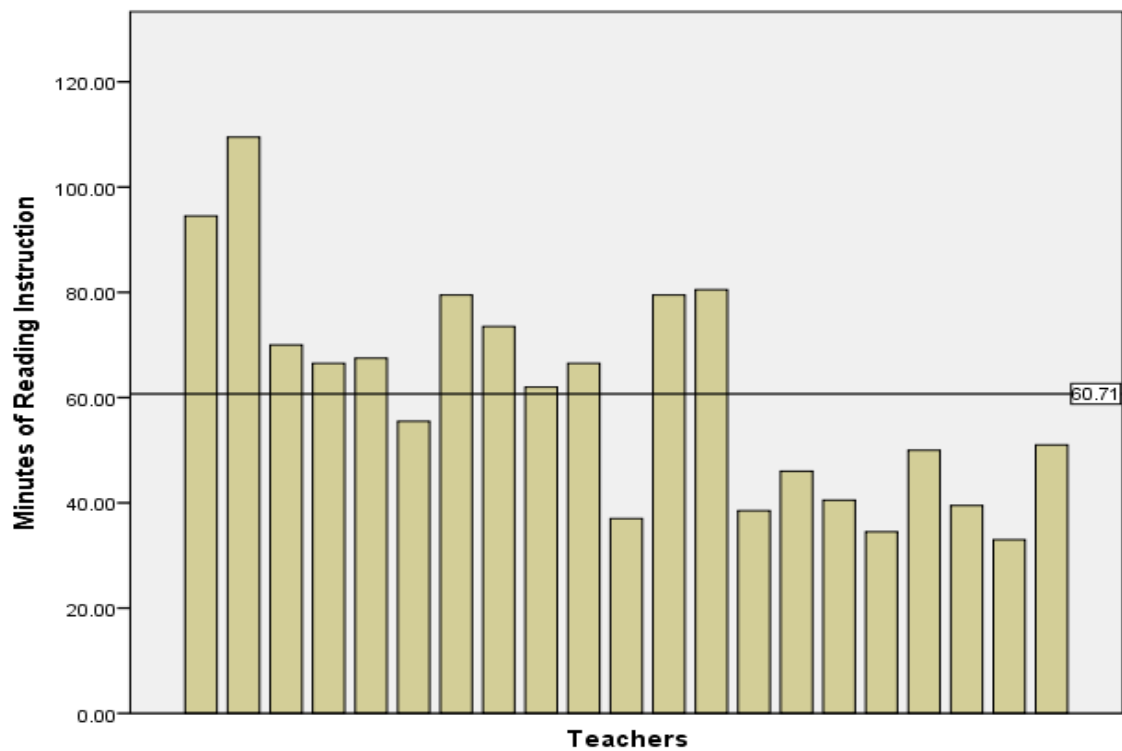


Figure 3. Distribution of classroom means for total minutes of reading-related instruction.

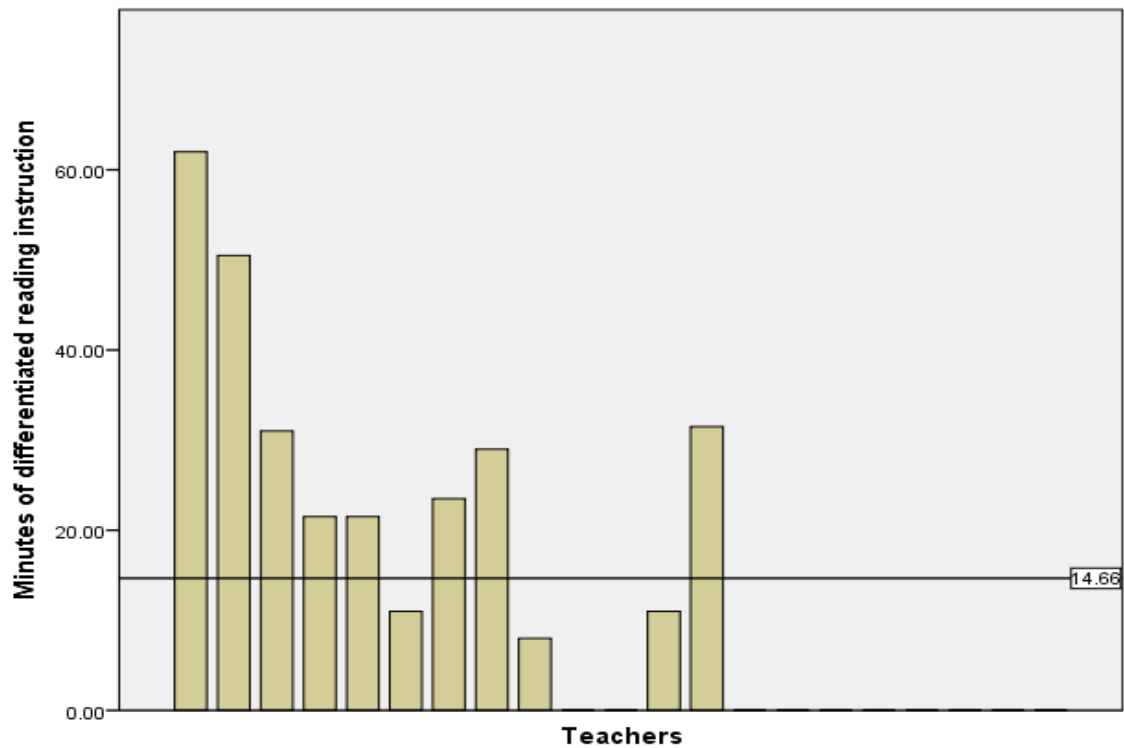


Figure 4. Distribution of classroom means for differentiated instruction.

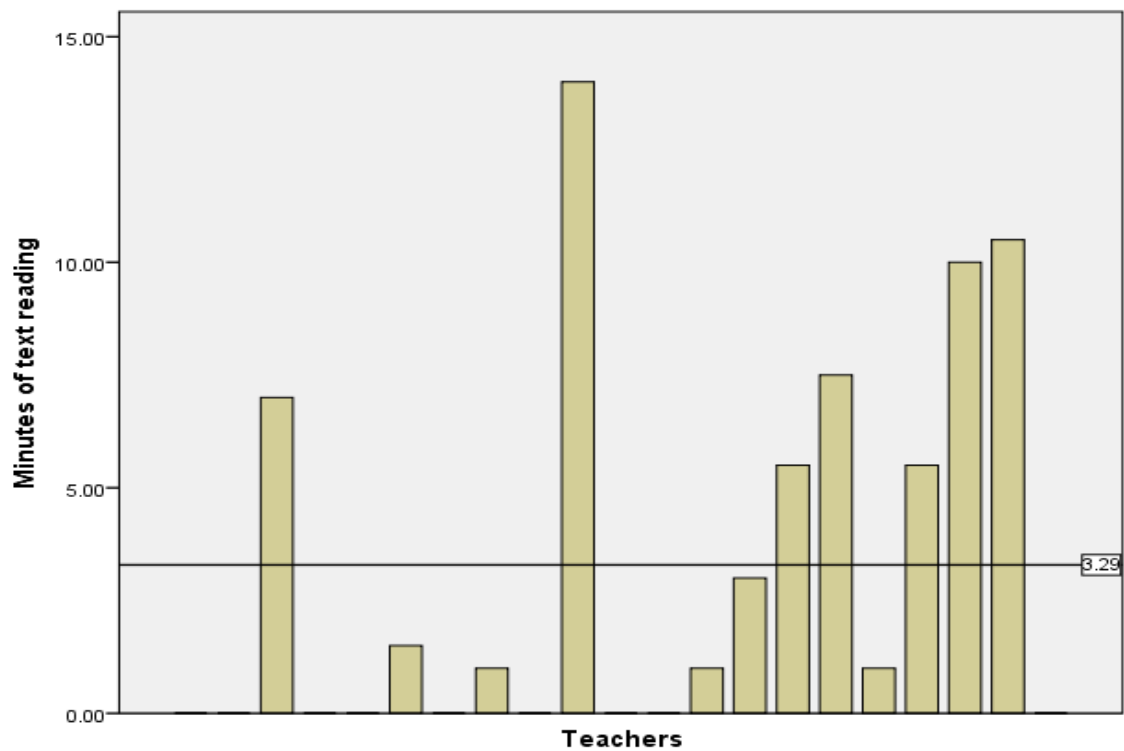


Figure 5. Distribution of classroom means for text reading activities.

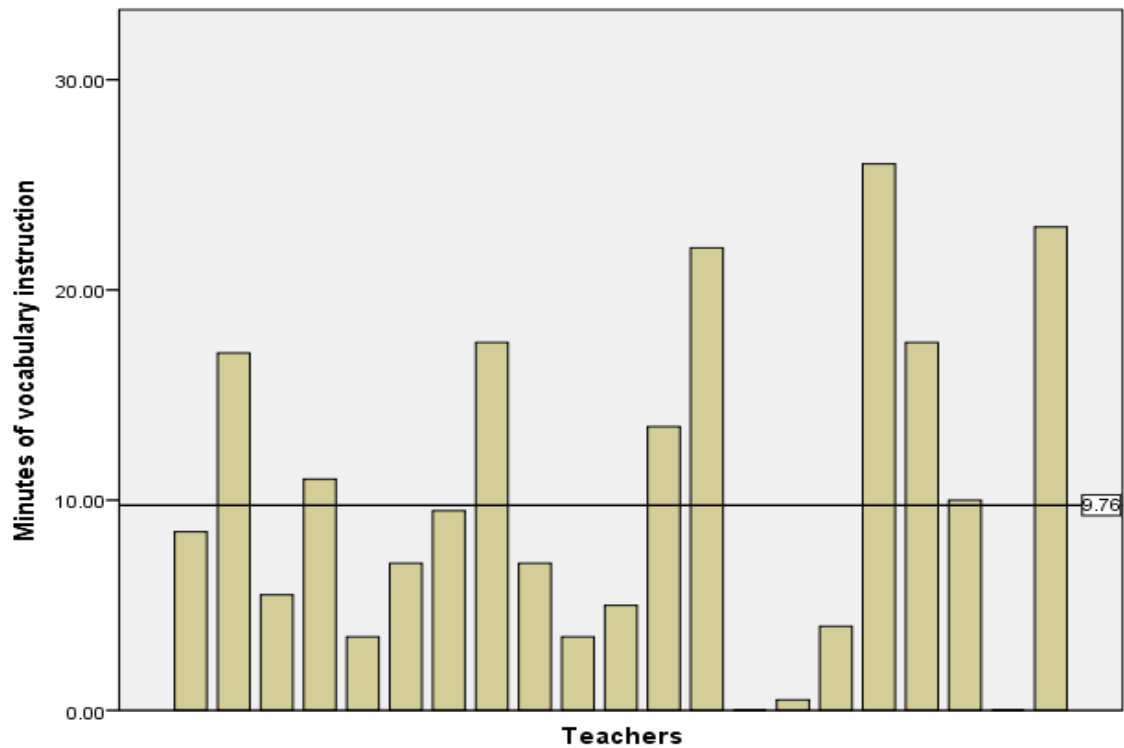


Figure 6. Distribution of classroom means for vocabulary/oral language instruction.

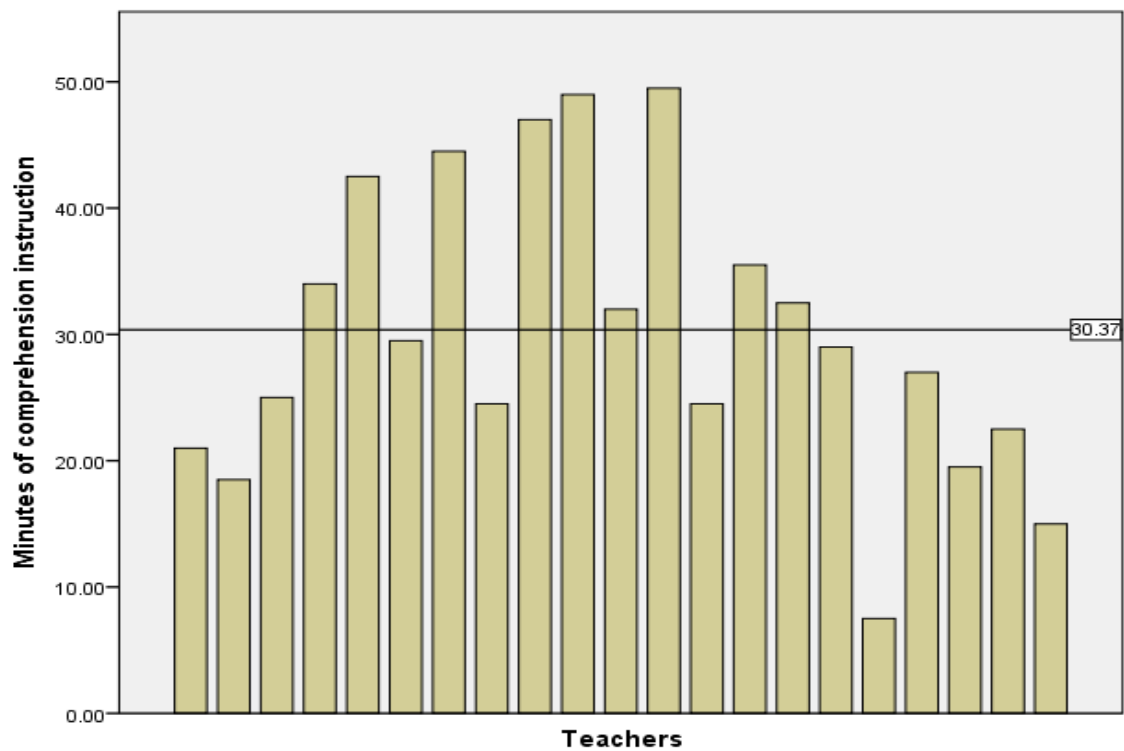


Figure 7. Distribution of classroom means for reading comprehension instruction.

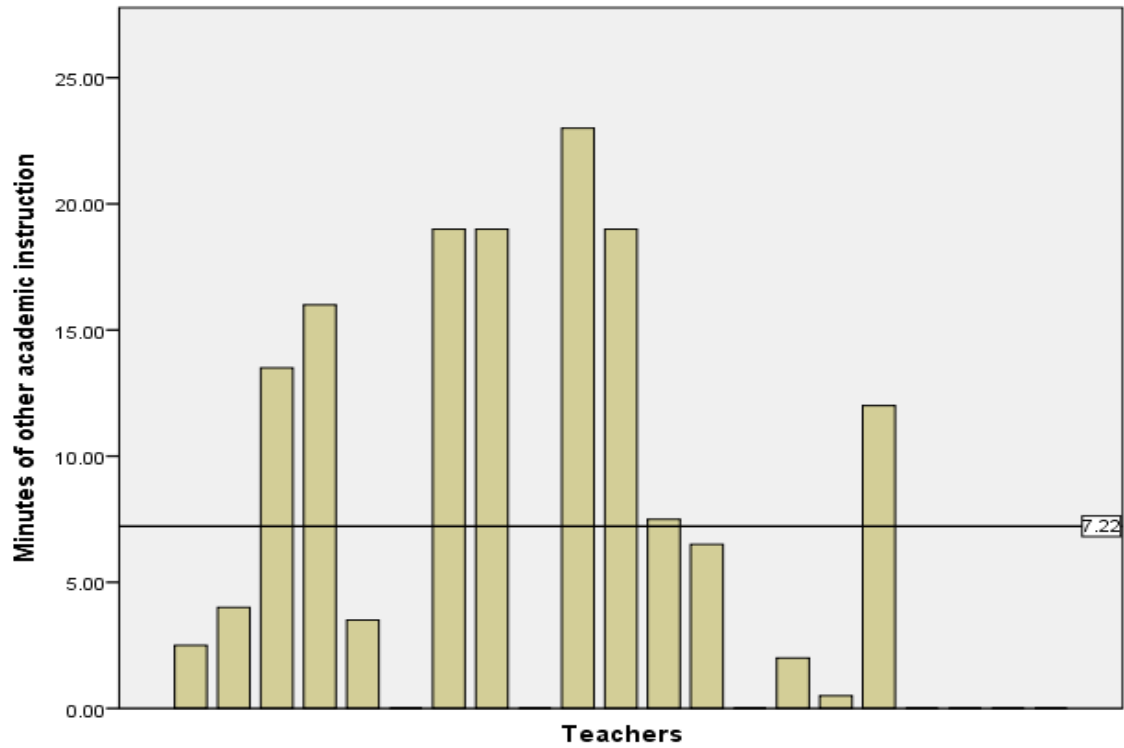


Figure 8. Distribution of classroom means for other academic instruction.

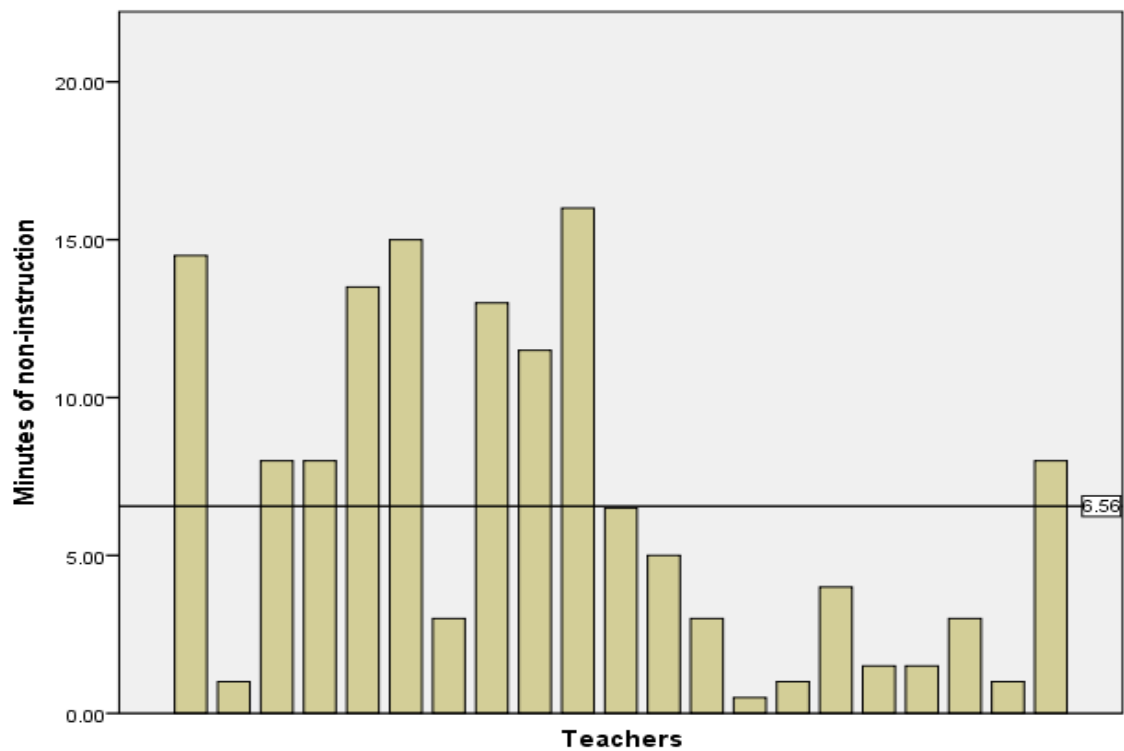


Figure 9. Distribution of classroom means for non-academic activities.

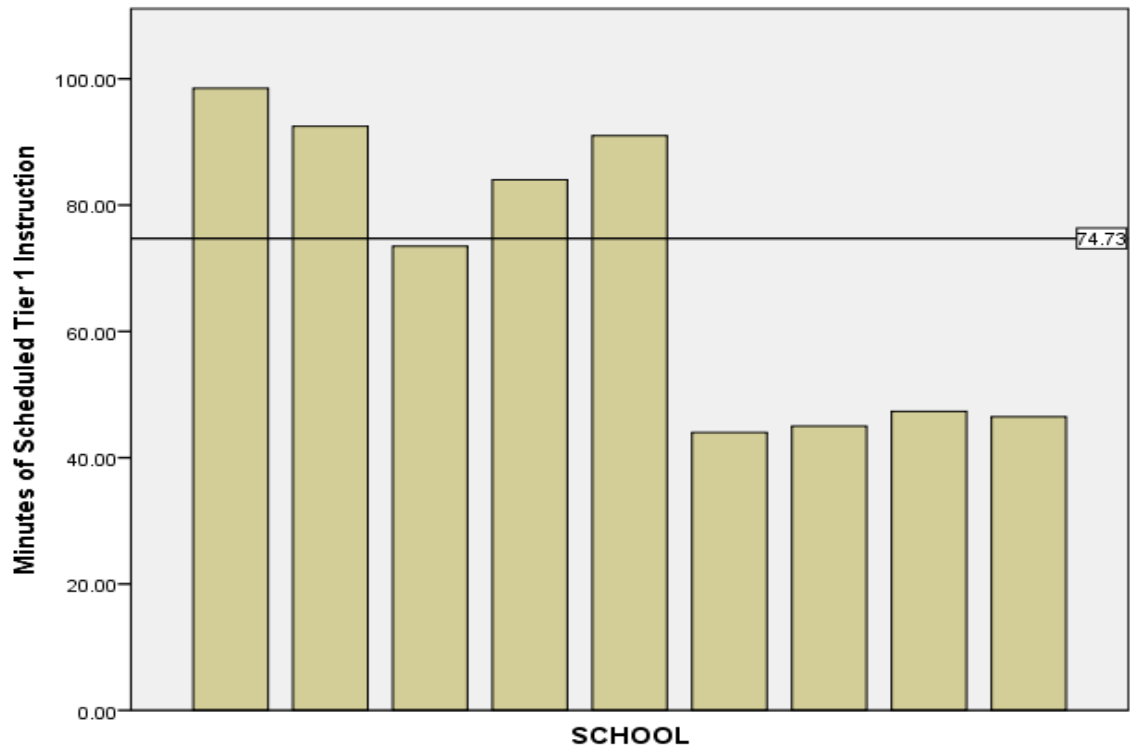


Figure 10. Distribution of school means for Tier 1 reading instruction.

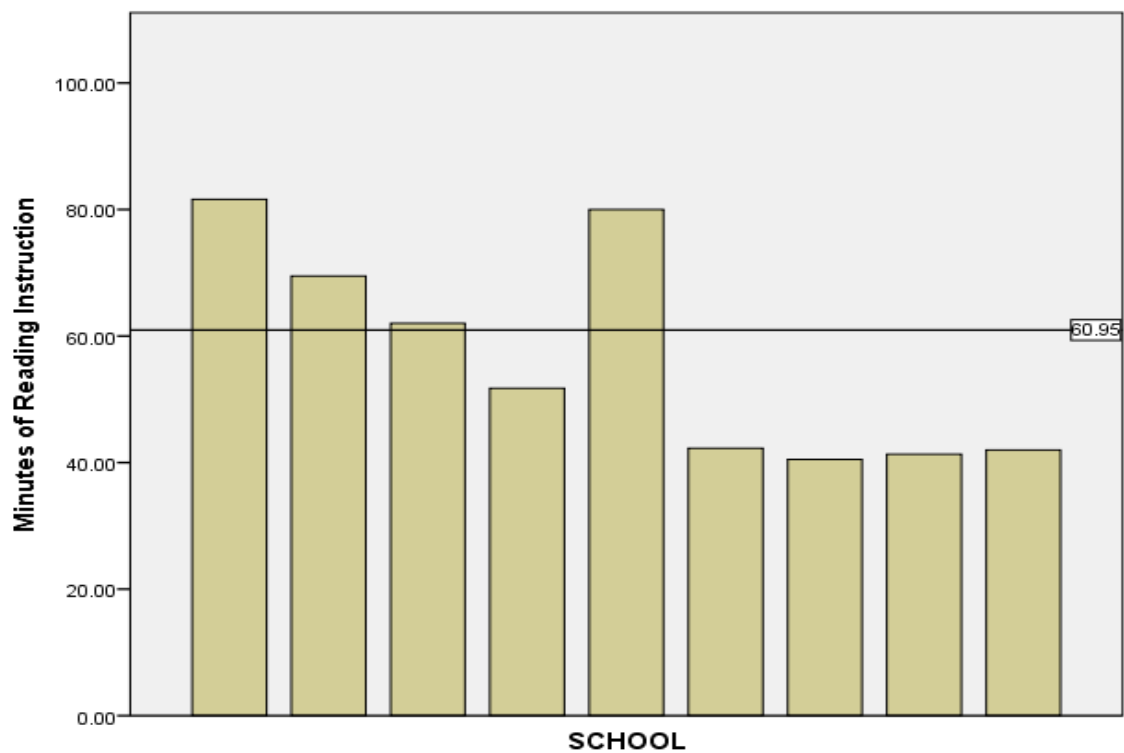


Figure 11. Distribution of school means for total minutes of reading-related instruction.

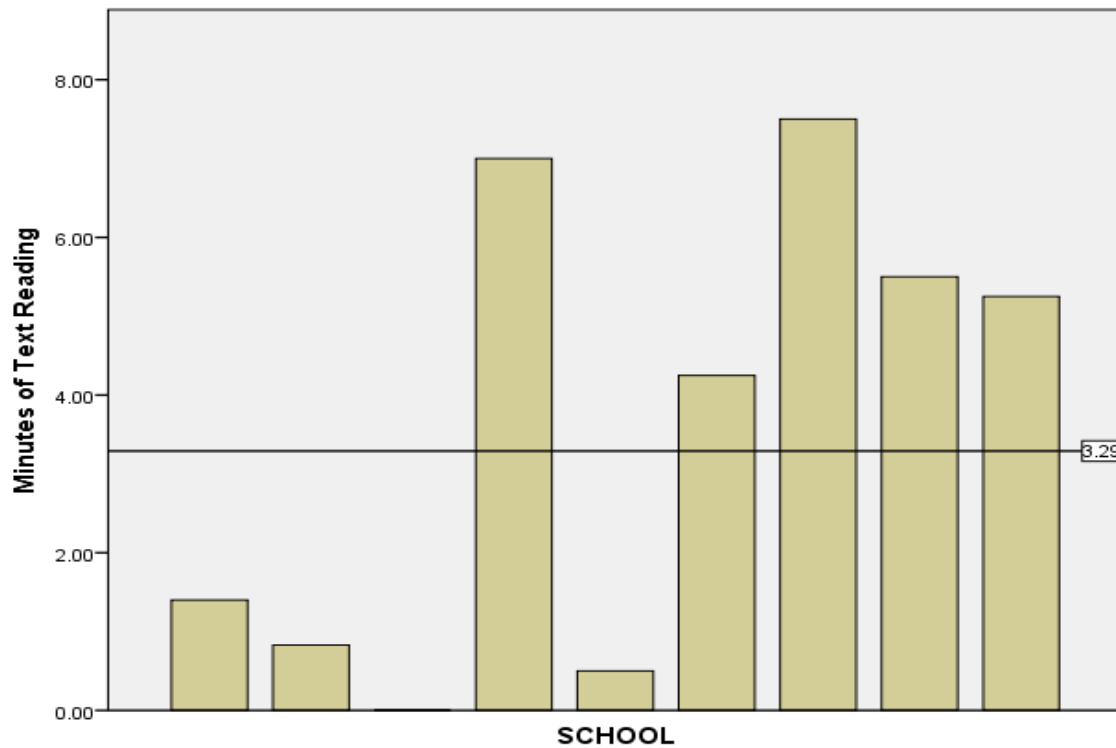


Figure 12. Distribution of school means for text reading activities.

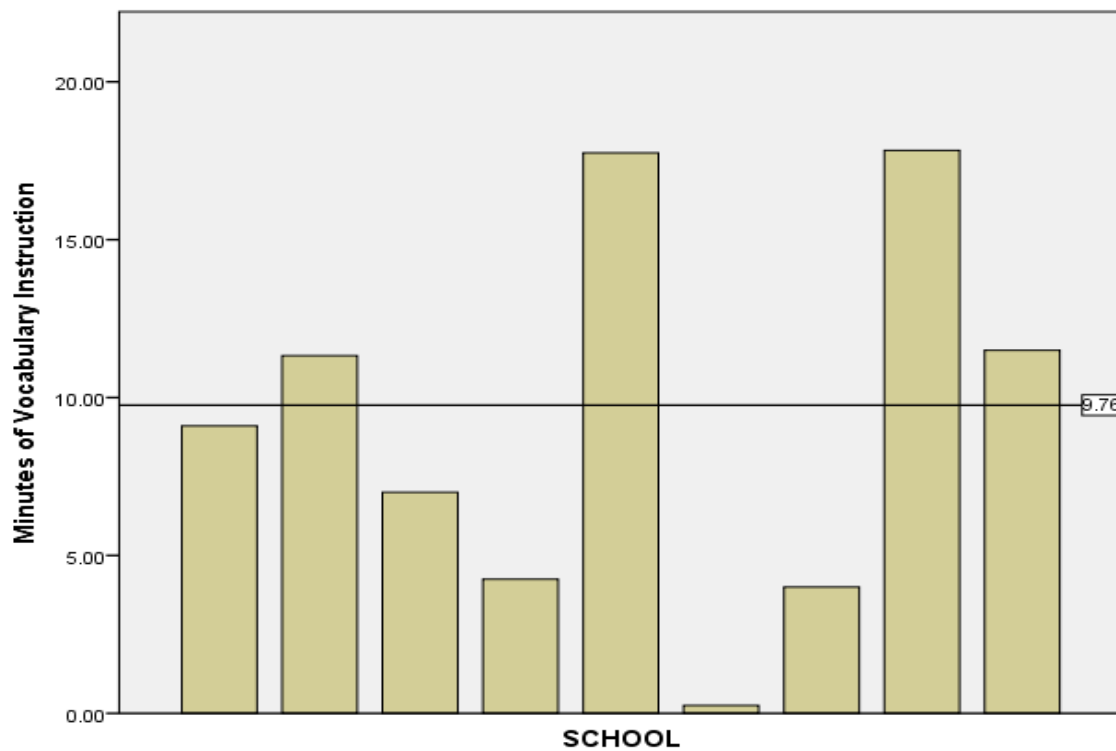


Figure 13. Distribution of school means for vocabulary/oral language instruction.

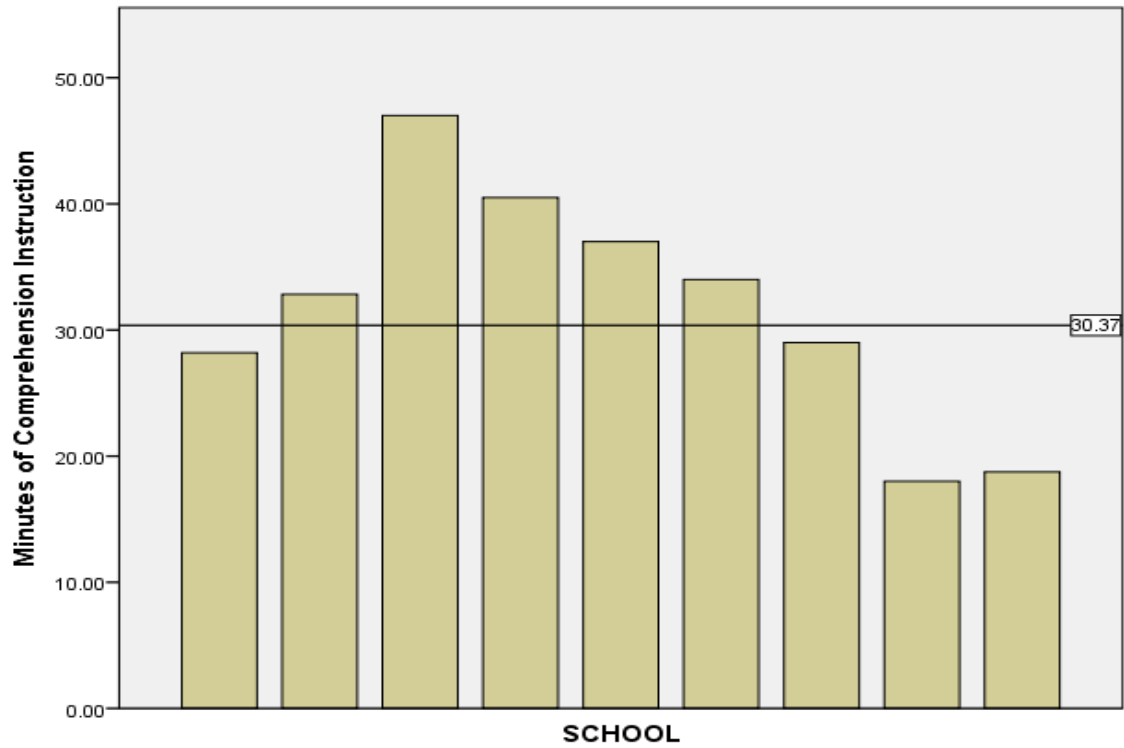


Figure 14. Distribution of school means for reading comprehension instruction.

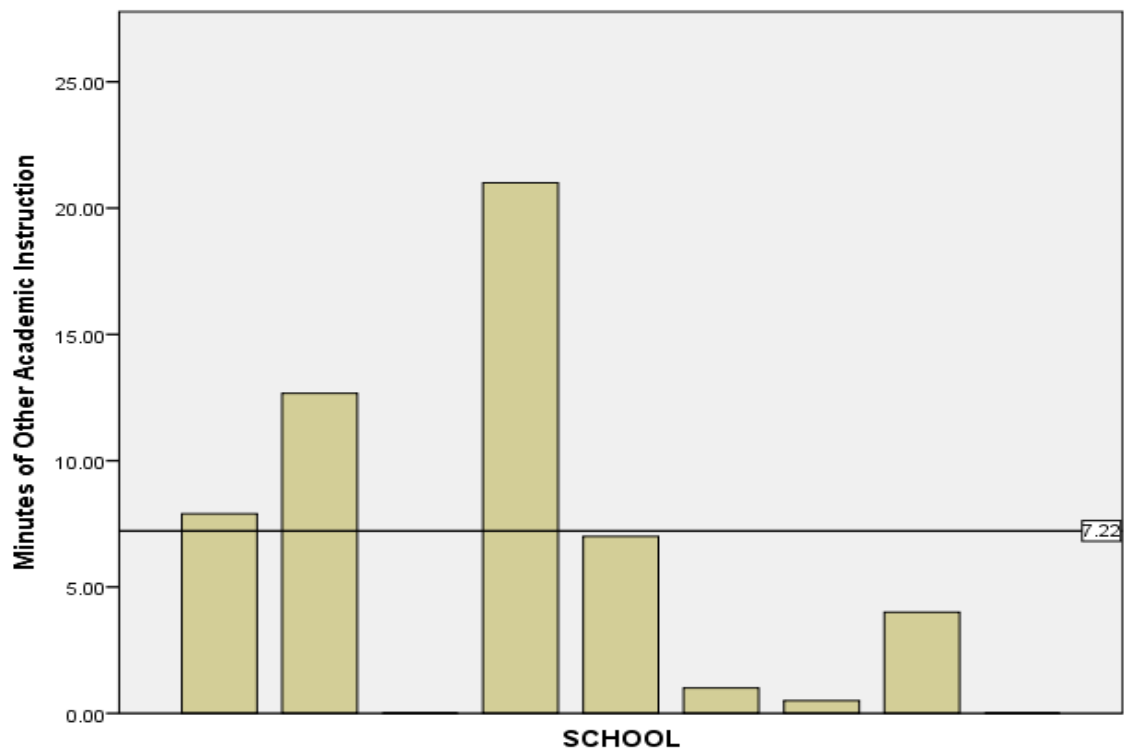


Figure 15. Distribution of school means for other academic instruction.

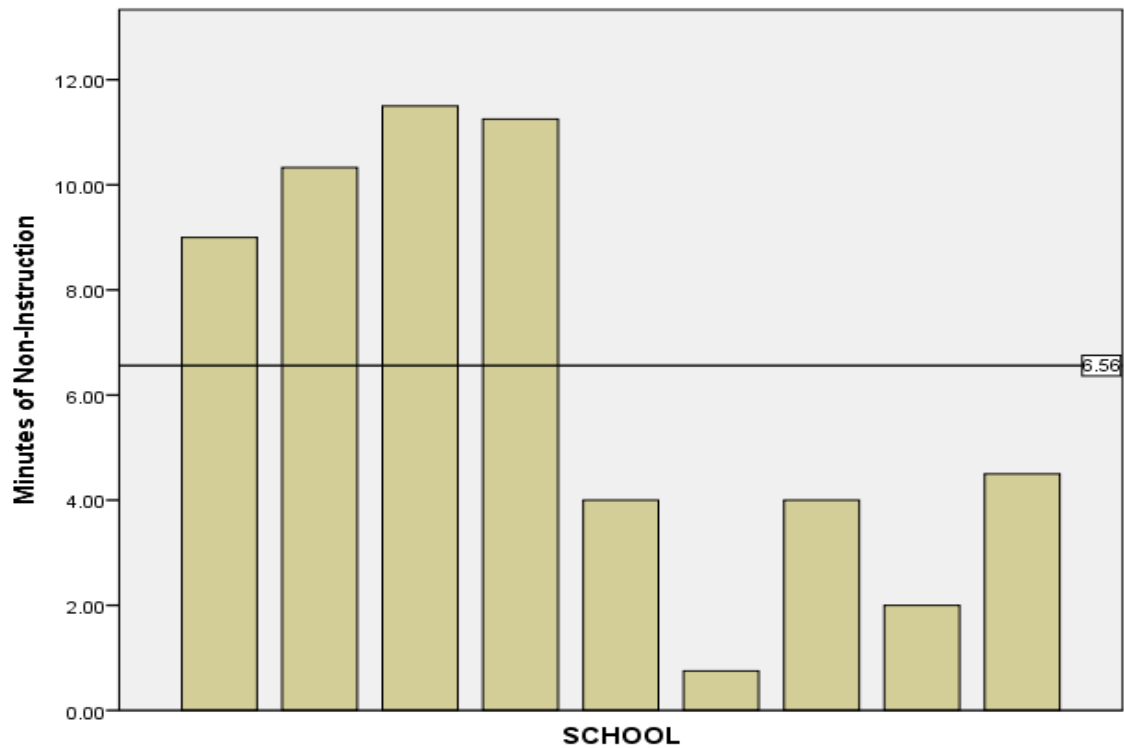


Figure 16. Distribution of school means for non-academic activities.

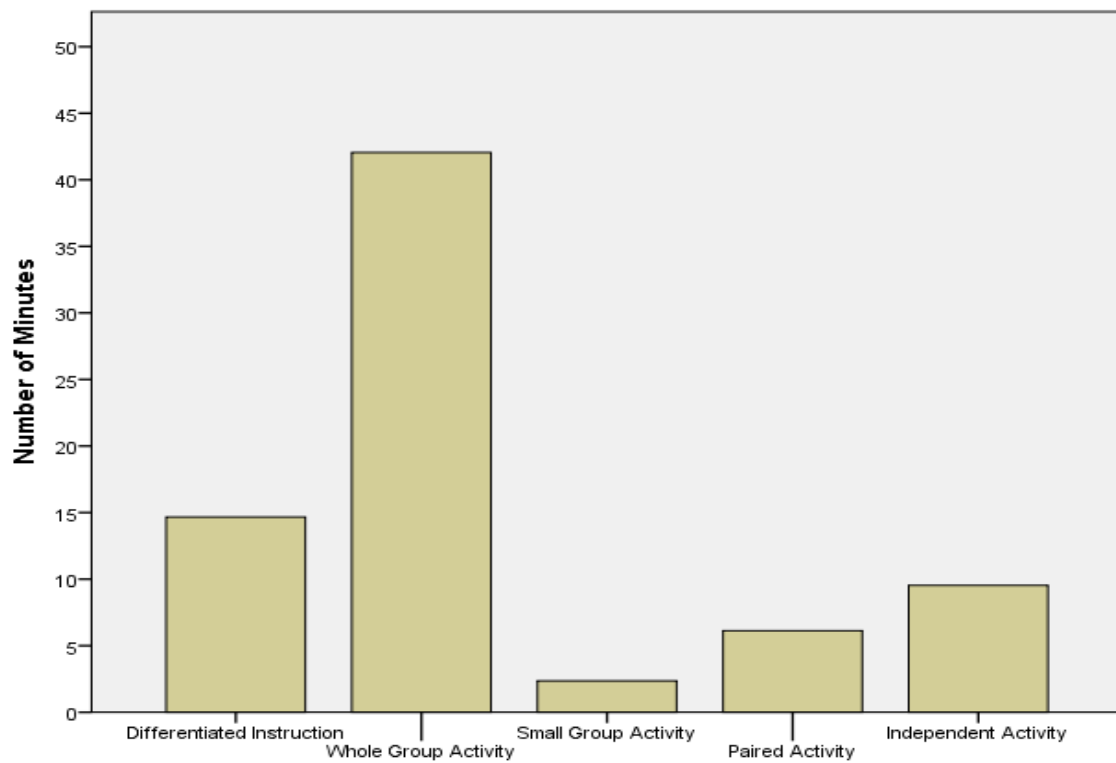


Figure 17. Instructional groupings during Tier 1 reading in fourth grade classrooms.

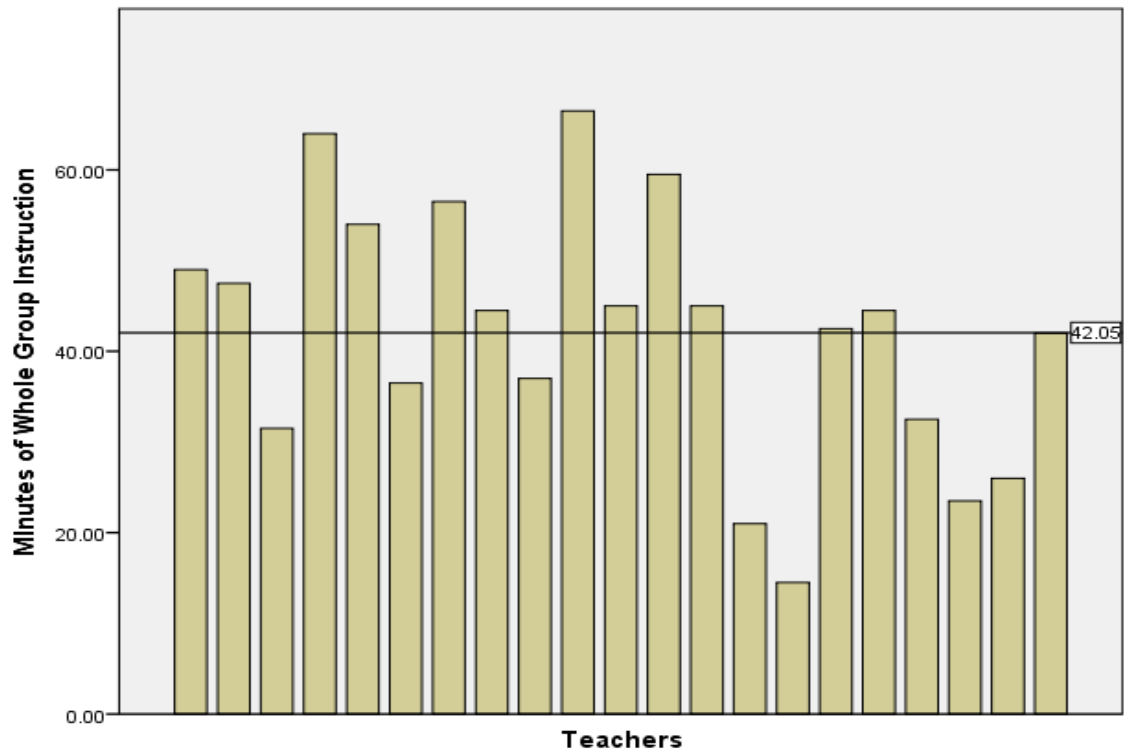


Figure 18. Distribution of classroom means for whole-group reading instruction.

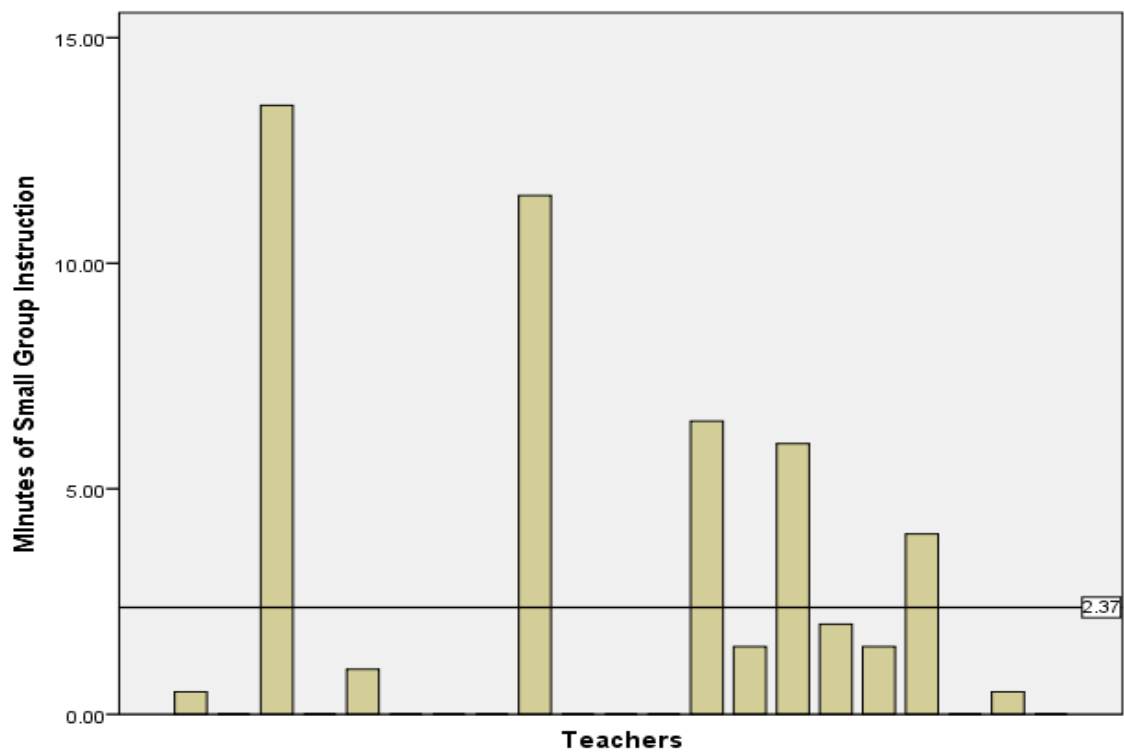


Figure 19. Distribution of classroom means for small-group reading instruction.

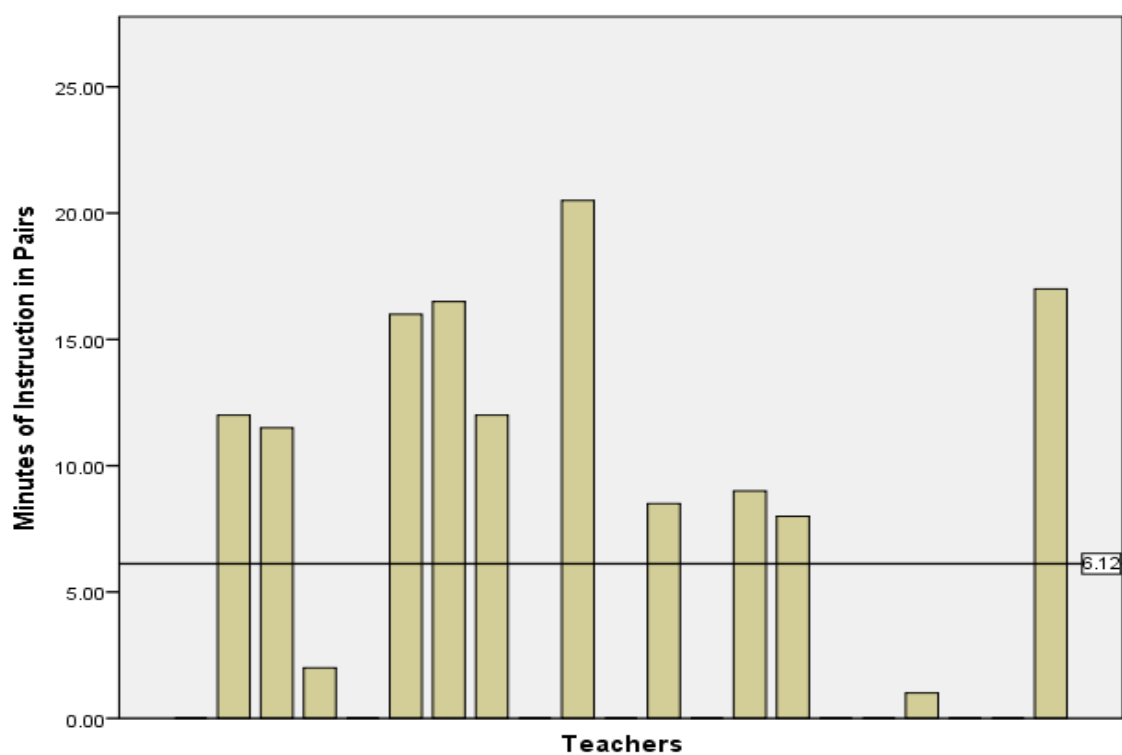


Figure 20. Distribution of classroom means for reading instruction in pairs.

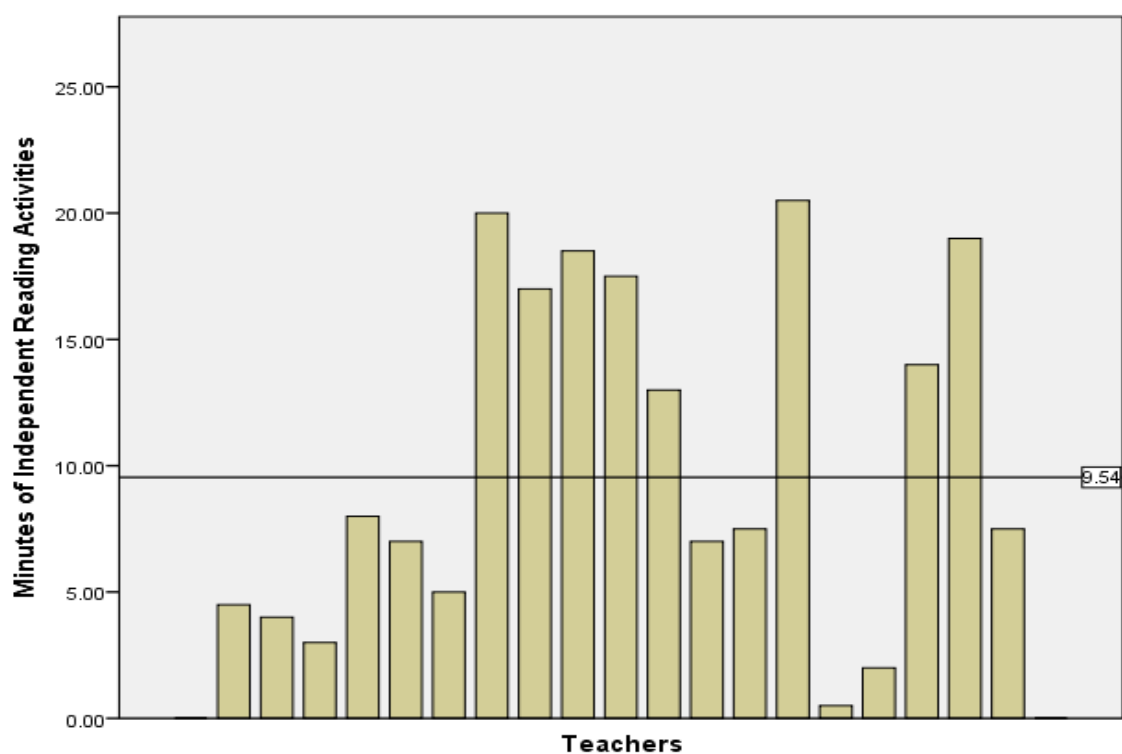


Figure 21. Distribution of classroom means for independent reading activities.

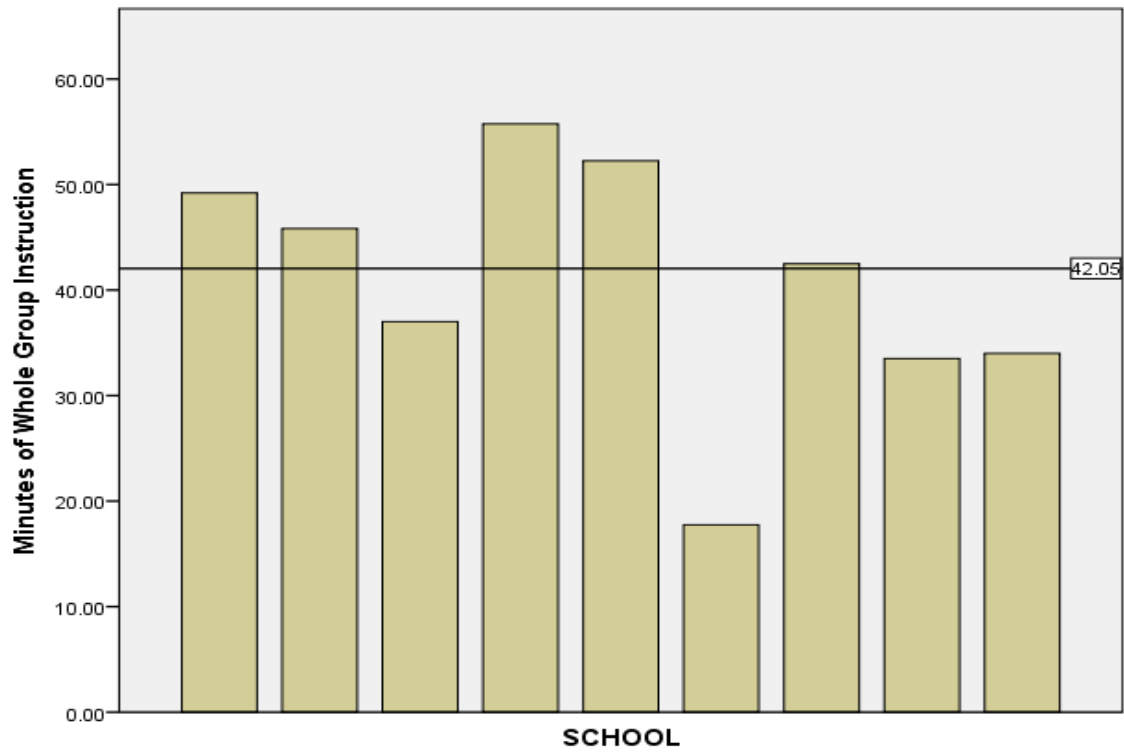


Figure 22. Distribution of school means for whole-group reading instruction.

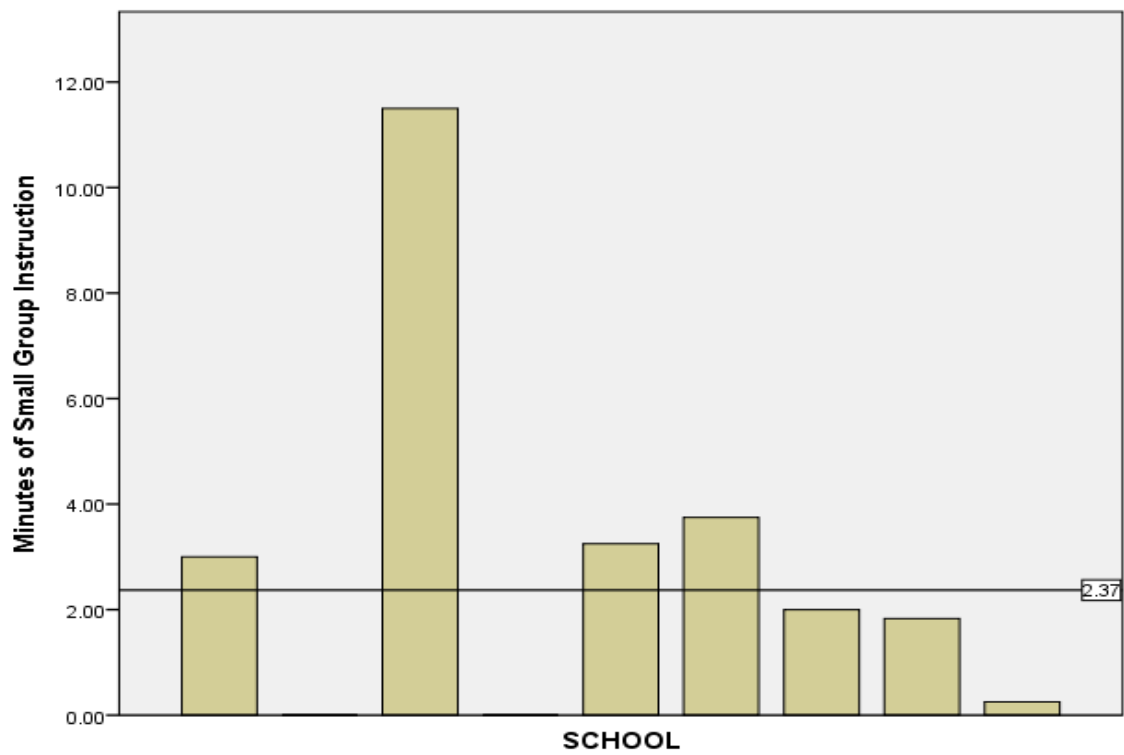


Figure 23. Distribution of school means for small-group reading instruction.

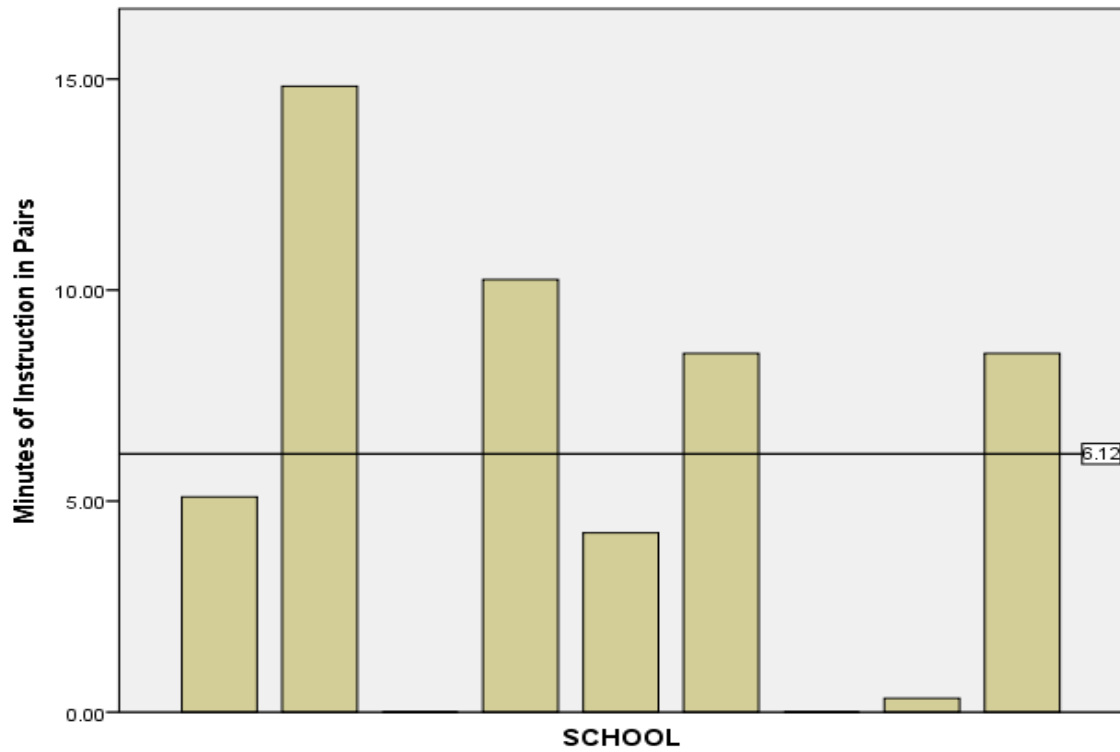


Figure 24. Distribution of school means for reading instruction in pairs.

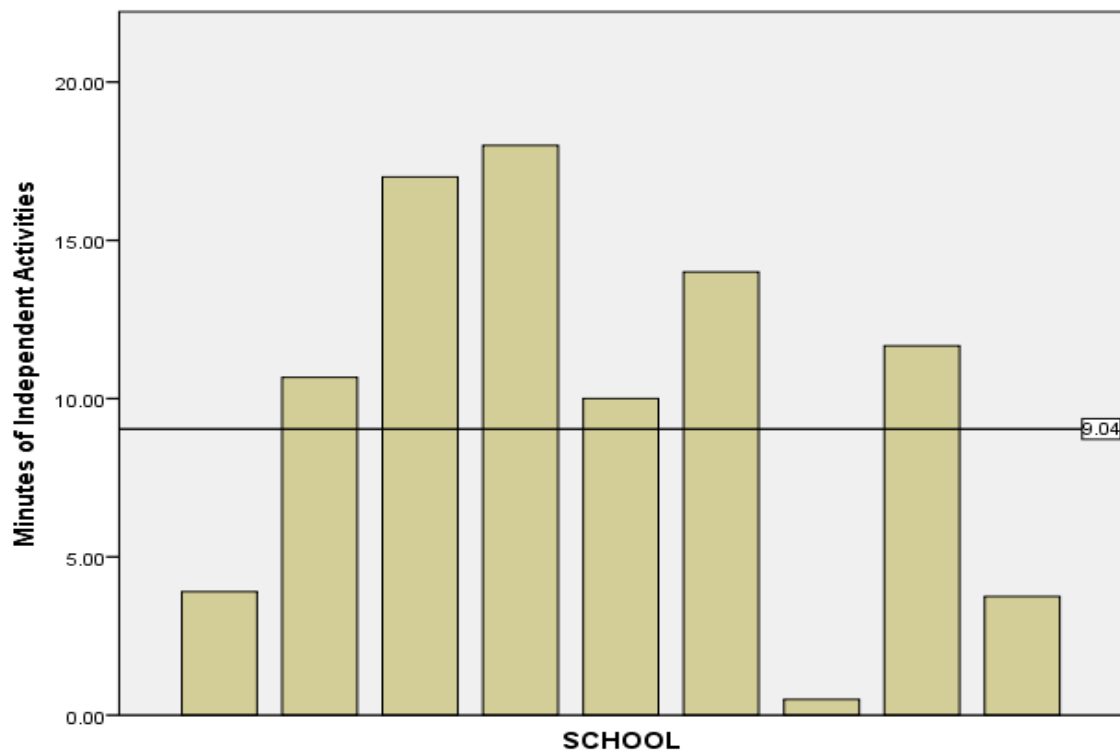


Figure 25. Distribution of school means for independent reading activities.

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- Vaughn, S., Wexler, J., Leroux, A., Roberts, G., Denton, C., Barth, A., & Fletcher, J. (2012). Effects of intensive reading intervention for eighth-grade students with persistently inadequate response to intervention. *Journal of Learning Disabilities*, 45(6), 515-525. doi:10.1177/0022219411402692
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- Ysseldyke, J.E., Thurlow, M.L., Mecklenburg, C., & Graden, J. (1984). Opportunity to learn for regular and special education students during reading instruction. *Remedial and Special Education*, 5, 29-37.

BIOGRAPHICAL SKETCH

Curriculum Vitae

Shawn Kent

EDUCATION

- | | |
|--------------------|--|
| 2014 (anticipated) | Doctor of Philosophy, Florida State University, School of Teacher Education, Tallahassee, FL
Major: Curriculum & Instruction/Special Education
Dissertation: <i>Instructional Factors Predicting Student Outcomes for Fourth-Grade Struggling Readers</i> |
| 2008 | Special Education Supervisor Certificate, Grand Valley State University, College of Education, Grand Rapids, MI |
| 2001 | Specialist in School Psychological Services, Master of Arts Central Michigan University, Department of Psychology, Mt. Pleasant, MI.
Major: School Psychology
Thesis: <i>School Psychologists' Participation In and Beliefs About Prereferral Intervention Teams</i> |
| 1997 | Bachelor of Science, Central Michigan University, Department of Psychology, Mt. Pleasant, MI.
Major: Psychology |

PROFESSIONAL CREDENTIALS

- | | |
|-----------|--|
| 2008-2013 | Michigan Department of Education Supervisor of Special Education- Full Approval. |
| 2001-2012 | Michigan Department of Education School Psychologist Approval. |

PROFESIONAL EXPERIENCE

- | | |
|---------|---|
| Current | Assistant in Research , Florida Center for Reading Research, Florida State University, Tallahassee, FL |
|---------|---|
- Coordinator for multi-site IES funded grant project investigating the efficacy of a 4th grade reading intervention:
 - Recruited and served as liaison with participating schools/districts.
 - Responsible for the hiring, training, and supervision of reading interventionists.
 - Facilitated project meetings across two sites.

- Examine and analyze data from a large extant database from IES Reading For Understanding Grant that developed and investigated strategies to increase adolescent reading comprehension.
- 2013-2014 **Project Coordinator**, Passport to Literacy Project, Florida Center for Reading Research, Florida State University, Tallahassee, FL
- Assisted in recruiting of participating schools.
 - Hired, trained, and supervised team of reading interventionists.
 - Coordinated intervention schedules with schools and teachers.
- 2010-2014 **Research Fellow/Assistant**, Florida Center for Reading Research, Florida State University, Tallahassee, FL
- Assisted on two federally-funded research projects.
 - Coded and analyzed data from videos of classroom reading instruction.
 - Coordinated data and fidelity collection across several districts/schools.
 - Developed instrument to document intervention fidelity.
- 2006-2010 **Supervisor of Special Education**, North Service Unit, Muskegon, MI
- Provided supervision to 7 elementary buildings in 3 school districts.
 - Coordinated infant/toddler and preschool special education programs.
 - Professional development for teachers, ancillary staff and administrators.
 - Participated in development of guidelines for assessment of ECDD and revision of SLD eligibility guidelines under the Response to Intervention model.
- 2004-2006 **Supervisor of Special Education**, Montcalm Area Intermediate School District, Stanton, MI
- Administrated programs for students with Emotional Impairments, Hearing Impairments, Moderate Cognitive Impairments, and Autism Spectrum Disorder.
 - Created and led county-wide behavioral support team.
 - Provided professional development in assessment, progress monitoring and data analysis.

- Literacy Coach for local schools participating in Michigan's Intensive Behavior and Learning Support Initiative.

1999-2004

School Psychologist, Mecosta-Osceola Intermediate School District, Big Rapids, MI

- Conducted academic and behavioral assessments.
- Developed interventions for students with academic and behavior difficulties.
- Delivered in-service training for teachers.
- Supervised 2 graduate student's year-long practicum.

UNIVERSITY TEACHING EXPERIENCE

Fall 2012

Instructor, Florida State University, Tallahassee, FL
Course Title: *Educational Assessment of Students with Disabilities* (EEX4212)

- Revised existing course syllabus and course assignments/critical tasks.
- Presented weekly lectures on assessment topics.
- Planned all class instructional activities and facilitated discussions on material.
- Graded and provided feedback to students on class assessments and assignments.

Fall 2011

Teaching Assistant, Florida State University, Tallahassee, FL
Course Title: *Teaching Reading* (RED4510)

- Designed and presented lecture, created class activity, and facilitated discussion on topic of reading assessment.
- Constructed and graded weekly quizzes based on required readings.
- Provided general instructional support to students.

Spring 2004

Adjunct Instructor, School Psychology Program, Central Michigan University, Mt. Pleasant, MI
Course Title: *Advanced Intellectual Assessment* (PSY656)

- Lead instructor for graduate-level school psychology course.
- Developed and presented weekly lectures and in-class activities.
- Assessed and provided feedback to students on test administration and report writing.

1998-1999

Teaching Assistant, Central Michigan University, Mt. Pleasant, MI

Course Title: *Advanced Intellectual Assessment* (PSY656)

- Supervised school psychology graduate students during lab experience in course on intellectual assessment.
- Evaluated and provided feedback to students on test administration skills and psychoeducational reports.

PUBLICATIONS

Kent, S. (in preparation). *Tier 1 reading instruction for students with reading difficulties in the upper elementary grades*. Manuscript in preparation.

Kent, S. (in preparation). *The use of empirically supported instructional practices in secondary content-area classrooms and their relation to learning for students with reading difficulties*. Manuscript in preparation.

Wanzek, J., Vaughn, S., & Kent, S. (in preparation). *A synthesis of less extensive tier 2 reading intervention for students in 4th-12th grade*. Manuscript in preparation.

Kent, S. & Wanzek, J. (submitted). *The relationship between component skills and writing quality and fluency across developmental levels: A meta-analysis of the last 25 years*. Manuscript submitted for publication.

Wanzek, J., **Kent, S.**, & Stillman-Spisak, S. (submitted). *Perceptions of Instruction in Middle and Secondary United States History Classes*. Manuscript submitted for publication

Kent, S., Wanzek, J., Swanson, E.A., & Vaughn, S. (in press). Team-based learning for students with high-incidence disabilities: Results from a randomized control trial in high school social studies classrooms. *Learning Disabilities Research and Practice*.

Wanzek, J., **Kent, S. C.**, Vaughn, S., Swanson, E. A., Roberts, G., & Haynes, M. (in press). The effects of team-based learning on eighth grade social studies learning. *Journal of Educational Research*.

Wanzek, J., Swanson, E.A., Vaughn, S., Roberts, G., & **Kent, S.C.** (in press). Promoting acceleration of comprehension and content through text in high school social studies classes. *Journal of Research on Educational Effectiveness*.

Kent, S., Wanzek, J., Petscher, Y., Al Otaiba, S., & Kim, Y. (2014). Writing fluency and quality in kindergarten and first grade: The role of attention, reading, transcription, and oral language. *Reading and Writing: An Interdisciplinary Journal*. doi:10.1007/s11145-013-9480-1

Swanson, E., Hairrell, A., **Kent, S.** Ciullo, S., Wanzek, J., & Vaughn, S. (2014). A synthesis and meta-analysis of reading interventions using social studies content for students with

learning disabilities. *Journal of Learning Disabilities*, 47, 178-195. doi: 10.1177/0022219412451131

Wanzek, J., Roberts, G., Al Otaiba, S., & **Kent, S.** (2014). The relationship of print reading in Tier I instruction and reading achievement for kindergarten students at-risk for reading difficulties. *Learning Disabilities Quarterly*, 37, 148-160. doi: 10.1177/0731948713518334

Wanzek, J., Vaughn, S., **Kent, S. C.**, Swanson, E. A., Roberts, G., Haynes, M., Fall, A. M., Stillman-Spisak, S., & Solis, M. (2014). The effects of team-based learning on social studies knowledge acquisition in high school. *Journal of Research on Educational Effectiveness*, 7, 183-204. doi: 10.1080/19345747.2013.836765

Hall, C., **Kent, S. C.**, McCulley, L., Davis, A., & Wanzek, J. (2013). A New Look at Mnemonics and Graphic Organizers in the Secondary Social Studies Classroom. *Teaching Exceptional Children*, 46(1), 47-55.

Kent, S.C., Wanzek, J., & Al Otaiba, S. (2012). Print reading in general education kindergarten classrooms: What does it look like for students at-risk for reading difficulties? *Learning Disabilities Research and Practice*, 27, 56-65.

Wanzek, J. & **Kent, S.C.** (2012). Implementing upper elementary interventions for students with reading disabilities. *Learning Disabilities: A Contemporary Journal*, 10, 5-16.

RESEARCH PRESENTATIONS

Kent, S. & Wanzek, J. (2014, September). *Passport to literacy: Preliminary results from a 4th grade reading intervention*. Presentation to Florida State University Schools Board of Education, Tallahassee, FL.

Kent, S. (2014, April). *Team-based learning for students with high-incidence disabilities in high school social studies classrooms*. Poster presented at Council for Exceptional Children Convention, Philadelphia, PA.

Kent, S. & Wanzek, J. (2014, February). *The relationship between component skills and writing quality and fluency across development*. Poster presented at the Pacific Coast Research Conference, San Diego, CA.

Kent, S. (2013, November). *Component skills in the production and quality of writing: A synthesis and exploratory study in the early grades*. Paper presented at the International Dyslexia Association Conference, New Orleans, LA.

Kent, S. (2013, September). *The effects of team-based learning on social studies knowledge acquisition*. Paper presented at the Florida Reading Association Conference, Orlando, FL

- Kent, S. (2013, May). *Promoting adolescents comprehension of text*. Paper presented at the Southeast Regional Educational Laboratory –Literacy Alliance Meeting, Tampa, FL.
- Kent, S., Wanzek, J., & Connor, C. (2013, April, 2013). *Engaging students with disabilities in content-area text and instruction*. Poster presented at the Council for Exceptional Children Convention, San Antonio, TX.
- Wanzek, J., & Kent, S. (2013, April). *Promoting adolescents comprehension of text*. Presented at Florida Center for Reading Research Colloquium, Tallahassee, FL.
- Kent, S. & Wanzek, J. (2013, February). *The effects of discourse-based practices on content-area writing in U.S. History: Preliminary evidence*. Poster presented at the Pacific Coast Research Conference, San Diego, CA.
- Kent, S., Petscher, Y., Wanzek, J., Kim, Y.S., & Al Otaiba, S. (2013, July). *Predictors of Kindergarten and First Grade Writing Skills: The Role of Attention, Reading, Transcription, and Language as Component Skills*. Poster presented at the Nineteenth Annual Meeting of the Society for the Scientific Study of Reading, Montreal, Canada.
- Kent, S. & Wanzek, J. (2012, February). *Reading intervention using social studies content for students with learning disabilities: A synthesis and meta-analysis*. Poster session at the Pacific Coast Research Conference, Coronado, CA.
- Kent, S. & Wanzek, J. (2011, February). *Amount and type of print engagement for kindergarten students at-risk for developing reading difficulties*. Poster session at the Pacific Coast Research Conference, Coronado, CA.

TRAININGS/WORKSHOPS CONDUCTED

- Kent, S. (2008, August). *Catch Them Before They Fall: Universal Screening of Essential Reading Skills*. Workshop conducted for Reeths-Puffer Schools, Muskegon, MI
- Kent, S., Elston, B. & Doty, S. (2006, October). *Curriculum Based Measurement*. Workshop presented for teachers at Montcalm Area ISD, Stanton, MI
- Kent, S. & Grialou, T. (2006, February). *Positive Behavior Support for ALL Students*. Workshop presented for Tri-County Area Schools, Sand Lake, MI
- Kent, S. (2003, June). *Using DIBELS in an Outcomes Driven Model*. Workshop conducted during Mecosta-Osceola ISD Summer Reading Institute, Big Rapids, MI

PROFESSIONAL SERVICE

- | | |
|--------------|---|
| 2012-current | <i>Assessment for Effective Intervention</i> , Student review board |
| 2014 | <i>Written Language and Literacy</i> , Ad-hoc reviewer |

2014	Florida Ms. Amazing Pageant, Invited judge
2013	Council for Exceptional Children Convention, Proposal reviews for 2014 Annual Convention.
2012	<i>Elementary School Journal</i> , Ad-hoc reviewer
2012-13	Florida State University School of Teacher Education & Florida Center for Reading Research . Graduate student representative for faculty search committees.
2012	Florida Center for Reading Research , Lead organizer of mini-conference on writing research.

ACADMIC AWARDS AND DISTINCTIONS

2014	<i>Robert M. Gaghe Student Research Prize</i> Florida State University Council on Research in Education
2013-2014	<i>Doctoral Student Scholar in Special Education Research</i> Council for Exceptional Children Division for Research
2010-2014	<i>Pre-Doctoral Research Training Fellowship</i> Florida Center for Reading Research, Florida State University
1997-1998	<i>Graduate Fellowship</i> Central Michigan University

PROFESSIONAL MEMBERSHIPS

International Dyslexia Association
Society for the Scientific Study of Reading
Society for Research on Educational Effectiveness
Council for Exceptional Children

- Division for Learning Disabilities
- Division for Research