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Predicting Reading Comprehension of 8<sup>th</sup> Grade Struggling Readers: Fluency, Self-Efficacy, and Intrinsic Motivation

A Dissertation submitted in partial satisfaction  
of the requirements for the degree of

Doctor of Philosophy

in

Education

by

Christy Liao

June 2015

Dissertation Committee:

Dr. H. Lee Swanson, Chairperson

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Dr. Michael Orosco

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The Dissertation of Christy Liao is approved:

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Committee Chairperson

University of California, Riverside

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## Dedication

To all my students and fellow teachers

## ABSTRACT OF THE DISSERTATION

Predicting Reading Comprehension of 8<sup>th</sup> Grade Struggling Readers: Fluency, Self-Efficacy, and Intrinsic Motivation

by

Christy Liao

Doctor of Philosophy, Graduate Program in Education  
University of California, Riverside, June 2015  
Dr. H Lee Swanson, Chairperson

Several theories contribute to explaining factors that influence text comprehension in struggling readers. Some authors assume a simple view in which fluent word recognition and adequate language comprehension leads to comprehension of text (Gough, Hoover, & Peterson, 1996). A broad base of research evidence supports the substantial impact of reading fluency in students' reading comprehension in elementary grades (Fuchs, Fuchs, Hosp, & Jenkins, 2001). However, as students move from elementary school to middle school, fluency tends to account for less variation in comprehension (Denton et al., 2011) and other factors must be considered. A missing part of the puzzle concerns psychological factors that relate to reading comprehension. What role does motivation play in adolescents' reading comprehension? Theories on the positive impact of self-efficacy and intrinsic motivation on academic achievement have been examined by several psychologists (Bandura, 1977; Deci & Ryan, 1985).



Researchers have used these theories to build motivation assessments, which explore how motivation is related to reading outcomes. However, most of these studies have focused on elementary school students, and limited studies have been conducted with English Language Learners (ELLs), a population that has been shown to lag behind their peers in reading comprehension (Lesaux, 2006). Using a sample of 102 eighth grade struggling readers, this study addressed the relationship between silent reading fluency, oral reading fluency, language status, self efficacy, and intrinsic motivation in predicting reading comprehension. Hierarchical linear models were used to control for the effect of teacher on reading comprehension. The following major conclusions can be summarized about struggling readers in middle school from this study: (1) Silent reading fluency significantly predicts reading comprehension; (2) Oral reading fluency does not contribute significantly to reading comprehension (3) Language status is a significant predictor of reading comprehension; (4) Self-efficacy and reading curiosity are not substantial predictors of reading comprehension scores; and (5) Language status moderates the relationship between reading involvement and reading comprehension scores. These conclusions will be discussed in light of the results of the study and practical implications for educators will be addressed.

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## **Chapter 1: Introduction**

Reading comprehension is an essential skill in life throughout childhood and adulthood, necessary for employment opportunities and higher education success. However, by middle school, very little reading instruction takes place as school becomes focused on reading to learn, not learning to read (Roberts, Torgesen, Boardman, & Scammacca, 2008). While typical readers may be able to comprehend text through general reading instruction in school, poor readers may need extra support in reading development (Leach, Scarborough, & Rescorla, 2003). Dysfluent readers, who may find reading to be a belabored task, will have more difficulty in learning content area knowledge through reading (Chall, Jacobs, & Baldwin, 1990) and may experience demotivation and avoidance of reading (Pinnell, Pikulski, Wixon, Campbell, Gough, & Beatty, 1995; Raskinski, 2001).

Different theories of reading comprehension have emerged over the past century and several hypotheses have been tested to assess the competing predictors that influence reading comprehension. While the simple view of reading (Gough & Tunmer, 1986) weighs language ability and fluency as the two necessary contributions to reading comprehension, more research conducted over the past decades has brought into consideration a number of other factors. Since then, other researchers have mentioned the importance of cognitive and sociocultural factors for comprehension difficulties. Cognitive skills such as verbal memory (Swanson, Cochran, & Ewers, 1989), inferential skills (Cain, Oakhill, Barnes, & Bryant, 2001), and attention (Gehlani, Sidhu, Jain, & Tannock, 2004) have been linked with reading comprehension. Sociocultural factors such

as language skills and background knowledge (Perfetti, 1988; van Dijk & Kintsch, 1983) likewise play an important role in reading comprehension.

Perhaps one of the measures most widely used in predicting reading comprehension is reading fluency, which is defined as “the ability to read text quickly, accurately, and with proper expression” (NICHD, 2000). Theories regarding the importance of reading fluency date back to LaBerge and Samuels (1974) and Huey (1908). LaBerge and Samuels (1968) theorized that human beings can attend to only one process at a time. Therefore if a reader has difficulty decoding words, sufficient attention cannot be given to constructing meaning and making inferences about what was read, therefore hindering reading comprehension. In addition, Verbal Efficiency Theory (Perfetti & Lesgold, 1979) also recognizes the importance of word-coding in order for comprehension to occur. Thus, a delay in word retrieval and word meaning retrieval may act as hindrances to comprehension and by contrast, adequate fluency enables a reader to free up their cognitive load so that they may have more room for comprehending text.

Although fluency and other reading measures (word identification, vocabulary) have been positively linked with reading comprehension, the influence of motivation on reading comprehension is less understood for students, especially in the middle school years and little to no studies have been published regarding the role of motivation with students who have lower reading ability (Logan, Medford, & Hughes, 2011). In addition, while Thernstrom and Thernstrom (2003) suggest that culture differences may explain discrepancies in academic achievement for diverse groups of students, there is a gap in research between motivation of English Language Learners and native English speaking

students (Cummins, 2011). However, few studies have explored the contribution of motivation simultaneously with fluency skills in relation to reading comprehension for struggling readers in middle school, and how these relationships may differ for English Language Learners.

Research questions were as follows:

- 1.) To what extent do silent reading fluency, oral reading fluency, language status, self efficacy, and intrinsic motivation predict reading comprehension?
- 2.) To what extent do silent reading fluency, oral reading fluency, language status, and the interactions between self-efficacy and language, and intrinsic motivation and language predict reading comprehension?

## **Chapter 2: Review of the Literature**

### **Reading Fluency and Reading Comprehension**

An abundance of research has linked oral reading fluency to reading comprehension (Pinnell, 1995) and two theoretical frameworks may be used to support why reading fluency may be a necessary basis for reading competence. The first, LaBerge and Samuels' (1974) automaticity model of reading, is commonly cited as a foundation for including fluency as a crucial prerequisite for comprehension (Potter & Wamre, 1990; Deno, 1985). In this framework, students who are able to process decoding and word meanings automatically are able to comprehend text more easily.

A second highly cited basis for reading comprehension was made popular by Perfetti (1985). Perfetti's Verbal Efficiency Theory suggested that the speed of single word reading accounts for the most substantial amount of variance in reading

comprehension performance. Through sufficient phonological processing and automatic word retrieval, a skilled reader will have the cognitive capacity available to use for achieving reading comprehension. Perfetti has cited the link between decoding and comprehension (Shankweiler, 1999) as evidence for the Verbal Efficiency Theory among young and older readers.

Due to its demonstration of strong relations with both decoding and reading comprehension in the elementary grades, oral reading fluency (ORF) has been widely accepted as a valid way to assess elementary school students' overall reading competence (Fuchs, Fuchs, Hosp, & Jenkins, 2001). However, most studies that measure oral reading fluency include an elementary school age sample (Fuchs et al., 2001). For example, Hosp and Fuchs (2005) found ORF and the Passage Comprehension of the Woodcock Reading Mastery Test-Revised (WRMT-R) in Grades 1 to 4 to be moderately to highly correlated, from .79 to .84.

Yet, measures of reading fluency with older students have been less widely researched (Denton et al., 2011) and patterns of the correlation between ORF and reading comprehension have been shown to become weaker as students progress from early elementary school to later grades (Jenkins & Jewell, 1993). Silberglitt, Burns, Madyun, and Lail (2006) examined grade differences in the correlation between fluency and state accountability test scores on a reading assessment. They found that oral reading fluency accounted for 50.4% of the variance in comprehension test scores in third grade but dropped to 26.0% by eighth grade. Although the correlation between ORF and comprehension may decline in middle school, students may show different levels of

comprehension when they read orally and silently (Miller & Smith, 1990). Despite the fact that most older readers spend most of their time reading silently, literature has mostly focused on oral reading fluency (Share, 2008) to predict comprehension.

**Silent Fluency.** Perhaps silent reading fluency has been overlooked because it has been assumed to develop naturally from oral reading fluency (Hiebert, Wilson, & Trainin, 2010). Mixed findings have been recognized in regard to the contribution of silent reading fluency as opposed to oral reading fluency. Denton et al. (2011) found that a silent fluency measure used to predict WJ-III passage comprehension was stronger than ORF measures in their sample of sixth and eighth grade students. Yildirim and Ates' (2012) study on Turkish children in fifth grade also found that silent reading fluency had a more significant contribution to the prediction of reading comprehension than oral reading fluency. On the other hand, Fuchs, Fuchs, Eaton, and Hamlett (2000) found the contribution of oral reading fluency to be statistically significantly higher than silent reading fluency on the Iowa Test of Basic Skills, however, this was in a fourth grade sample.

Moreover, it may be difficult to observe silent reading fluency, thus making it challenging to come up with valid measures of the construct. Using self-report measures, such as asking students to circle the last word they read after an interval of time, has been problematic (Fuchs et al., 2001). Silent reading fluency has also been measured by a sentence verification test, which asks students to read sentences and indicate whether they are true or false (Woodcock–Johnson III; Woodcock, McGrew, & Mather, 2001). The standardized measure used in this current study was the Test of Silent Contextual



Reading Fluency (TOSCRF; Hammill, Wiederholt, & Allen, 2006), which is a contextual reading measure that has been validated through research (Hammill et al., 2006). This assessment presents students with strings of words with no spaces; students are asked to separate the words by drawing lines. The TOSCRF is described in greater detail in the method section. Due to the mixed findings on whether to use oral reading fluency or silent reading fluency to predict comprehension, both were used in this study as a more comprehensive measurement of reading skills. Furthermore, the studies cited did not specifically address the reading fluency of a sample that only contained poor readers or readers with learning disabilities in middle school.

Similarly to declining patterns with the relationship between ORF and reading comprehension as students get older, Torgesen, Nettles, Howard, and Winterbottom (2003) reported that correlations between silent reading fluency, as measured by the TOSCRF, and Florida Comprehensive Assessment Test (FCAT) declined from Grade 4 to 8. This indicates that the relation of fluency and comprehension declines as students progress from the primary to the intermediate and secondary grades, when they are faced with more complex text and greater demands for high-level reasoning and inferencing (Paris, Carpenter, Paris, & Hamilton, 2005). Given that fluency becomes a smaller part of the contribution in reading comprehension as students progress into middle school, a missing piece of the reading comprehension puzzle still remains. While a wide breadth of research has provided evidence that fluency correlates with reading comprehension, how do psychological factors, such as motivational processes, play a part in students' reading?

## **Achievement Motivation in Reading**

Studies have shown that students who are more motivated in school have higher academic outcomes when compared with their peers (Eccles, 2002). Research has shown that motivation has a substantial impact on student achievement for all ages and subject areas, including math, science, and reading (Guthrie et al., 1996; Oliver & Simpson, 1988; Pajares & Graham, 1999). In the domain of reading, a longitudinal study was conducted to explore motivational variables and their association with reading achievement (Froiland & Oros, 2014). With data from students followed from fifth to eighth grade, intrinsic motivation to read, perceived competence, and engagement in fifth grade significantly predicted reading achievement in eighth grade when gender, socioeconomic status, race/ethnicity, and prior reading achievement were controlled. Measures of reading achievement in this study encompassed vocabulary, reading comprehension, and sight-word identification.

Students' reading comprehension may be affected by motivation through different pathways. It has been hypothesized that students who are more curious or interested in reading tend to exhibit higher amounts of reading engagement (Wigfield & Guthrie, 1997), pointing to the influence of intrinsic motivation. Consequently, the amount of reading in which students engage may facilitate reading development (Mol & Bus, 2011). Stanovich (1986) also pointed out that the gap in reading ability between skilled and poor readers might stem from the amount of practice students receive in reading. Another pathway may suggest that students who have higher self-efficacy are willing to exert more effort in trying to dissect meaning from the text and master the task, resulting in

higher reading comprehension (Schunk & Zimmerman, 1997).

While research suggests a link between motivation and reading achievement, Shiefele and Schaffner (2012) point to the need for clarification of dimensions of reading motivation as they are currently being studied and assessed by questionnaires.

Different conceptualizations of reading motivation and dimensions of reading motivation have been offered. Wigfield and Guthrie (1997) categorized constructs of motivation into self-efficacy beliefs, goals for reading, and social purposes for reading. However, from the psychological perspective of motivation, which was used in this current study, social aspects of reading were not considered, as they may be due to social contexts of development.

**Self-efficacy.** Self-efficacy, which dates back to Albert Bandura, concerns individuals' beliefs about their capabilities to perform a task. Bandura (1977) suggested that efficacy beliefs for tasks could determine activity choice, as well as willingness to persist and persevere in a task. Researchers have documented that a sense of efficacy relates to academic performance (Zimmerman, Bandura & Martinez-Pons, 1992) and that adolescents' ability beliefs relate to and predict their achievement performance in reading (Meece, Wigfield & Eccles, 1990). Furthermore, Shell, Colvin, and Bruning (1995) found that self-efficacy beliefs were more associated with reading comprehension than reading skill components from the California Achievement Test and that self-efficacy was more closely tied to reading comprehension as students progressed from fourth grade to seventh grade. Findings relating competence beliefs are particularly useful for low achieving students, whose self-efficacy has been found to be a greater facilitator of

achievement (Schunk, 1985, 1987) than that of high achieving students.

However, some studies have found that self-efficacy is not a significant predictor for reading comprehension. Guthrie, Hoa, Wigfield, Tonks, Humenick, and Littles (2007) performed a study on the motivation of fourth graders, and its relation to reading comprehension growth from September to December, as measured by the Gates MacGinitie Reading Comprehension Test. They found that while interest, choice, and involvement significantly contributed to comprehension growth, social motivation and self-efficacy did not. Lau and Chan (2003) also found that while intrinsic motivation was significantly correlated with a standardized reading comprehension test for seventh grade students from Hong Kong, reading efficacy was not. Whether these findings may have differed due to different criterion measures or different samples, there exists evidence that self-efficacy may be related to reading comprehension and that the link between self-efficacy and struggling readers is an important area worth studying.

**Intrinsic motivation.** Included in the aforementioned category of “goals for reading,” as suggested by Wigfield and Guthrie, are intrinsic motivation and extrinsic motivation. Intrinsic motivation is represented in self-determination theory (Deci & Ryan, 1985) and refers to how motivated, curious, and interested in an activity for its own sake an individual is. This differs from extrinsic goal orientations, which may include working for a reward or grade (Deci & Ryan, 1985). In Schiefele, Schaffner, Moller, and Wigfield’s (2012) synthesis of the reading motivation literature in the past 20 years, intrinsic motivation was found to be a strong contributor of reading competence while extrinsic motivation has been shown to have relatively small or negative contributions to

reading competence (also see Park, 2011).

Andreassen and Braten (2010) administered a text comprehension test to fifth grade students in Norway and found from their regression analysis that intrinsic motivation was a significant predictor of text comprehension. In McElvany, Kortenbruck, and Becker's (2008) study, a sample of German students was included. Findings revealed that the relationship between intrinsic reading motivation in third grade, and reading comprehension in sixth grade were significant, with correlations between .19 and .32.

While these two studies did not differentiate between the reading skill levels of students, Logan, Medford, and Hughes (2011) split their sample of 111 fifth and sixth grade students into groups of good readers and poor readers, based on a standardized reading assessment. They studied the verbal abilities, reading skills, and intrinsic motivation for students in the United Kingdom. Logan et al. (2011) found that while verbal abilities and decoding skills made a significant contribution to reading comprehension, intrinsic motivation explained more variance in reading skill for poor readers. This suggests that the way intrinsic motivation drives students may be different for skilled and poor readers.

**Motivation measures.** These findings have led to more exploration into how to measure motivation constructs. Measuring student motivation has traditionally been done through surveys, such as the Motivation for Reading Questionnaire (MRQ), developed by Wigfield and Guthrie (1997). The MRQ has been commonly used in quantitative studies of students' reading motivation. It was initially created based on a questionnaire given to 105 fourth and fifth grade children in southern Maryland. Wigfield and Guthrie

conducted factor analyses on the 82-item questionnaire and proposed 11 distinct dimensions to reflect reading motivation. The full revised version of the MRQ still contains 11 constructs, but with only 53 items. The 11 constructs included are reading efficacy, challenge, curiosity, involvement in reading, importance of reading, work avoidance, competition in reading, reading for grades, recognition for reading, social reasons for reading, and compliance. Wigfield and Guthrie suggest that reading challenge (the satisfaction of mastering or assimilating complex ideas in text), curiosity (generalized interest in learning about the world through reading),-and involvement (desire to be immersed and absorbed in reading through a variety of particular texts) are all aspects of intrinsic motivation.

Since then, researchers have examined the dimensions that Wigfield and Guthrie had originally found in their questionnaire (Watkins & Coffey, 2004; Schaffner & Schiefele, 1997; Moller & Bonerad, 2007) and discovered different constructs through factor analytic techniques. Watkins and Coffey (2004) attempted to replicate the constructs proposed by Wigfield and Guthrie through confirmatory factor analysis. Through two studies, one with 328 third to fifth grade students from two mid-Atlantic elementary schools, and another with 735 third to fifth grade students from two southwestern schools, they found that the constructs of challenge, compliance, and importance were not able to fit their data, and therefore recommend that the MRQ be revised. Included in Schiefele et al.'s synthesis on over thirty quantitative and qualitative studies of reading motivation are the following they call true dimensions of reading motivation: curiosity, involvement, competition, recognition, grades, compliance, and

work avoidance. Of these, the only two that coincided with the intrinsic motivation category of the MRQ were curiosity and involvement. Since reading challenge was not included, the abbreviated version of the MRQ administered did not include the construct of reading challenge as part of measuring intrinsic motivation.

In addition, the majority of studies using the MRQ have been conducted with elementary age populations (Guthrie et al., 2004; Taboada, Tonks, Wigfield, & Guthrie, 2009). For example, Guthrie et al. (2004) found that motivational variables made significant contributions to children's reading comprehension in fourth grade, and that the motivational variables predicted growth in reading comprehension over a three-month period from September to December. Wigfield, Guthrie, Tonks, and Perencevich (2004) examined how participation of a different reading instruction programs influenced third grade children's intrinsic motivation to read and reading self-efficacy on the MRQ.

**Adolescent motivation.** Unfortunately, students' motivation tends to change negatively as they shift from elementary school to middle school (Harter, 1981; Eccles & Midgley, 1989). Unrau and Schlackman (2006) found that among the 1032 students in urban middle schools they studied, an overall decline in reading motivation was observed. Given that students' views of their efficacy and task values as they approach adolescence could have a tremendous impact on achievement outcomes, their declining self-efficacy and outlook as they move out of elementary school may be worth further investigation for educators.

### **Reading Comprehension and English Language Learners (ELLs)**

Research in the past few decades has brought to light the gap in reading

comprehension that ELLs experience compared to their native English-speaking peers. ELLs typically are able to achieve similar levels of word reading skills as their peers when they have received adequate reading instruction, however, many older ELLs perform at lower levels when compared to their peers on measures of reading comprehension (Lesaux, 2006). This finding has been underscored by several researchers (Betts et al., 2009; Jean & Geva, 2009; Garcia, 1991), but few studies have investigated the specific sources of reading comprehension difficulties for ELLs (Kieffer & Lesaux, 2008).

**Fluency and ELLs.** While the importance of fluent reading for comprehension has been noted, whether that is a significant source of discrepancy between ELLs and non-ELLs' reading comprehension performance is debatable. The umbrella skill of fluency encompasses automatic word recognition, and research has shown that non-ELLs may not exhibit advantages of text reading when compared to ELLs (Lesaux, Geva, Koda, Siegel & Shanahan, 2008). For example, the phonological processing skills of ELLs and non-ELLs have been shown to be comparable (Lesaux et al, 2008). Furthermore, some studies have found that ELLs may actually outperform non-ELLs on measures of rapid word naming speed, pseudoword reading, and word identification (Geva & Yaghouh Zadeh, 2006; Lesaux & Siegel, 2003).

An additional layer of complexity in making inferences about reading fluency for ELLs is that while researchers have found that measures of oral reading fluency (ORF) are reliable predictors of reading comprehension for non-ELLs (Crawford, Tindal, & Stieber, 2001; Stage & Jacobsen, 2001), some have found ORF to be a biased measure in



predicting comprehension for ELLs. Klein and Jimerson (2005) looked at demographic variables that may influence the validity of oral reading fluency measures including: ethnicity, gender, home language, and socioeconomic status. They found that home language emerged as the strongest factor influencing the bias in predicting comprehension, as measured by Stanford Achievement Test (SAT-9) scores. Additionally, Kranzler, Miller, and Jordan (1999) have tested the validity of curriculum-based measures of reading with students from diverse linguistic and ethnic backgrounds in later elementary grades, and conclude that the use of ORF is not an unbiased indicator of concurrent reading comprehension. Yesil-Dagli (2011) studied word reading skills of ELL students and determined that Hispanic ELL students' oral reading fluency was significantly lower than that of Asian, White, or Black ELLs. These studies point to the influence of sociocultural factors and code-switching in students' reading skills.

**Sociocultural factors and reading comprehension.** Mixed findings have been found regarding the role of fluency as a significant source of reading comprehension differences among ELLs and non-ELLs. As mentioned previously, studies with monolingual students have shown that deficiencies in verbal memory, inferential skills, and attention could be sources of reading comprehension difficulties for students. Also, studies with native English speakers have shown that prior knowledge of text content can account for a significant amount of variance in reading test scores (Marr & Gormley, 1982; Pearson, Hansen, & Gordon, 1979). Although these contributors of reading comprehension difficulties are not exclusive to only native English speakers, a salient finding across many studies suggests that ELLs' reading comprehension is more likely to

be limited by reading skills that involve acquiring meaning from text (Lesaux et al., 2008; Proctor, Carlo, August & Snow, 2005). For example, vocabulary knowledge differences between ELLs and non-ELLs have been examined. Proctor et al. (2005) found through a structural equation model that for students with average decoding ability, vocabulary knowledge was a significant contributor for reading comprehension scores for Spanish speaking ELLs. Although the importance of vocabulary has also been established for non-ELLs (Freebody & Anderson, 1983), factors such as the students' native language and literacy development, amount of time they have been exposed to English, and the nature of instruction and support in their second language are also important contributors of reading ability (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006) for ELLs.

**The Simple View and ELLs.** Granted that sociocultural influences in ELLs' reading comprehension exist, how does the interaction between fluency and language comprehension differ between ELLs and non-ELLs? Returning to the simple view of reading, originally hypothesized for monolingual students, it is evident that ELLs may face additional obstacles beyond fluency and listening comprehension (Francis et al., 2006). Although recent studies have examined the simple view, no studies on the simple view of reading for Spanish-speaking ELLs in middle school had been examined prior to 2009. Mancilla-Martinez, Kieffer, Biancarosa, Christodoulou, and Snow (2009) tested the simple view with a group of language minority learners in fifth, sixth, and seventh grade. They found that while studies have shown that language comprehension has a higher contribution to reading comprehension than word reading for monolingual students (Catts, Hogan, & Adolf, 2005; Vellutino, Tunmer, Jaccard, & Chen, 2007), the opposite

was true for language minority students. Word reading was a better predictor in explaining reading comprehension performance. Perhaps these differing findings of reading performance are due to the text being read. Their study also suggests that the sources of differences in reading comprehension vary for ELLs and non-ELLs.

Although the contribution of word reading seems to outweigh the contribution of listening comprehension for reading comprehension in Mancilla-Martinez et al.'s study, Lesaux, Crosson, Kieffer, and Pierce (2010) found that by fifth grade the relationship between word reading and reading comprehension becomes weaker for ELLs than for native English students. In addition, given that ELLs' fluency may be similar to non-ELLs, and that oral reading fluency has been questioned as an unbiased measure for ELLs, the question of what the sources are of reading comprehension deficits for ELLs still remains unanswered. While vocabulary knowledge and English language development have been recognized as sources of reading comprehension differences between ELL and non-ELLs, another possible explanation is that older students with reading difficulties lack the task orientation toward reading to effectively acquire reading proficiency. Guthrie and Wigfield (2000) report that students who are more engaged in reading are also more likely to use reading strategies associated with reading comprehension.

### **Ethnicity and Motivation**

It has been shown that the effect of motivation on reading differs not only by age, but by ethnic groups as well. Different ethnic groups, including African Americans (Baker & Wigfield, 1999) and Chinese students (Wang & Guthrie, 2004) have been

included in studies using the MRQ. One study that included Hispanic students and Asian students (Unrau & Schlackman, 2006) showed that the effects of reading motivation on Hispanic students' reading achievement was not as strong as the impact of reading motivation for Asian students. However, there is limited research on the motivation of adolescent English language learners that are struggling readers compared to motivation of their native English-speaking counterparts (Cummins, 2011), thus warranting more research in this area. Taken together, these studies underscore the importance of exploring additional explanations of differences between ELLs and non-ELLs' reading comprehension.

### **Chapter 3: Method**

#### **Setting**

Data were collected from two Southern California school districts across four middle schools. A summary of demographic information for each district and school is provided in Table 1. In the 2013-2014 school year, District A served over 19,480 students. The largest ethnic subgroup was Hispanic (78.3%), followed by Whites (11%), African Americans (3.9%), and Asian (3.3%). The remaining 5.5 % was comprised of students who identified as American Indian/Native Alaskan, Filipino, or Pacific Islander. Approximately 81% of students were socioeconomically disadvantaged, 41.3% of students were English Language Learners (ELLs), and 9.8% of students were enrolled in Special Education programs.

District B was larger and served approximately 42,587 students. Similar to District A, the largest ethnic subgroup was Hispanic (59.9%), followed by Whites

(24.6%) and African Americans (7.2%). The remaining population was identified as American Indian/Native Alaskan, Filipino, or Pacific Islander. Approximately 66% of the student body was socioeconomically disadvantaged, 17.3% were ELLs, and 11.0% were enrolled in Special Education

Students in this sample attended one of four middle schools. Schools A and B were part of District A, while Schools Y and Z belonged to District B. Schools A, B, Y, and Z were similar in size ( $N=1077$ ,  $N=921$ ,  $N=1000$ , and  $N=1022$ , respectively), and each school's ethnic representations followed district proportions. School A, B, and Z served sixth through eighth grades, while School Y's population only included seventh and eighth graders. Hispanic students were the largest ethnic subgroup in all four schools. English Language Learner percentages varied at each school, with 44.9% at School A, 62.5% at School B, 9.9% at School Y, and 4.1% at School Z. The majority of the ELLs were Spanish speaking. Special education information was not available by school.

### **Participants**

Participants were 102 eighth graders who struggled in reading, and were initially recruited as part of a larger study on teaching comprehension to poor eighth grade readers in a U.S. History context. They consisted of 33 special education and 69 general education students, 28 English language learners and 74 non-English language learners. 14 students were both English language learners and in special education. Descriptive data are shown in Table 2.

**Criteria for Selection.** Students were screened in the spring of the 2013-2014 school year while they were in seventh grade as part of the larger middle school reading

study. Since California Standardized Tests were eliminated in the 2013-2014 school year, the TOSCRF was used as a screening measure for inclusion in the studies. The TOSCRF is designed to accurately identify and screen students with reading difficulties (Hammill et al., 2006). Students who had standard scores that reflected a 2.0 to 5.0 grade level were identified as potential participants. These nominations were confirmed by students' eighth grade US History and special education teachers. Out of the pool of potential participants, permission letters, which included support from the principal, were distributed to parents and returned to the students' history teachers. Finally, participants with parent and student consent were included in the study.

**English Language Learners.** English Language Learners were identified using their California English Language Development Test (CELDT) scores from seventh grade. The CELDT was created by CTB/McGraw-Hill (CTB) in conjunction with the California Department of Education (CDE) Statewide Assessment Division and has been continually in development since their first field test in 2000. It assesses the listening and speaking proficiency of students whose first language was not English upon enrollment. Reliability of the CELDT has been tested using Cronbach's  $\infty$  index of internal consistency (Cronbach, 1951). Test reliability coefficients ranged from .76 to .88 for the most recent technical report from the CDE.

This study used the classification system as put forth by the California Department of Education (CDE). Students who receive a score of 1-3 which represent Basic, Early Intermediate, and Intermediate language proficiency, respectively, are classified as ELLs in the sample, while those who score at Early Advanced or Advanced

levels are classified as English proficient. Within this sample, 29% of the participants are classified as ELLs based on scores from the California English Language Development Test (CELDT).

### **Data Collection Procedure**

All of the measures were administered at one time point, in the spring of the 2014-15 school year. The oral reading fluency, reading comprehension, and motivation measure were individually administered by graduate students. The items on the motivation measure were orally read to students individually or in small groups of 3-6 and students were asked to choose how much that item reflected their beliefs about themselves on a scale of 1 to 4. The silent reading fluency measure was given at the same time point by graduate student researchers to the students' whole class as a screening assessment.

### **Measures**

*Oral Reading Fluency.* The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency Passages (ORF; Good, Kaminski, & Dill, 2002) is a standardized, individually administered test that assesses accuracy and reading rate. Students are instructed to read a passage aloud for one minute. Words that are omitted or words read incorrectly, or student hesitations lasting three or more seconds are scored as errors. Three different passages are presented to the student and for each passage, the number of words read correctly per minute is scored. The median score of the three passages was recorded as the oral reading rate and used for analysis. Criterion-related

validity from eight separate studies in the 1980's reported coefficients ranging from .52 to .91 (Good & Jefferson, 1998).

*Silent Reading Fluency.* The Test of Silent Contextual Reading Fluency (TOSCRF; Hammill, Wiederholt, & Allen, 2006) is a norm-referenced test intended to measure silent general reading ability and the speed with which students can recognize the individual words in a series of passages. This was group administered to students in their U.S. History classes. Students were required to read short passages adapted from the Gray Oral Reading Tests Fourth Edition and the Gray Silent Reading Tests. The passages are arranged in rows of contextually related words, which are ordered by level of difficulty. There are no spaces or punctuation between the words (e.g., AYELLOWBIRDWITHBLUEWINGS) and students are told to draw lines to separate as many words as possible (e.g., A/YELLOW/BIRD/WITH/BLUE/WINGS) in 3 minutes. The average test-retest reliability for students in middle school is .84. The students' standard score was utilized for data analysis.

*Reading Comprehension.* Students were given the Passage Comprehension subtest of the Woodcock-Johnson Tests of Achievement III (WJ-III; Woodcock, McGrew, & Mather, 2001). The Passage Comprehension subtest is an individually administered, untimed test that requires students to read short sentences or passages (increasing in difficulty) and provide a contextually appropriate word for completion within the passage. Internal consistency reliability of the Passage Comprehension subtest is .88.

*Motivation.* A shortened version of the Motivation for Reading Questionnaire



(MRQ; Guthrie & Wigfield, 1997) was given to students. The MRQ was developed in 1995 through a study on 105 fourth and fifth grade students. Since that time, a revised version containing 53 items has been developed and validated by Wigfield and Guthrie. For purposes of the constructs being examined in this study, the questionnaire included the 13 items from the MRQ that measured reading self-efficacy and intrinsic motivation (made up of curiosity and involvement). The questionnaire asked students to decide whether each sentence describes a person that is like them or different from them. The scale offered four choices: not at all like me, not like me, somewhat like me, and a lot like me, with each response coded as 1, 2, 3, or 4, respectively. An example of an item that addressed self-efficacy is, "I am a good reader." The constructs that made up intrinsic motivation were reading involvement and curiosity. An item from the involvement construct was "I make pictures in my mind when I read," and the curiosity construct contains items such as "If the teacher discusses something interesting I might read more about it." The internal consistency reliability coefficient for the self-efficacy construct is .68, and curiosity and involvement are both .76.

### **Preliminary Data Analyses**

The dataset was checked for missingness and outliers. Less than 1% (only one case) had a missing value, which occurred on one of the motivation survey items. Because the missing value only affected one of the motivation variables (self-efficacy/reading curiosity), this case was not included in any of the analyses that contained self-efficacy/reading curiosity, but was included in subsequent hierarchical linear analyses. Each continuous variable was screened for outliers falling outside an

absolute value of 3 standard deviations from the mean. No outliers were found. The range of data for each variable can be seen in Table 3.

*Principal component analysis (PCA.)* A principal component analysis of the motivation survey was performed due to the abbreviated version of the MRQ and the unique population used in this study. Principal component analyses were done to reduce the number of items need to explain the variance in scores because items in the survey were correlated with each other. Researchers have indicated that there is almost no significant difference between principal components analysis and factor analysis, or that principal components analysis is preferable when reducing variables (Arrindell & van der Ende, 1985; Guadagnoli and Velicer, 1988; Schoenmann, 1990; Velicer & Jackson, 1990).

An initial PCA was run to determine how many components to extract from the data. A scree plot revealed 3 factors, using the Kaiser (1960) criterion of eigenvalue over 1. However, extracted factors should be rotated to simple structure so as to have high loading on at least one of the factors, and small loadings onto other factors (Gorsuch, 1983); thus a Promax (oblique) rotation was used, which allows items to correlate with one another.

In the rotated PCA with all items, the three factors explained 56% of the variance. However, when looking at the factor loadings, 5 of the items loaded onto more than one factor (cross loading). If there is a difference of 0.2 or less in the cross loading, removal of the items is warranted (Bedford, 1997). In this model, items 4 (I have favorite subjects I like to read about), 7 (I read to learn new information about topics that interest me), 8 (I

learn more from reading than most students in the class), 12 (I read a lot of adventure stories) and 13 (I feel like I make friends with people in good books) had cross loadings with differences of 0.2 or less, therefore they were removed, which left 8 items on the survey.

In the final structure matrix, examination of the inflection point of the components in the scree plot justified retaining two factors. In this structure matrix, Bartlett's Test of Sphericity remained significant,  $(28) = 162.306, p < .001$  and analysis on the remaining nine items resulted in two factors with eigenvalues over Kaiser's (1960) criterion of 1. The Kaiser-Meyer-Olkin's Sampling Adequacy remained above 0.7 (.723) as recommended by Hutcheson and Sofroniou (1999) and the variance explained by the model was 52%. A loading of 0.4 or higher for each item was obtained, as recommended by Stevens (2002). In addition, for Component 1, Cronbach's  $\alpha = .724$  for the four items, and Cronbach's  $\alpha = .638$  for the four items in Component 2, both indicating high reliabilities.

Items 1 (If the teacher discusses something interesting I might read more about it), 2 (I enjoy a long, involved story or fiction book), 3 (I know that I will do well in reading next year), and 6 (I am a good reader) were included in Component 1. Items 5 (I make pictures in my mind when I read), 9 (I read stories about fantasy and make believe), 10 (I read about my hobbies to learn more about them), and 11 (I like mysteries) were included in Component 2. The items that cluster on the same components suggest that Component 1 represents self-efficacy (se)/reading curiosity and Component 2 represents reading involvement (Wigfield & Guthrie, 1997). In particular, items 3 and 6 addressed self-

efficacy, while 1 and 2 represented reading curiosity questions. Although Item 2 was originally proposed as an involvement type of question in the original MRQ, it can also be argued that it taps into students' curiosity. As suggested in Schiefele and Schaffner's (2012) synthesis on reading motivation literature, Guthrie et al.'s dimension of reading termed "curiosity" corresponds to Nolen's (2007) dimension of reading termed "interest," which refers to "getting involved with the plot or the characters of a story." Item 2 can therefore, arguably also tap into students' curiosity. Factor scores were calculated for each student in SPSS 22, and used for analysis. Table 5 shows the factor loadings after rotation and Table 6 shows the means and standard deviations of motivation scores for the retained items for each language group.

### **Statistical Analyses**

Because the dataset had a hierarchical structure (students nested within teachers), both student and classroom characteristics must be considered (Bryk & Raudenbush, 1992). In order to make sure that there is not overestimation of relationships between variables, teacher effects must be considered and controlled in the analysis. In addition, four out of eleven teachers were special education teachers, which may affect variance in comprehension scores. Therefore, a hierarchical linear model (HLM) was utilized for both research questions.

Several assumptions must be met before performing hierarchical linear modeling. Normality and linearity of each continuous predictor variable, independence of observations in student level variables, as well as normality from the residuals of the final model must be achieved.

*Assumptions of student level variables.* Each continuous variable was checked for normality through skewness and kurtosis. These values are displayed in Table 3. Analysis showed that the outcome variable, passage comprehension was normally distributed, with skewness=.082 (SE=.239) and kurtosis=-.550 (SE=.474). All continuous predictor variables were also normality distributed: ORF skewness=.273 (SE=.239) and kurtosis=-.550 (SE=.474); TOSCRF skewness=-.180 (SE=.239) and kurtosis=-.085 (SE=.474); self-efficacy/reading curiosity skewness=-.537 (SE=.240) and kurtosis=.389 (SE=.476); and reading involvement skewness=-.765 (SE=.239) and kurtosis=.342 (SE=.474).

*Normality of residuals.* Secondly, normality of residuals on the final conditional model must be achieved. Tests for normality indicated residual skewness=.426 (SE=.240) and kurtosis=.124 (SE=.476), falling in the range of acceptable normality. Because independence of observations at the student level was met through a non-significant residual correlation, indicated by a Durbin-Watson value of 1.99, the assumptions for the analyses were all met.

The sample size of the nested data may raise concerns in regard to a minimum number of students nested within each classroom to assure unbiased standard error estimates for the fixed effect components. However, researchers have argued that in fact, the level 2 sample size may be more important for assuring non inflated error estimates and that standard errors can be adjusted by using a design effect calculation for Level 2 sampling. Using the formula by Killip, Mahfoud and Pearce (2004;  $N/((1 + (\text{cluster size} - 1)(1 - \text{ICC}))$ ) the design effect calculation suggests that a sufficient level 2 sample size for

this study would be  $102/((1 + (11-1) (1-.17))) = 11$  teachers, which matches the number in this study.

## **Chapter 4: Results**

### **Descriptive Statistics**

Descriptive statistics were calculated for reading and motivation variables of the sample, and separated by language group. These values are displayed in Table 3 and 4.

### **Correlations**

Table 7 shows a correlation matrix of the variables used in this study using Pearson-product moment correlations. Most correlations observed were moderate to negligible. A strong positive correlation was found between oral reading fluency and silent reading fluency (.549) and between WJ PC and TOSCRF (.427). A strong negative correlation was found between EL status and WJ passage comprehension (-.415). Moderate positive correlations were found between WJ passage comprehension (PC) and ORF (.374), and self-efficacy/reading curiosity and reading involvement (.391). None of these bivariate correlations were highly correlated at above 0.7, therefore the issue of multicollinearity did not raise concerns.

### **Hierarchical Linear Models (HLM)**

In all hierarchical linear models, the criterion measure used was reading comprehension. For ease of comparison and interpretation, all continuous variables were standardized using a z-transformation in SPSS. In addition all predictor variables that did not have a meaningful zero value were grand mean centered (oral reading fluency and silent reading fluency.) A dummy-coded variable (non-ELL with 0 and ELL with 1) was

also created for the language variable (EL Status). Restricted maximum likelihood was used to prevent biased significant tests because of the small sample size of level 2 units (history teachers). Because the focus of this study was on Level 1 variables, these predictors were entered as fixed effects into the conditional models.

*Unconditional Model.* The first step in our HLM analysis was to examine the results of the fully unconditional model to determine the extent of variation in students' reading comprehension scores between teachers. The unconditional model yielded an estimated intercept (teacher) variance of .173 (Wald  $Z=1.428$ ,  $p=.153$ ) and a statistically significant estimated residual variance of .846 (Wald  $Z=6.767$ ,  $p=.000$ ). Although the intercept was non significant, the intraclass correlation ( $\hat{\rho}=.17$ ) indicated that an estimated 17% of the total variation in reading comprehension of students was attributable to differences between teachers, warranting the use of nesting the individual student data within teachers.

*Conditional Model 1.* Next, conditional models added student level predictors to examine their influence on reading comprehension after accounting for teacher effects. In the first conditional model, three parameters were added onto the unconditional model: ORF, TOSCRF, and EL Status. Overall, the slope for the intercept was statistically significant,  $t(98)=2.22$ ,  $p<.05$ . This indicates that the estimated initial average comprehension score was 0.22. The slope for TOSCRF was also statistically significant,  $t(98)=2.56$ ,  $p<.05$ . For every increase in standard deviation from the mean on the silent reading fluency scores, students' passage comprehension scores increased by .257 (SE=.10). Also, the slope for EL status was statistically significant,  $t(98)=-4.199$ ,  $p<.01$ .

On average, students who were English learners scored lower on their passage comprehension by .795 (SE=.199). The slope for oral reading was not statistically significant. All fixed effect estimates are shown in Table 8. In Conditional Model 1, model fit significantly improved over the unconditional model  $\Delta\chi^2(4)=23.80$ ,  $p<0.001$ . The AIC and BIC fit indices also decreased in this model, indicating a better fit (Singer & Willet, 2003). This suggests that taken together, students' ORF, TOSCRF, and EL status are better predictors of reading comprehension than just teacher effect alone. While these findings are in accordance with literature on reading comprehension that suggests silent reading fluency and language status are predictive of reading comprehension, the next model tested the significance of students' motivation, as measured by reading self-efficacy/curiosity, and reading involvement.

*Conditional Model 2.* In this model, four additional predictors were added in: self-efficacy/reading curiosity, reading involvement, as well as the interactions between EL status and self-efficacy/reading curiosity, and EL status and reading involvement. These interactions were added to determine whether language status, which was significant in the previous model, moderates the relationship between reading involvement and reading comprehension scores. Main effects and interactions were all included in the model. Some have argued that when the main effect variables are missing in the analysis, interaction path coefficients are not true interaction effects (Jaccard, Wan, & Turrisi, 1990).

Overall, the intercept was significant,  $t(93)=2.20$ ,  $p<.05$ . This indicates that the estimated initial average comprehension score was 0.22. The slope for TOSCRF



remained statistically significant,  $t(93)=2.43, p<.05$ . For every increase in standard deviation from the mean on silent reading, students' passage comprehension scores increased by .251 (SE=.103). EL status also remained significant  $t(93)=-4.01, p<.05$ . On average, children who were English learners scored lower on their passage comprehension by .756 (SE=.1882). The slope for EL x reading involvement was statistically significant,  $t(93)=2.22, p<.05$ . This indicates that for EL students, increases on reading involvement were associated with increases on their comprehension scores by .473 (SE=.213) This interaction is displayed in Figure 1. The slope for oral reading was still not statistically significant. The slopes for self-efficacy/reading curiosity and reading involvement were also not statistically significant. When comparing Conditional Model 2 to Conditional Model 1, the change in deviance statistics was negligible (less than 0.2) and did not exceed the .05 critical value of the Chi-square distribution. Additionally, the AIC and BIC fit indices were similar with the addition of the motivation variables and the interaction effects, indicating Conditional Model 2 was a comparable fit to Conditional Model 1. Thus, the reading fluency variables (oral and silent) and language status alone were not better predictors of comprehension than when combining the fluency and language variables with the motivation variables.

*Conditional Model 3.* Because in the model building process, the last step is typically to develop the most parsimonious model (Brieman, 1995; Freedman, 1983), conditional model 3 included only those variables that were significant in previous models. The final model only contained the three significant predictors from Conditional Model 2: TOSCRF, EL Status, and the EL Status x reading involvement interaction.

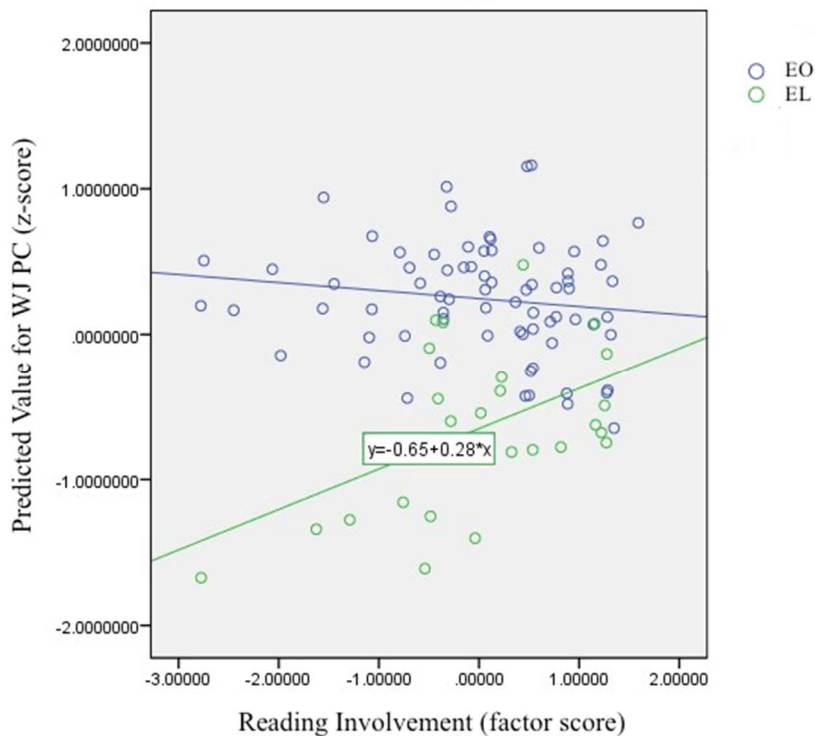
Results revealed that two predictors ended up showing statistical significance: TOSCRF and EL status. Overall, the intercept was significant,  $t(97)=2.22, p<.05$ , indicating that the estimated initial average comprehension score was 0.22. The slope for TOSCRF remained statistically significant,  $t(97)=4.19, p<.05$ . For every increase in standard deviation from the mean on the TOSCRF, students' passage comprehension scores increased by .353 (SE=.084). The slope for EL also remained statistically significant,  $t(97)=-4.26, p<.05$ . Thus, EL students scored lower on WJ PC by .803 (SE=.189). In the final model, the slope for EL x Reading Involvement was not statistically significant.

When comparing Conditional Model 3 to Conditional Model 2, the deviance statistic decreased by 3.48 ( $\Delta df=4$ ), which did not exceed the .05 critical value of the Chi-square distribution. However, the AIC and BIC fit indices decreased from the previous model, thus it can be argued that Conditional Model 3 is still a better model than Conditional Model 2. When comparing Conditional Model 3 to Conditional Model 1, which had the same number of parameters, the change in deviance statistic was negligible (less than 0.3) and AIC and BIC fit indices decreased. These two models differ in the fact that Conditional Model 1 contained ORF, while Conditional Model 3 contained ELx reading involvement, indicating the interaction between language status and reading involvement is a better predictor of reading comprehension than oral reading fluency and Conditional Model 3 was a better model overall.

Across all conditional models, the intercept estimate was 0, indicating that there was no variance in scores explained by teacher after the student level predictors were entered in the model. Results show that silent reading fluency, language status, and the

interaction between language status and reading involvement play a significant role in predicting reading comprehension. Implications regarding the influence of fluency, language status, and motivation will be further discussed.

Figure 1  
*Interaction Between Language Status and Reading Involvement*



## Chapter 5: Discussion

This study addressed how fluency and reading motivation play a part in struggling readers' comprehension and explored the relationship between English learner students' motivation and reading comprehension. The following major conclusions can be summarized about struggling readers in middle school from this study: (1) silent reading fluency significantly predicts reading comprehension; (2) Oral reading fluency does not contribute significantly to reading comprehension (3) Language status is a significant

predictor of reading comprehension; (4) Self-efficacy and reading curiosity are not substantial predictors of reading comprehension scores; and (5) For English learner students who are struggling readers, reading involvement may significantly boost reading comprehension scores. In general, the results yield five important findings.

First, across all conditional models, when students' silent reading fluency scores were added, it was shown to be a significant predictor of reading comprehension. The finding of silent reading fluency relating to reading comprehension makes sense given that the passage comprehension subtest of the Woodcock Johnson requires students to read passages silently. This finding also aligns with prior research that suggests strong correlations between silent reading fluency and reading comprehension. Klauda and Guthrie (2008) found a strong relationship ( $r=.75$ ) between silent fluency (measured by the Woodcock-Johnson III Reading Fluency Test) and reading comprehension (measured by the Gates-MacGinitie Reading Test; GMRT) for fifth grade students. In addition, Rasinski, Samuels, Hiebert, Petscher, and Feller (2011) examined the effects of practicing a silent reading fluency computer program on fifth to ninth grade students and found it to have positive and substantial improvements in reading comprehension and overall reading achievement. Although this current study may contribute to research that suggests the positive impact of silent reading fluency on reading comprehension, this did not hold true for oral reading fluency in the sample that was examined.

Second, across all conditional models, oral reading fluency was not found to be an important contributor for predicting reading comprehension. Although this may contradict results from Hasbrouck, Ihnot, and Rogers' (1999) study, which found that a

program to increase oral reading fluency of students with learning disabilities in sixth grade contributed to higher reading outcomes, this current study does substantiate evidence from other researchers of the declining contribution of oral reading fluency as students approach middle school.

Studies that have found oral reading fluency to be an important predictor of comprehension have shown this to be true mostly in elementary school settings. Fuchs et al. (2001) suggested oral fluency was a more promising indicator of comprehension than silent fluency, for fourth fourth graders. Jenkins and Jewell (1993) found the correlation between oral reading fluency and two standardized reading tests declined as grade level increased from second to sixth grade. Findings in Silberglitt et al.'s (2006) study also found oral reading fluency to attribute to less variance in comprehension scores by the time students got to eighth grade. Given that the sample in question here was made up of eighth graders, it seems to reflect previous findings that suggest oral reading fluency is less predictive of comprehension for students after early elementary school (Yildirim & Ates', 2012). Although oral reading fluency was not a significant predictor in this study, factors that influence language, such as CELDT scores, may be more important in this sample of students.

Third, results showed that language status was a significant predictor of students' reading comprehension scores. The fact that language status came out to be significant in all conditional models, and the EL students were predicted to score lower on reading comprehension based on the negative slope estimates, converges with research suggesting that on average, English only students outperform their English learner peers

on measures of reading comprehension (Lesaux, 2006). This current study indicated that among the pool of poor readers selected, EL students still scored at the bottom. Several hypotheses may explain this consistent finding. Research has shown that oral language skills (which encompass vocabulary and oral comprehension) are important precursor skills to reading comprehension (Bradley & Bryant, 1983; Hulme, Muter, Snowling, & Stevenson, 2004). Unfortunately, EL students have been shown to lag behind peers on vocabulary (Proctor et al., 2005), as well as oral language proficiency (Droop & Verhoeven, 2003). Although vocabulary and oral comprehension skills were not measures that were specifically included in this study, the EL students' overall CELDT score tapped into speaking, listening comprehension, reading, and vocabulary skills, suggesting lower scores in these domains may attribute to their lower comprehension scores. These factors may be important for future exploration, as language status was shown to interact with motivation in the results.

Fourth, measures of self-efficacy/reading curiosity did not contribute significantly to struggling readers' comprehension. This may imply that the general reading ability beliefs of a student may not actually contribute to their reading comprehension capabilities. This finding is similar to that of Guthrie et al., (2007) in which the reading interest, choice and involvement of fourth graders were significantly related to comprehension, whereas reading efficacy was not. Similarly, in Lau and Chan's (2003) study, poor readers in seventh grade exhibited significant correlations between intrinsic motivation and comprehension, but not reading efficacy. When considering the items used to address self-efficacy (ratings on how good of a reader students think they are, and

whether they will do well in reading the following year), a number of inferences can be drawn. Multiple regression analysis was used to examine whether the motivation survey items significantly predicted students' passage comprehension scores (Table 9). A non-significant regression equation was found ( $F(8,92)=1.003, p=.439$ ) with an  $R^2$  of .08. This analysis showed that the second item used to measure self-efficacy (whether students think they will do well in reading the following year) did not come out to be significant, suggesting that a student could believe they are going to get a good grade in classes that involve reading, yet not actually have high reading comprehension skills. They may assume that their grades are not directly linked to their skill level.

Another explanation for the non-significant contribution of self-efficacy may be due to trends that show students with learning disabilities to overrate their academic competence. This trend has also been attributed to the way teachers motivate their students. Teachers that praise and show positive feedback for student with learning disabilities may increase efficacy and downplay academic difficulties, while students infer their academic abilities from teachers' praise (Schunk, 1989a, 1989b; Weiner, Graham, & Taylor, 1983). Thus their reading self-efficacy does not accurately predict their comprehension skills.

This fourth finding however, contrasts prior research that suggests students' ability beliefs predict their reading achievement performance. Retelsdorf, Köller, and Möller (2011) found reading self-concept (although not the same as self-efficacy, but closely related) to have a positive effect on reading performance for fifth to eighth graders. Park (2011) also found intrinsic motivation and self-concept to be significantly

correlated with reading comprehension in elementary school. Likewise, Taboada et al. (2009) found intrinsic motivation and efficacy to be related to comprehension for fourth grade students, although the study was conducted using teacher ratings as opposed to self-ratings. Further research would have to be carried out in order to investigate the relationship between self-efficacy and reading comprehension with struggling middle school students.

As found in the PCA, self-efficacy was combined with reading curiosity in the analyses. The first curiosity item (If the teacher discusses something interesting I might read more about it) was also not significantly related to comprehension. This shows that if reading curiosity is not a significant predictor of comprehension, perhaps the fact that these students are curious about certain topics does not mean they are actually going to go ahead and read about them or perform better on specific reading comprehension questions. The topics they are curious about may be focused to something that does not necessarily contribute to their comprehension skills. While curiosity, which was previously found to tap into intrinsic motivation, was not significant, another aspect of intrinsic motivation, reading involvement, was found to be an important contributor of reading comprehension for language learners in this study.

Finally, language status moderated the relationship between reading involvement (as measured by the abbreviated MRQ) and reading comprehension. This finding suggests that for students who are English Learners, a higher rating on reading involvement can actually boost their reading comprehension scores significantly. Despite the fact that overall, English learners have been shown to have lower comprehension



scores than their English only peers, this does not mean that this trend holds true for every type of EL student. The predictive nature of reading involvement for reading comprehension may be explained through different pathways. The items on this survey that measured reading involvement suggest that students who score higher on this construct like to read a variety of texts (Items 9, 10, and 11).

A common finding has been discussed in research regarding students' interest in reading and how it is positively related to comprehension. This has been seen in not only the elementary school population (Asher, Hymel, & Wigfield, 1978; Asher & Markell, 1974) but also with college students (Schiefele, 1991). When college students' prior knowledge and general intelligence were controlled, their interest in text materials was still shown to influence their comprehension (Schiefele, 1991). It was suggested that the higher interest allowed for deeper processing of the material and more strategy usage while reading. In a study of fifth and sixth graders, Renninger (1992) assessed interest in reading materials and found that interest in text enhanced comprehension, even when the text was difficult for children.

Another proposition to address the link between reading involvement and comprehension occurs through the amount of reading a child does. Enjoyment in an activity should facilitate a child's persistence and intensity of the activity (Schunk et al., 2008); accordingly, the child who likes reading is likely to read more. Longitudinal studies have shown that a wider breadth of reading is linked to higher reading achievement. For example, the amount of reading in third grade was shown to predict growth of reading achievement in fifth grade (Cipielewski & Stanovich, 1992).

Furthermore, Cunningham and Stanovich (1997) found that print exposure (using students' recognition of a variety of authors found inside and outside of school) in early elementary school contributed to a significant amount of variance in reading comprehension for these students in eleventh grade. Therefore, reading comprehension may be boosted through the amount of reading a student does and the students' interest for reading.

In combination with items 9-11 in the reading involvement construct was item 5, which asked students to rate how much they agree with the statement "I make pictures in my mind when I read." In the regression analysis, it was found that Item 5 significantly predicted comprehension ( $\beta = .24, p < .05$ ). This statement reflects use of mental imagery processing in written text. Given that this strategy has indeed been linked to higher oral/written language and comprehension (Kosslyn, 1994), it is not a surprising finding that students who rate themselves high on this item would also have higher reading comprehension. In general, these results indicate that students' reading interest and involvement link the use of effective learning strategies, engagement, and attention, to reading comprehension.

In summary, the most salient predictors of reading comprehension for eighth grade poor readers, as addressed in this study, were silent reading fluency and language status. However, for EL students, reading involvement also played an important role in reading comprehension. When looking at the most parsimonious model of reading comprehension, the two best sets of predictors were found in conditional model 1 and conditional model 3. The difference in these two models lies in the presence of either oral

reading fluency (conditional model 1) or language status x reading involvement (conditional model 3), with conditional model 3 showing slightly better fit indices. This suggests that perhaps the influence of oral reading fluency skills is not as important as other factors, such as silent fluency, language status, and reading involvement, as students progress to eighth grade. While a growing body of research indicates that EL students perform lower on reading comprehension measures, language learners' motivation may not develop in the same way as English only students, and few researchers have begun to tackle its connection to reading comprehension (Grabe, 2009).

### **Limitations and Future Directions**

Several issues should be kept in mind when interpreting the results of this study. This section discusses limitations of the measures and the sample used in the study. Something to consider when applying the survey to the sample in this study is that the MRQ, which was used to collect self-efficacy and intrinsic motivation scores, was originally created for fourth and fifth graders, and not necessarily targeted toward students in special education, ELLs, nor middle school students. The items in the survey did not necessarily converge onto the same constructs of self-efficacy, reading curiosity, and involvement, as proposed by Guthrie and Wigfield. A limitation of the current study emerges due to the fact that some argue that a principal component analysis requires a sample size of 5 to 10 participants per variable (Kass & Tinsley, 1979). Although this study did not reach a sample size of 10 participants per variable, others have argued that changes in the ratio of participant per variable make little difference to the stability of factor solutions (Arrindell & van der Ende, 1985). Furthermore, the identification of

factors from the PCA was not one of the primary research questions of this study, and was conducted in order to use them in regression analyses. The fact that the constructs did not match up with factors extracted in the original MRQ points to a need for developing a motivation measure that considers culturally diverse adolescents in middle school.

Secondly, the validity of self-reports in social science research has been questioned. While some have argued that the validity of questionnaires is high (Dunnette, 1952) and that the accuracy of self report data is not less accurate than other methods of data collection (Walsh, 1967), the inaccuracy of using self-reports in research has also been brought to attention (Cronbach, 1970). A common explanation for the inaccuracy of self-report data is tied to social desirability. The MRQ was administered individually or in small groups, prohibiting the anonymity of the survey, which may have influenced students' responses. In this case, if a desire of the student to select acceptable answers for a teacher or test administrator was present, it may have affected their responses. Alternatively, Pintrich, Smith, García, and McKeachie (1993) studied the predictive validity and reliability of a Likert-scale motivation and cognition survey given to college students before the end of the winter semester. They found their scale to have high correlations with students' final grades, suggesting high predictive validity of self-report data surveys. Although there exist limitations in self-report measures and the MRQ, it is not the only measure with flaws in this study.

Francis et al. (2006) demonstrate that any single attempt to assess reading comprehension does not tell a complete story about a student's reading comprehension

ability. The inferences that are made about how well an individual person comprehends written material vary depending on how it is assessed (Cutting & Scarborough, 2006). In this study, comprehension was measured by the Woodcock-Johnson passage comprehension subtest, which requires students to read a passage silently and then state a word that could be used to fill in the blank for the sentence. However, this score should not be taken as the only reflection of a student's comprehension ability. Also, an analysis of reading comprehension tests done by Keenan, Betjemann, and Olson (2008) suggests that passage comprehension on the Woodcock-Johnson relies more on decoding, whereas language comprehension accounts for most of the variance in other standardized reading comprehension measures. These analyses lend themselves to the possibility of finding different results using different comprehension measures.

Additionally, there is an increasing body of research indicating that the academic self-perceptions of students with learning disabilities may not reflect their actual academic skills (Alvarez & Adelman, 1986) and that these students tend to overestimate their academic skills. Stone and May (2002) suggest that this phenomena should be further examined, as some studies have found that LD students demonstrate significantly greater overestimation than students without LD (Heath, 1995; Meltzer, Roditi, Houser, & Perlman, 1998), while another study found no significant difference of overestimation in age matched peers (Slife, Weiss, & Bell, 1985). Thus, it is possible that the scores of the students with learning disabilities in the sample may affect the results of the study.

In addition to the sample of LD students who may have overestimated their reading skills, the sample of EL students and EO students was unequal. The fact that

there were 28 EL students compared to 74 EO students may have limited the comparison of the two groups. Future studies of reading motivation may be conducted on a larger sample of EL students. Future explorations may also consider independent sample t-tests to determine if there were significant differences between EL and EO students in the motivation variables.

### **Implications**

This study underscores a number of practical implications. For educators and school psychologists working in middle school, silent reading fluency assessments may be a very valuable tool to use to detect reading comprehension difficulties and gauge comprehension skill levels. Also, as these findings suggest, particular attention in reading comprehension should be given to students with English language learner status, as the EL students in this study were still scoring lower than their EO peers that were poor readers. Another practical reading comprehension strategy extracted from this study guides educators toward the usefulness of teaching mental imagery to students who have comprehension deficits (Wilson, 2012).

The findings in this study also suggest that it may be worthwhile to invest time in motivating students to become more involved in their reading, particularly EL students with poor reading profiles. The effects of motivation may be beneficial well into their future. As Łockiewicz, Bogdanowicz, and Bogdanowicz (2014) found in a sample of adult dyslexics, succeeding in different fields by highly functioning adult dyslexics was more closely linked to personality, motivational factors, and aspirations, rather than educational attainment or cognitive factors.

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## Tables

Table 1  
*School Demographics*

	District A		District B	
	School A	School B	School Y	School Z
Enrollment ( <i>N</i> )	1077	921	1000	1022
Ethnicity <i>n</i> (%)				
African American	16 (1.5%)	13 (1.4%)	61(6.1%)	74 (7.24%)
Hispanic	924 (85.8%)	869 (94.4)	644 (64.4%)	358 (35.0)
White	99 (9.2%)	24 (2.6)	259 (25.9%)	432 (42.3%)
American Indian	2 (0.19%)	2 (0.2%)	5 (0.5%)	5 (4.9%)
Asian	17 (1.58)	6 (0.7%)	20 (2.0%)	54 (5.3)
Filipino	6 (0.56%)	1 (0.1)	10 (1%)	31 (0.3%)
Pacific Islander	4 (0.37%)	2 (0.2%)	2 (0.2%)	6 (0.6%)
Multiple/no response	9 (0.84%)	4 (0.4%)	21 (2.1%)	41 (4.0%)
English Language Learners	484 (44.9%)	576 (62.5%)	101 (9.9%)	42 (4.1%)
Special Education (by District)	9.8%		11.0%	

Table 2  
*Sample Descriptive Data*

	N	English Language Learners (ELLs)	English Only	Special Education
School A	28	15	13	11
School B	26	10	16	6
School Y	17	2	15	7
School Z	31	1	30	9
Total	102	28	74	33

Table 3

*Descriptive Statistics for Reading and Motivation Measures for all Students*

Measure	N	Mean	SD	Min	Max	Skewness	Kurtosis
WJ PC ss	102	76.24	9.49	55.0	98.0	.08	-.55
TOSCRF ss	102	88.12	10.38	62.0	116.0	-.18	-.09
ORF raw	102	105.01	32.84	21.0	202.0	.27	.27
Motivation							
SE/Reading Curiosity	101	11.39	2.39	4	16	-.54	.39
Reading Involvement	101	11.88	2.49	5	16	-.77	.34

*Note.* WJ PC ss= Woodcock Johnson Passage Comprehension standard score; ORF raw=Oral Reading Fluency raw score; TOSCRF ss= Test of Silent Contextual Reading Fluency standard score; SE=Self-Efficacy; scores on SE/Reading Curiosity and Reading Involvement are composite scores made up of items included in each factor

Table 4

*Means and Standard Deviations for Reading and Motivation Measures by Language Status*

Measure	non-EL (n=74)				EL (n=28)			
	M	SD	Min	Max	M	SD	Min	Max
WJ PC ss	78.24	8.54	62.0	98.0	70.39	9.87	55.0	98.0
TOSCRF ss	88.82	1.31	62.0	116.0	86.42	8.25	69.0	100.00
ORF	108.66	31.34	43.0	202.0	94.35	35.37	21.0	153.0
Motivation								
SE/Reading Curiosity	11.37	2.15	5	16	11.43	2.97	4	16
Reading Involvement	11.95	2.52	5	16	11.71	2.46	5	15

*Note.* WJ PC ss= Woodcock Johnson Passage Comprehension standard score; ORF=Oral Reading Fluency raw score; TOSCRF= Test of Silent Contextual Reading Fluency standard score; SE=Self-Efficacy, scores on SE/Reading Curiosity and Reading Involvement are composite scores made up of items included in each factor

Table 5

*Summary of Principal Component Analysis of Motivation Questionnaire (N=101)*

Rotated Factor Loadings		
Item	1	2
1. If the teacher discusses something interesting I might read more about it.	<b>.72</b>	.27
2. I enjoy a long, involved story or fiction book.	<b>.70</b>	.20
3. I know that I will do well in reading next year.	<b>.79</b>	.25
5. I make pictures in my mind when I read.	.25	<b>.77</b>
6. I am a good reader.	<b>.74</b>	.38
9. I read stories about fantasy and make believe.	<b>.41</b>	<b>.70</b>
10. I read about my hobbies to learn more about them.	.05	<b>.57</b>
11. I like mysteries.	<b>.40</b>	<b>.72</b>
Eigenvalues	2.91	1.29
% of variance	36.36	16.07
Cronbach's Alpha	.72	.64

*Note. Factor loadings over .40 appear in bold, 1=self-efficacy/reading curiosity, 2=reading involvement*

Table 6  
*Means and Standard Deviations for Motivation Survey Items by Language Status*

Measure	non-EL (n=74)		EL (n=28)	
	M	SD	M	SD
Item 1	2.97	.66	2.79	1.03
Item 2	2.64	.85	2.79	.96
Item 3	3.10	.67	3.21	.88
Item 5	3.34	.83	3.14	.85
Item 6	2.68	.78	2.64	.95
Item 9	2.69	.78	2.75	.84
Item 10	2.92	.89	2.71	.98
Item 11	3.00	.92	3.11	.88

*Note.* Scores for items range from 1-4

Table 7  
*Correlation Matrix for Reading, Language, and Motivation Variables*

Variables	1.	2.	3.	4.	5.	6.
1. WJ PC ss	1					
2. ORF	.374**	1				
3. TOSCRF ss	.427**	.549**	1			
4. EL Status	-.415**	-.168	-.122	1		
5. SE/Reading Curiosity	-.013	.266**	-.056	-.028	1	
6. Reading Involvement	.052	.067	-.016	-.047	.391**	1

*Note.* \*\* significant at  $p < .01$ ; WJ PC ss= Woodcock Johnson Passage Comprehension standard score; ORF=Oral Reading Fluency raw score; TOSCRF ss= Test of Silent Contextual Reading Fluency standard score; EL=English learner, SE=self-efficacy

Table 8  
*Hierarchical Linear Models Predicting Reading Comprehension*

	Unconditional model		Conditional Model 1		Conditional Model 2		Conditional Model 3	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
<b>Fixed effects</b>								
Intercept	.17	.12	.22*	.10	.22*	.10	.22*	.10
TOSCRF			.26*	.10	.25*	.10	.35**	.08
ORF			.17	.10	.15	.11		
EL Status			-.80**	.19	-.76**	.19	-.80**	.19
SE/RC					.08	.12		
RI					-.08	.11		
EL x					-.37	.19		
SE/RC								
EL x RI					.47*	.21	.28	.16
<b>Random effects</b>								
Teacher	.17	.12	0	0	0	0	0	0
Residual	.84**	.12	.71**	.10	.69**	.10	.71**	.10
<b>Fit Statistics</b>								
Deviance	284.42		260.62		260.75		257.27	
AIC	288.42		264.62		264.75		261.27	
BIC	293.65		269.79		269.82		266.42	
Parameters	3		6		10		6	

*Note.* \* significant at  $p < .05$ , \*\* significant at  $p < .01$ . ORF=Oral Reading Fluency; TOSCRF= Test of Silent Contextual Reading Fluency standard score; EL=English Learner, SE=self-efficacy, RC=reading curiosity, RI=reading involvement, Deviance Statistic=-2 Log Likelihood, AIC= Akaike Information Criterion, BIC= Bayesian Information Criterion

Table 9  
*Summary of Regression Analyses for Motivation Survey Items Predicting Reading Comprehension (N = 102)*

Variable	<i>B</i>	<i>SE B</i>	$\beta$
Item 1	1.79	1.47	.15
Item 2	.35	1.26	.03
Item 3	-3.03	1.65	-.23
Item 5	2.73	1.34	.24*
Item 6	.87	1.46	.08
Item 9	-1.34	1.21	-.13
Item 10	-.43	1.13	-.04
Item 11	-.48	1.24	-.05
$R^2$		.08	
$F$		1.00	

*Note.* \* significant at  $p < .05$ ; Item 3  $N = 101$

## Appendix A

### Abbreviated Motivation for Reading Questionnaire Used

Directions: We are interested in your reading.

The sentences tell how some students feel about reading. Listen to each sentence and decide whether it talks about a person who is like you or different from you. There are no right or wrong answers. We only want to know how you feel about reading.

For many of the statements, you should think about the kinds of things you read in your class.

Here are some ones to try before we start on the ones about reading:

I like ice cream.

Not at all like me

Not like me

Somewhat like me

A lot like me

I like spinach.

Not at all like me

Not like me

Somewhat like me

A lot like me

Okay, we are ready to start on the ones about reading. Remember, when you give your answers you should think about the things you are reading in your class. There are no right or wrong answers, we just are interested in YOUR ideas about reading.

Let's start...

1. If the teacher discusses something interesting I might read more about it.

Not at all like me

Not like me

Somewhat like me

A lot like me

2. I enjoy a long, involved story or fiction book.

Not at all like me



Not like me  
Somewhat like me  
A lot like me

3. I know that I will do well in reading next year.

Not at all like me  
Not like me  
Somewhat like me  
A lot like me

4. I have favorite subjects that I like to read about.

Not at all like me  
Not like me  
Somewhat like me  
A lot like me

5. I make pictures in my mind when I read.

Not at all like me  
Not like me  
Somewhat like me  
A lot like me

6. I am a good reader.

Not at all like me  
Not like me  
Somewhat like me  
A lot like me

7. I read to learn new information about topics that interest me.

Not at all like me  
Not like me  
Somewhat like me  
A lot like me

8. I learn more from reading than most students in the class.

Not at all like me  
Not like me  
Somewhat like me

A lot like me

9. I read stories about fantasy and make believe.

Not at all like me

Not like me

Somewhat like me

A lot like me

10. I read about my hobbies to learn more about them.

Not at all like me

Not like me

Somewhat like me

A lot like me

11. I like mysteries.

Not at all like me

Not like me

Somewhat like me

A lot like me

12. I read a lot of adventure stories.

Not at all like me

Not like me

Somewhat like me

A lot like me

13. I feel like I make friends with people in good books.

Not at all like me

Not like me

Somewhat like me

A lot like me