3-25-2017

A Study of the Relationship between Oral Language and Sight Word Acquisition in First-Grade Students

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A Dissertation Submitted to

The Faculty of

The Annsley Frazier Thornton School of Education

Bellarmine University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy of Education and Social Change

by

Becky L. Goetzinger

March 2017

Bellarmine University

The Annsley Frazier Thornton School of Education of Bellarmine University certifies that Becky L. Goetzinger has successfully defended her dissertation for the degree of Doctor of Philosophy in Education and Social Change as of March 25, 2017.

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Abstract of the Dissertation

This study examines the relationship between socio-economic status, oral language, graphophonemic knowledge, and sight word acquisition in first-grade students. Previous research has shown that a relationship exists between socio-economic status and oral language as well as between oral language and reading. The present study built on the research by extending these relationships to include high-frequency sight words, the words frequently targeted in early reading instruction. Information concerning family socio-economic status was collected using a survey at the start of the study. Across their first-grade year, 46 students were then assessed on measures of receptive oral language, graphophonemic knowledge, and sight word knowledge. Students made significant progress on all measures indicating that first grade was a time of rapid growth in oral language, graphophonemic knowledge, and sight word acquisition. Multiple regression analysis revealed that oral language accounted for 37.6% of the variance in sight word acquisition in winter and 25.9% of the variance in spring, which establishes that oral language is related to sight word acquisition. When an analysis of covariance was used to control for the impact of socio-economic status on sight word acquisition, the results were significant, F (1, 44) = 8.550 , $p < .01$, $\eta^2 = .163$; socio-economic status also influences sight word acquisition. Mediation analysis revealed that graphophonemic knowledge reduced the impact of oral language on sight word acquisition from .556 to .225. Together these findings show that both socio-economic status and oral language impact the acquisition of high-frequency sight words. Therefore, direct instruction in high-frequency sight words is needed in early elementary classrooms. Further, because oral language impacts sight word acquisition, primary classrooms need to be language-rich environments where students have opportunities to hear complex vocabulary and to participate in productive talk.

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Chapter 1: Introduction

Literacy begins with oral language as children first listen to spoken words and then begin to produce their own (Honig, 2007). The seminal work of Hart and Risley (1995), along with more recent research by other scholars, suggests that children's oral language is related to their families' socioeconomic status ([SES] Hoff, 2003; Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010). Additional research suggests that oral language is correlated to reading achievement (Catts, Fey, & Proctor-Williams, 2000; Catts, Fey, Zhang, & Tomblin, 1999; Goff, Pratt, & Ong, 2005; Nation & Cocksey, 2009; Roth, Speece, & Cooper, 2002; Storch & Whitehurst, 2002). Studies have parsed out the various components of both reading and oral language in order to clarify the relationship between the two constructs. However, one crucial aspect of reading, sight word reading, has been neglected in this research. Theories of reading, including Hoover and Gough's (1990) Simple View of Reading and Logan's (1988) Instance Theory of automaticity, indicate that the ability to decode and read words automatically is a crucial component of reading. Therefore, the purpose of this study is to investigate the relationships between SES, oral language, and sight word learning.

Graphophonemic knowledge is considered as an additional factor affecting the rate of sight word acquisition. Uhry and Shepherd (1997) found that gains in phonological awareness were linked to increases in word reading. Additionally, Stuart (1990) found that children used phonics knowledge in word recognition tasks. In first grade, graphophonemic skills are often taught concurrently with sight words and increases in this knowledge have the potential to impact sight word learning. Therefore, graphophonemic knowledge is examined as a potential mediating variable.

To explore the relationships between SES, oral language, sight words and graphophonemic skill, a yearlong quantitative study with repeated measures was undertaken with a sample of 46 first-graders from two schools representing children from backgrounds of lower and higher SES. A family survey was used to gather information about SES and that data were analyzed using Hollinghead's (2011) Four Factor Index of Social Status to determine a numeric SES score. Four assessments were administered to participants in fall, winter, and spring. Oral vocabulary was used as the measure of oral language proficiency and was assessed using The Peabody Picture Vocabulary Test ([PPTV] Dunn & Dunn, 2007). Sight words were measured using both the Sight Word Efficiency Subtest (SWE) of the Test of Word Reading Efficiency (TOWRE-2) and a Curriculum-Based Measure (Deno, 2003; Torgesen, Wagner, & Rashotte, 2012). Graphophonemic knowledge was measured using the Phonemic Decoding Efficiency (PDE) subtest of the TOWRE-2. Data were analyzed and findings are reported in this dissertation.

Problem Statement

Since the Great Recession, larger numbers of students come to school from families living in poverty (Annie E. Casey Foundation, 2014). At the same time, the results of the National Assessment of Educational Progress (NAEP) show that students from families with a low socioeconomic status (SES) lag behind their more affluent peers in reading (United States Department of Education, 2014). Between 2003 and 2013, reading scores from NAEP show a significant gap between SES groups on reading proficiency (United States Department of Education, n.d.). For example, in 2013, 51% of fourth-grade students who were ineligible for free or reduced-priced lunch (FRPL), a marker for SES, scored at or above proficient on the NAEP reading test; however, only 18% of students who were eligible for FRPL achieved at

proficient or distinguished levels (National Center for Education Statistics, n.d.). Educators and policymakers have worked to identify ways to close this gap (Rowan, Hall, & Haycock, 2010). Research has shown that one underlying issue may be oral language skills (Hoff, 2013; Honig, 2007; Huttenlocher, et al., 2010).

A significant amount of research has found differences in oral language development between children who come to school from families with different socioeconomic backgrounds (Fenson, et al., 1994; Hart & Risley, 1995; Hoff, 2013). Specifically, children whose families have a lower socioeconomic status tend to have fewer words in their vocabularies (Fenson, et al., 1994; Goldin-Meadow, et al., 2014; Hoff, 2003; Hart & Risley, 1995). Additionally, oral language is strongly correlated with reading at both the word recognition and reading comprehension levels (Catts, Fey, & Proctor-Williams, 2000; Catts, Fey, Zhang, & Tomblin, 1999; Goff, Pratt, & Ong, 2005; Nation & Cocksey, 2009; Roth, Speece, & Cooper, 2002; Storch & Whitehurst, 2002). Catts, Fey, Zhang, and Tomblin (1999) found a significant difference in the expressive and receptive vocabularies of good readers compared to poor readers; 11.8% of good readers compared to 57.4% of poor readers had deficits in receptive language, and 12.2% of good readers had deficits in expressive language compared to 50.3% of poor readers. More recent research by the Language and Reading Research Consortium (2015) found vocabulary had an indirect effect on reading comprehension through direct effects on word recognition and listening comprehension. However, while research has examined the relationship between oral language and general word recognition, the role of oral language in the development of sight words has been under-researched. Additionally, the existing empirical research on this relationship does not examine socioeconomic status and its relationship to oral language as a possible contributing factor to word recognition skills. Therefore, this is an important area for

potential study because in schools, one focus of early reading instruction is word recognition in terms of high frequency, sight words (Helman & Burns, 2008; Language and Reading Research Consortium, 2015). The Common Core State Standards for Foundational Skills in Reading include standards for word recognition in terms of sight words in kindergarten and in terms of irregular words in first, second, and third grades (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010).

Purpose

The purpose of this dissertation is to broaden the research connecting oral language and reading to include sight word reading. The specific goal of this dissertation is to evaluate the hypothesized model, as illustrated in figure 1, linking socioeconomic status, oral language, and sight word learning in beginning readers. Because of the established relationship between graphophonemic knowledge and word recognition, graphophonemic knowledge is considered as a potential mediating factor.

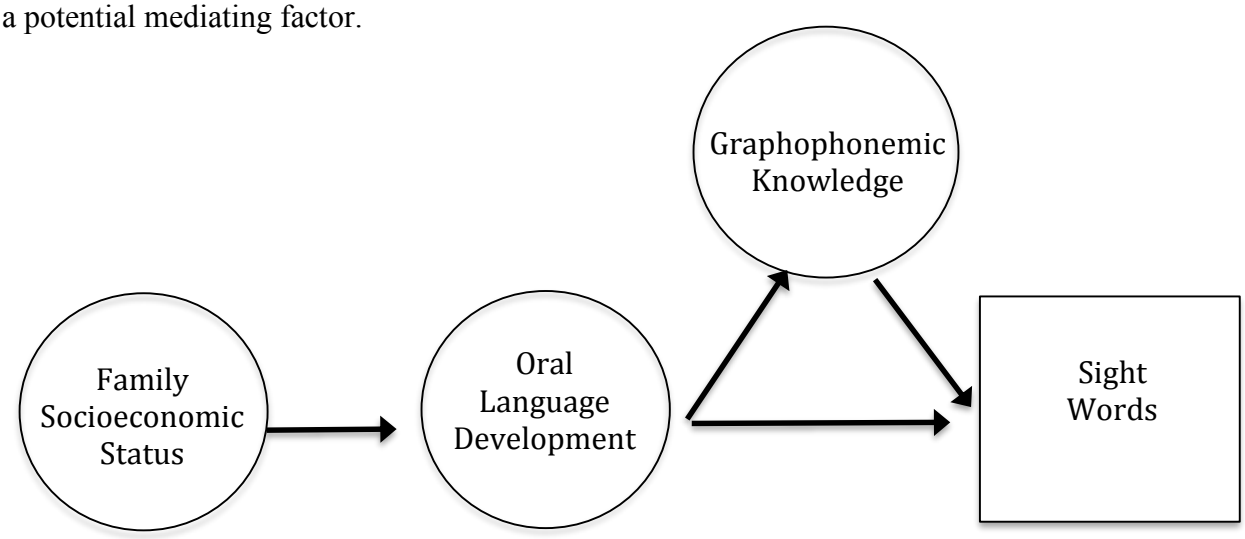


Figure 1 Hypothesized Model for Factors Impacting Sight Word Learning.

The individual components of this model, oral language development, socioeconomic status, reading, sight words, and graphophonemic knowledge, are well-researched topics

(Browder & Xin, 1998; Ehri, 1995; Fry, 1980; Hart & Risley, 1995; Hoff, 2003; Oulette & Beers, 2010; Uhry & Shepherd, 1997). Research has repeatedly shown that family SES impacts oral language development (Hart & Risley, 1995; Hoff, 2003). Additionally, oral language development has been shown to impact reading (Ricketts, Nation, & Bishop, 2007; Roth, Speece, & Cooper, 2002). Finally, graphophonemic knowledge, including letter-sound correspondence and sound blending, have been shown to influence word recognition (Barker, Torgesen, & Wagner, 1992; Stuart, 1990; Uhry & Shepherd, 1997).

Further, several reading theories support the importance of the development of sight words as a key early reading skill and provide a foundation for this work (LaBerge & Samuels, 1974; Logan, 1997; Seidenberg & McClelland, 1989). Hoover and Gough's (1990) simple view of reading is often cited in research on the relationship between oral language and reading (Catts, et al., 2000; Nation & Snowling, 2004; Oulette & Beers, 2010; Storch & Whitehurst, 2002). In this theory, the reading process is made up of two components: decoding and linguistic comprehension as well as the interaction of the two. Decoding is defined as efficient word reading and linguistic comprehension is defined as understanding of language (Hoover & Gough, 1990). This dissertation examines both of these elements in terms of sight words and receptive oral language skills and studies the interaction between the two.

Additionally, theories of automaticity (LaBerge & Samuels, 1974; Logan, 1997) support the importance of developing sight words in early readers. LaBerge and Samuels' (1974) automatic information processing theory suggests that practice with words produces a strengthening effect, which allows for automatic, effortless recall. Logan's (1997) instance theory contends that each new encounter with a word creates a new memory trace, which ultimately allows for rapid, effortless, unconscious recall of words. Both theories of automaticity

support the idea that automatic recall of sight words allows the reader to shift attention to higher level skills, including comprehension (LaBerge & Samuels, 1974; Logan, 1997). Therefore, the development of sight words is a key early reading skill, which should be one focus of early reading instruction (Helman & Burns, 2008; Language and Reading Research Consortium, 2015).

This dissertation attempts to establish the relationship between SES, oral language, and sight words and is significant because early reading instruction often focuses on high frequency, sight words (Helman & Burns, 2008; Language and Reading Research Consortium, 2015). If sight word learning is impacted by students' established oral language skills, then teachers need to be prepared to provide early intervention for students who have less developed oral language to insure that all children learn to read. Additionally, if graphophonemic knowledge can serve as a mediating factor, then instruction and intervention in phonics might also provide a path to increased reading achievement.

Research Questions and Hypothesis

The research questions guiding this study are:

1. What impact does oral language have on sight word acquisition over time?
2. How does sight word acquisition vary by socioeconomic status across first grade?
3. How does graphophonemic knowledge mediate the relationship between oral language and sight word acquisition?

From these questions, it is hypothesized that that oral language skills exert a direct effect on sight word learning. Further, it is expected that a positive relationship exists between socioeconomic status and sight word acquisition. Finally, graphophonemic knowledge is expected to mediate the

effects of oral language skills on students' sight word learning particularly for those students from families with a lower SES.

Limitations

One limitation of this study is that subjects could not be randomly selected from the entire first-grade populations of the elementary schools at sites one and two. As part of the agreement with the school district, parents were required to submit a signed letter of consent before students could participate in this study. Additionally, parents were asked to complete the family background survey, which included sensitive information about education levels and occupations. Students were automatically struck from the pool of subjects if either of these forms were not completed. Therefore, the study was limited to families with higher degrees of literacy who were able to read and complete these forms independently. As a result, the socioeconomic status of participants was negatively skewed.

Another limitation is that sight word instruction could not be studied as an additional factor. The participating school district was opposed to evaluation or observation of teachers' sight word instruction. An attempt was made to obtain qualitative data on sight word instruction; however, only 4 of the 5 participating teachers completed a sight word instruction survey. Additionally, teachers were reluctant to participate in follow-up interviews. Lack of participation may have been due to the fact that teachers were assigned to participate in the study by administrators rather than having volunteered independently.

Finally, a threat to internal validity is acknowledged in the sequencing of the assessments, which comprise the student assessment battery. When multiple tests are administered in the same order, it can relate in deflated scores on one of the tests; this phenomenon is known as administration order effects (Ryan, Glass, & Brown, 2010). Even

though it added a limitation to the study, the same order was intentionally used to maximize student interest. Because the TOWRE SWE test and sight word$_{CBM}$ contain similar directions and components, it was decided that the PPVT would be administered between them at each testing session. The purpose was to keep the assessment more interesting for the young participants by varying the types of items.

Definition of Terms

Oral language is a broad construct that relates to spoken words. Bradfield, et al. (2014) defined oral language as "The ability to use words to communicate ideas and thoughts and to use language as a tool to communicate to others," (p. 233). Oral language can be subdivided into expressive language, the ability to speak words to communicate, and receptive language, the ability to listen and understand a verbal message (Bradfield, et al., 2014). An additional distinction in oral language is vocabulary versus grammar (Bradfield, et al., 2014). Words that a person knows are vocabulary while grammar refers to the statements, or rules, about how a particular language works (Harris & Hodges, 1995). In terms of oral language, receptive vocabulary denotes words that a person can listen to and understand their meaning. This dissertation focuses on vocabulary and uses children's receptive language as the measure of overall oral language development.

Crucial to this dissertation is an understanding of the term *sight words*. *Sight reading* refers to words that have been previously read and are stored in an individual's lexical memory (Scott & Ehri, 1990). These words are read from memory without decoding or conscious effort (Logan, 1997). The term, *sight words,* is also used as a synonym for high frequency words (Ehri, 2005; Helman & Burns, 2008). High frequency words are the most commonly used words in the English language based on frequency counts in printed materials (Fry, 1980). The words

assessed in this study come from Fry's Instant Word Lists, the 1,000 most frequently used words in the English language (Fry & Kress, 2006). Therefore, in this dissertation, the term *sight word* is used to refer to the specific high frequency words that early readers learn to read from memory.

In the empirical literature, low socio-economic status, or SES, is sometimes equated with poverty. The United States Census Bureau (2106) uses specific income thresholds to calculate poverty levels. However, Hoff (2013) notes that a family's SES is based upon multiple factors, including levels of parental education, income, and occupational prestige, rather than just income. Poverty is part of the low SES range and represents the most extreme end of the socioeconomic spectrum (Hoff, 2013). In this study, Hollinghead's (2001) Four Factor Index for Social Status was used in conjunction with a family background survey to determine a social status score for each participating family. Therefore, references to low and high socioeconomic status in this study refer to these scores rather than a particular level of family income.

Finally, graphophonemic knowledge is an awareness of the relationships between graphemes and the phoneme(s) they represent or what might also be called letter-sound correspondence (Harris & Hodges, 1995). A phoneme is a unit of speech sound while a grapheme is the written representation of that sound using letters (Ehri & Roberts, 2006). In developing graphophonemic knowledge, children learn that sounds are systematically associated with each letter or group of letters (Ehri & Roberts, 2006). Knowledge of phonemes and graphemes allows a reader to blend sounds together in order to read words. In this dissertation, reading of decodable nonwords is used as a measure of students' graphophonemic knowledge. Nonwords can be pronounced using phonetic rules but carry no meaning (Seidenberg and McClelland, 1989).

Chapter 2: Literature Review

Introduction

The purpose of this literature review is to explore research on the connection between oral language skills and early reading, specifically the development of sight words. Topics include oral language development, sight words, high frequency words, early reading, and the relationship between these factors. Computer searches were conducted on the journal databases EBSCOhost, which includes ERIC, and JSTOR. To investigate oral language, the search terms *oral language* and *socioeconomic* yielded 138 articles in EBSCOhost. For the terms *sight words* and *oral language* as well as *high frequency words* and *oral language*, EBSCOhost searches resulted in 52 and 55 journal articles respectively. An additional search was conducted using the same search terms in JSTOR; however, over 80,000 related articles were retrieved so further limiting terms, including *elementary* and *reading*, were added. Further, as articles and books were read, their sources were then examined and located.

Articles and studies were evaluated for their relevance to the research questions as well as their overall merit. Articles that provided explanatory information about the constructs were included as well as those studies that explored the relationships between the various components of oral language and reading. Specifically, studies that included research questions relating oral language to word recognition were included. Additionally, a broad overview of language development, focusing on vocabulary, was included, but specific theories of language acquisition were omitted because the research questions focus on how already established oral language impacts sight word learning rather than on how the oral language was initially acquired. Finally, several articles were excluded because they focused on a specific intervention and ways to improve oral language or sight word acquisition, and the research questions, at this time, are

focused on the relationships rather than methods for providing instruction in oral language or sight word skills.

Oral Language Development

Oral language is a broad construct that relates to spoken words. Bradfield, et al. (2014) defined oral language as "the ability to use words to communicate ideas and thoughts and to use language as a tool to communicate to others," (p. 233). Oral language development is primarily a product of the social interaction between parents and their infants (Honig, 2007). Children learn morphemes, vocabulary, and rules for combining words into sentences through socialization (Honig, 2007; Saracho & Spodek, 2007). Further, children use language for social purposes such as making a request or comment, asking a question, or describing an event (Saracho & Spodek, 2007; Shonkoff & Phillips, 2000).

For typically developing children, oral language development follows a predictable progression (Goldin-Meadow, et al., 2014; Huttenlocher, Haight, Seltzer, & Lyons, 1991; Fenson, et al., 1994; Shonkoff & Phillips, 2000). It begins with receptive language as infants listen to and try to make meaning from the words of their caregivers (Honig, 2007). Fenson, et al. (1994) found that word comprehension typically begins between 8 and 10 months, and by 11 months, children can understand 50 words.

Infants' first attempts at expressive language, or language production, come as they make sounds based on the speech they have heard (Saracho & Spodek, 2007). Between 10 and 15 months, most children will begin to use oral language (Huttenlocher, et al., 1991; Shonkoff & Phillips, 2000). The first spoken words will often be nouns representing people or things in the environment (Honig, 2007). Fenson, et al. (1994) found that expressive language develops

slowly; on average, children produce fewer than 10 words at 12 months and 40 words at 16 months.

A language burst begins between 17 and 20 months and continues through the start of preschool (Fenson, et al., 1994; Honig, 2007; Shonkoff & Phillips, 2000). This is the period when expressive vocabulary acquisition is theoretically the most rapid, and a typically developing child learns an average of 8 to 11 new words each day (Alcock & Krawcyzk, 2010; Fenson, et al., 1994; Shonkoff & Phillips, 2000). Over a 15-month period, expressive vocabulary increases tenfold, and by 30 months, children can produce an average of 573 words (Fenson, et al., 1994). At 22 months, children typically begin pairing words into phrases, and by age 3, they are speaking in full sentences (Fenson, et al, 1994; Shonkoff & Phillips, 2000). Mean length of utterance, or average words per sentence, tends to be 4 words at 24 months (Fenson, et al., 1994).

During the preschool and elementary years, children's vocabulary continues to grow at a rapid rate (Anglin, Miller, & Wakefield, 1993; Fenson, et al., 1994). There is considerable variability in estimates of children's actual vocabulary during this period due to differences in measurement and criteria for known words (Anglin, et al., 1993). Research suggests that typically developing children learn thousands of words each year, which means they learn several new words each day (Anglin, et al., 1993). In a study of receptive vocabulary knowledge, Anglin, Miller, and Wakefield (1993) estimate children understand approximately 10,000 words in first grade, close to 20,000 words in third grade, and 40,000 words in fifth grade.

Research suggests that most typically developing children follow this predictable course of language development from sounds to words, from words to phrases, and from phrases to fully formed sentences (Huttenlocher, et al., 1991; Saracho & Spodek, 2007). However, there is a great deal of variability in the timing and the rate at which individual children learn language

(Fernald, Marchman, & Weisleder, 2013; Goldin-Meadow, et al., 2014; Huttenlocher, et al., 2010). Specifically, Huttenlocher, et al., (1991) conducted early research on the relationship between language exposure, in terms of mother's speech, and children's language acquisition. While all study participants increased their rate of vocabulary growth between the ages of 16 and 22 months, there were significant differences in individual children's vocabulary growth trajectories. Huttenlocher, et al. (1991) found a significant correlation (.65, $p < .001$) between the frequency with which words appeared in a mother's speech and the child's age of acquisition for those words suggesting that environmental factors played a crucial role in language development.

Other studies have also linked environmental factors, specifically language experiences, to a child's expected language development (Hart & Risley, 1995; Scheuele, 2001; Shonkoff & Phillips, 2000; Stanton-Chapman, Chapman, Kaiser, & Hancock, 2004). In a twin-study, Hayiou-Thomas (2008) examined the impacts of both genetics and environment on language and concluded that while both factors have an influence, environment contributed a significant portion of the variance in measures of language, including vocabulary.

Additionally, in a review of the literature, Scheuele (2001) found that children with environmental risk factors, such as poor prenatal care and exposure to violence, were more likely to have poor developmental outcomes including language development. Scheuele noted that many children, especially those from lower socio-economic groups, are impacted by multiple risk factors making it difficult to separate the impact of a single environmental factor on language development. Similarly, Stanton-Chapman, Chapman, Kaiser, and Hancock (2004) examined language development in terms of cumulative environmental risks. The number of risk factors, such as maternal tobacco use and parental education levels, were calculated. The more

risk factors present in a child's life, the more likely the child would be identified as having low language skills (Stanton-Chapman, et al., 2004).

Differences in Language Development Based on Socioeconomic Status

From family to family, parent-child interactions and language experiences vary significantly, and the scope of those experiences has a significant impact on a child's language development (Hart & Risley, 1995; Hoff, 2003; Huttenlocher, et al., 2010). Studies have consistently indicated that the richness of the language in a child's environment paired with the number of words heard will determine both the breadth of the child's vocabulary and the complexity of their oral language by age 4 (Hoff, 2003; Honig, 2007; Huttenlocher, et al., 2010).

Specifically, research has shown that socioeconomic status (SES) is related to language learning; children from low SES families typically have different language development trajectories than children from higher SES families (Anglin, et al., 1993; Fenson, et al., 1994; Hart & Risley, 1995; Hoff, 2003; Huttenlocher, et al., 2010). Hoff (2013) defines low-SES families as those in which "parents have low levels of education, income, and/or occupational prestige," (p. 5). Low-SES families are not limited to the very poor; poverty represents only the most extreme end of the socioeconomic spectrum (Hoff, 2013; Walker, Greenwood, Hart, & Carta, 1994). Also included are people living in "the lower strata of social and economic life," (Walker, et al., 1994, 607).

In a seminal study, Hart and Risley (1995) investigated the differences in language exposure and vocabulary learning based on family SES. When the children in their study were only 7 to 9 months old, they began recording the interactions between them and their caregivers for one hour every week and continued until the children reached the age of 3. They discovered a significant difference in the average number of words spoken based on the family's SES: a child

on welfare heard 616 words per hour, a working class child heard 1,251 words per hour, and a child from a professional family heard 2,153 words per hour (Hart & Risley, 1995). When this data was extrapolated, the authors concluded that by four-years-old, a child living in poverty would have a 13-million word gap in terms of their cumulative language experience compared to a child from a working class family. Additionally, they determined, at age 3, children from families on welfare had fewer words in their expressive vocabularies than their peers from professional families. Further, significant differences were found in the rates at which children learned new words; children from welfare families had slower growth trajectories than children from professional families (Hart & Risley, 1995).

Smith, Brooks-Gunn, and Klebanov (1997) used data from the National Longitudinal Survey of Youth and the Infant Health and Development Project to examine the impacts of poverty on cognitive ability, verbal ability, and school achievement. Family poverty was found to affect children's verbal ability, and the magnitude of this impact increased with the child's age (Smith, Brooks-Gunn, & Klebanov, 1997). Further, Smith, Brooks-Gunn, and Klebanov subdivided the sample into three groups: children who had never lived in poverty, children who lived in transient poverty, and children who lived in persistent, or continuous poverty. On the various measures, the persistent poverty group scored 6-9 points lower than the never poor group while the transient poverty group scored 4-5 points lower than the never poor group demonstrating that even short periods of poverty impact children's verbal abilities. Additionally, Smith, Brooks-Gunn, and Klebanov found that mother's educational levels were significantly related to their children's outcomes suggesting that socio-economic status could be measured in ways other than family income.

Hoff (2003) and Huttenlocher, Waterfall, Vasilyeva, Vevea, and Hedges (2010) looked at the relationship between language exposure, in terms of caregiver speech, and expressive language development. Hoff (2003) found that higher-SES mothers produced more language, used more word types, and had longer mean length of utterances than mothers in the lower-SES group. While children in both the higher-SES and lower-SES groups had similar vocabularies at the first home visit, the children in the higher SES group experienced faster rates of expressive vocabulary growth when compared to their lower-SES peers at the second visit 10 weeks later (Hoff, 2003). Similarly, Huttenlocher, Haight, Seltzer, and Lyons, (2010) found significant differences in children's language acquisition and that SES predicted growth; lower incomes corresponded with lower growth curves while higher incomes corresponded with higher growth curves in expressive language. The relative rank order of the children in comparison to one another remained fairly constant throughout the course of the study (Huttenlocher, et al., 2010). These studies found that children from higher-SES families develop expressive vocabulary more rapidly than their peers from low-SES families.

With a sample of both low-income and middle-income families, Furey (2011) compared the data gathered on children's vocabulary at 16-months and 18-months from two different measures: a maternal report checklist and a clinical observation. At both 16-months and 18-months, the children from low-income families (120 and 135 words) had smaller vocabularies than their peers from middle-income families (174 and 282 words) when measured by maternal report (Furey, 2011). Further, when compared to the vocabulary inventories created from the clinical observations, there was no difference in the accuracy of maternal reporting between the low-income and middle-income mothers; both groups of mothers tended to underreport their children's vocabularies (Furey, 2011). Furey concluded that vocabulary differences between

low-income and middle-income children that are reported in the empirical literature are accurate and not a function of underreporting by mothers.

Fernald, Marchman, and Weisleder (2013) conducted a longitudinal study to explore the relationship between SES and language development using measures for both expressive and receptive language. Fernald, et al. (2013) found that children whose families were classified as low SES were 6 months behind children from high-SES families in vocabulary production. Specifically at 24 months, children from high-SES families produced 450 words on average while children from low-SES families produced 300 words; the number that children from high-SES families had produced at 18 months (Fernald, et al., 2013). Further, in terms of receptive vocabulary, children from high-SES families were faster and more accurate in locating pictures to match spoken words than children from low-SES families (Fernald, et al., 2013). These group differences based on SES were detected at both 18 and 24 months (Fernald, et al., 2013). Fernald, et al. (2013) showed that not only expressive language development, but also receptive language development is correlated with SES.

In a longitudinal study that compared the language development of typical children from varied socio-economic backgrounds with children who had experienced a brain injury, Goldin-Meadow, et al. (2014) found that the quantity of parental language input varied by SES. Further, in both sample groups, children's output, in terms of expressive vocabulary, was related to parents' input. Low-SES parents said fewer words, and low-SES children produced fewer words. Additionally, children with brain injury who were exposed to high rates of parental talk had similar rates of vocabulary growth compared to typically developing children who were exposed to less parental talk (Goldin-Meadow, et al., 2014). An additional variable in this study was children's gestures. At 14 months, the number and type of children's gestures was related to

family's SES, and gestures predicted later vocabulary in both typically developing children and children with brain injuries. Goldin-Meadow, et al. demonstrated that parental speech is a key environmental factor in children's language development; even in the presence of brain injury, parent speech predicts children's vocabulary growth.

Anglin, Miller, and Wakefield (1993) also studied vocabulary development, but with school-age children rather than toddlers and preschoolers. One factor considered was SES. Significant differences in vocabulary recognition were found with higher-SES children recognizing more words than their lower-SES peers (Anglin, et al., 1993). Additionally, these differences increased with age and grade; the vocabulary gap between high-SES and low-SES children was greater in fifth grade than third grade (Anglin, et al., 1993). This research suggests that the SES gaps in oral language, in terms of vocabulary, extend well into children's school years.

While many children from low-SES backgrounds show deficits in oral language development, Schuele (2001) discovered in her review of the literature that few studies include children who have been diagnosed with primary language impairments. For example, Hart and Risley (1995) reported no children whose language was considered in the clinical range. Instead, children from low-SES backgrounds tend to have scores in the low-average range on standardized measures of language, which means that they do not meet the traditional criteria for language impairment (Schuele, 2001). As a result, many children with oral language gaps do not receive intervention services from speech-language pathologists (Schuele, 2001). Similarly, Walker, et al. (1994) noted that in their sample, children from low-SES families with low language scores did not appear to be receiving individualized educational services with the exception of two students who had been placed in classes for behavior disorders.

In summary, research has found a strong relationship between a family's socioeconomic status and a child's language development (Anglin, et al., 1993; Fenson, et al., 1994; Hart & Risley, 1995; Hoff, 2003; Huttenlocher, et al., 2010; Smith, Brooks-Gunn, and Klebanov (1997). Children from more affluent homes often develop oral language at faster rates than children who grow-up in less affluent homes (Fernald, et al., 2013; Hart & Risley, 1995; Huttenlocher, et al., 2010). Children from lower-SES families are more likely to have fewer words in their vocabularies (Anglin, et al., 1993, Hart & Risley, 1995; Schuele, 2001). This language acquisition gap is present prior to the beginning of children's formal education and widens as students move through school (Anglin, et al., 1993; Fernald, et al., 2013; Hart & Risley, 1995). Additionally, while many children from low-SES families have a language gap, many of them are not considered to have clinical deficits that would qualify them for targeted intervention services (Schuele, 2001).

Oral Language and Reading

The gap in oral language development is significant because research suggests that oral language forms the basis for later literacy learning (Hayiou-Thomas, 2008; Ricketts, et al., 2007). Specifically, in the empirical literature, researchers have found a relationship between oral language and readings skills (Babayigit, 2015; Catts, Fey, & Proctor-Williams, 2000; Catts, et al., 1999; Goff, Pratt, & Ong, 2005; Nation & Cocksey, 2009; Ricketts, et al., 2007; Roth, Speece, & Cooper, 2002; Storch & Whitehurst, 2002). Different aspects of oral language, including expressive and receptive language, and various reading components, including comprehension and early literacy skills, have been operationalized in varied combinations in order to gain a better understanding of how language skills contribute to reading skills (Catts, et al., 1999; Catts, et al., 2000; Oulette & Beers, 2010). Evidence suggests there is a relationship

between reading ability and language skills; however, there is no general consensus about which language skills provide the most significant contribution to reading ability or which facets of reading are most influenced by language skills (Goff, et al., 2005; Language and Reading Research Consortium, 2015).

The theoretical framework underlying much of the more recent research on the relationship between oral language and reading is Hoover and Gough's (1990) simple view of reading. This theory emphasizes the role of oral language in reading and hypothesizes that the reading process is comprised of two components: decoding and linguistic comprehension. An additional component is the interaction between decoding and linguistic comprehension. In the simple view, decoding is defined as efficient word reading with printed text, and linguistic comprehension is "the ability to take lexical information and derive sentence and discourse interpretations," (Hoover & Gough, 1990, p. 131). Linguistic comprehension is based in oral language and is measured in terms of language understanding; it differs from reading comprehension, which is the understanding of written text (Hoover & Gough, 1990). Linguistic comprehension is dependent on a subset of oral language processing skills, including vocabulary (Babayigit, 2015). The simple view of reading provides a theoretical link between reading skills and oral language learning, and it has been used as a theoretical framework in much of the empirical literature exploring this relationship, including the current study (Babayigit, 2015; Language and Reading Research Consortium, 2015; Nation & Snowling, 2004; Oulette & Beers, 2010; Storch & Whitehurst, 2002).

General Reading Ability. Walker, et al., (1994) examined the relationship between oral language and academic performance in board terms in their extension of the work of Hart and Risley (1989). In a longitudinal study that followed a portion of the sample from the original

study through the first 4 years of school, Walker, et al. used Hart and Risley's data on the variables of spoken vocabulary and mean length of utterance to investigate the relationship to school performance. From kindergarten to third grade, language data gathered at 36 months predicted children's expressive and receptive language as well performance on reading and mathematics measures. When SES and spoken vocabulary were combined, the variables accounted for 41% of the variance in reading achievement at second grade (Walker, et al., 1994). Further, the children from low-SES families had lower scores on language and reading tasks throughout school suggesting that their growth trajectories were never accelerated. Walker, et al. concluded that differences in parent-child interactions in the preschool years impacted, not only early language, but also later school performance.

Catts, et al. (1999) investigated the relationship between oral language and reading by comparing children with and without language disabilities. Reading ability was operationalized with two components, word recognition and comprehension, while oral language was broadly defined in terms of expressive and receptive language (Catts, et al., 1999). Reading measures from second grade were examined in relationship to oral language measures from kindergarten. A significant difference was found between the receptive and expressive language scores of good readers compared to poor readers (Catts, et al. 1999). For receptive language, 57.4% of poor readers had language deficits compared to 11.8% of good readers; similarly, 50.3% of poor readers showed deficits in expressive language compared to 12.2% of good readers (Catts, et al., 1999). These results were similar regardless of whether reading ability was determined based on reading comprehension or word recognition measures (Catts, et al., 1999).

Catts, Fey, and Proctor-Williams (2000) extended the previous study by following their participants through 4th grade. Reading was again operationalized in terms of word recognition

and comprehension. Kindergarteners' oral language scores were better predictors of 2nd grade reading comprehension than either kindergarten phonological processing or nonverbal IQ scores (Catts, et al., 2000). Word recognition scores in 2nd grade were also predicted by kindergarten oral language skills (Catts, et al. 2000). Further, 2nd grade oral language scores also contributed to the unique variance in 4th grade comprehension scores (Catt, et al., 2000). It is noted that in both of these studies, the relationship between kindergarten oral language skills was related to reading skills in later grades.

Furthermore, in an effort to establish a predictive relationship between the oral language of kindergarteners and reading ability in first and second grades, Roth, Speece, and Cooper (2002) also operationalized reading at two levels: word reading and comprehension. Oral language was measured using a three-domain framework that included structural language, metalinguistics (including phonological awareness), and narrative discourse. Additionally, family background was considered as an additional predictor. Roth, et al. (2002) found that family background, metalinguistics, and structural language in kindergarten were all significant variables that contributed unique variance to word reading in first grade. In second grade, background and metalinguistics remained significant; word retrieval was also significant. Further, oral vocabulary and word identification combined to account for 23% of the variance in measures of second-grade reading comprehension (Roth, et al., 2002). Phonological awareness was a predictor of word reading, but not a predictor of reading comprehension. Roth, et al. concluded that different aspects of oral language impact different reading tasks. Similar to Catts, et al. (1999) and Catts, et al. (2000), Roth, et al. (2002) established that a relationship does exist between oral language skills and reading abilities.

Notably Hill and Launder (2010) found no strong correlation between oral language and reading achievement in their work with a small group of young children in Australia. Hill and Launder (2010) assessed phonology, reading achievement, and oral language, in terms of receptive vocabulary. While there was a strong correlation between phonology and reading achievement, there was no significant correlation between vocabulary and reading achievement. Hill and Launder's findings differ from much of the research on oral language and reading suggesting that this relationship is an area for continued study.

Comprehension. In an early study focused on intelligence and reading comprehension, Stanovich, Cunningham, and Feeman (1984) included an oral language variable, listening comprehension. Overall, reading ability was found to be moderately predicted by general intelligence, and this correlation seemed to increase with age; however, Stanovich, et al. (1984) concluded that any theory focused on a single factor, such as intelligence, failed to account for the individual contributions of critical sub-skills that also impact reading. With the first-grade sample, Stanovich, et al. used regression analysis to demonstrate that phonological awareness (49.4%), decoding speed (14.2%), and language comprehension (6.5%) contributed more to reading comprehension than did general intelligence (4.3%). The contribution of general intelligence was not considered significant (Stanovich, Cunningham, & Feeman, 1984). Stanovich, et al. determined that reading development was dependent on several different skills beyond general intelligence including verbal comprehension, a measure of oral language (Stanovich, et al., 1984).

Griffin, Hemphill, Camp, and Wolf (2004) also studied the relationship between oral language and reading comprehension in a longitudinal study. At age 5, children participated in play narration and picture description tasks; transcripts from those tasks were then analyzed for

specific oral discourse competencies including narrative clauses, plot structure and elaboration, and descriptive information (Griffin, Hemphill, Camp, & Wolf, 2004). Then at age 8, the same children completed literacy assessments, which included a test of reading comprehension. While not all measures of oral discourse were correlated with later reading comprehension, children's use of evaluative language in the play narrative task and their reporting of information on the picture description task were significantly correlated with reading comprehension at age 8. Griffin, et al., (2004) concluded that children's ability to use text-level macrostructures in their preschool oral language was positively related to reading comprehension ability at age 8.

To explore the relationship between oral language and reading, Goff, Pratt, and Ong (2005) examined the impact of word reading, language, and memory to explore their impact on comprehension. This study is unique because it considered memory as a variable. Receptive language was a predictor of reading comprehension; 9% of the variance in comprehension scores was accounted for by receptive language (Goff, et al., 2005). However, orthographic processing, or irregular word reading, was a stronger predictor of reading comprehension accounting for 36% of the variance (Goff, et al., 2005). To further delve into this finding, Goff, et al. calculated the relationship between receptive language and orthographic processing and found a strong relationship between them suggesting that receptive language does impact comprehension but that it largely does so through its impact on orthographic processing.

Another type of study compares children who have poor reading comprehension skills (poor comprehenders) with children who have typically developing reading comprehension skills (Catts, Adlof, & Weismer, 2006; Nation, Snowling, & Clarke, 2007). Catts, Adlof, and Weismer (2007) found that in eighth grade, children who were identified as poor comprehenders had significant deficits in measures of general language comprehension, including vocabulary, and

these deficits were present in kindergarten, second, and fourth grades. Similarly, Nation, Snowling, and Clarke (2007) found that poor comprehenders tended to score in the low-average range on a standardized measure of expressive vocabulary. In Catts, et al.'s sample, while many of the children had low scores on language measures, only about one third met the clinical definition for language impairment and only 18% of the children received speech or language services by kindergarten. These findings correspond with Schuele's (2001) assertion that many children with oral language deficits, score in the low-average range and do not qualify for intervention services. However, these deficits are significant enough to impact reading comprehension (Catts, et al., 2007; Nation, et al., 2007).

Additionally, Nation, et al. (2007) found that when taught new words as part of the study, the low comprehenders needed the same number of teaching trials as the control group, but recalled fewer words and fewer definitions at a one-week follow-up. Further, Nation, et al. determined that the source of the poor comprehenders' difficulties with learning new words was semantics; children were unable to consolidate the meanings of new words even though they showed no significant weaknesses in phonological skills when compared to the control group. In terms of phonology, Catts, et al. (2007) also found that poor comprehenders had no significant deficits. These findings further support that reading comprehension skills are rooted in oral language skills, rather than decoding.

Cain and Oakhill (2014) extended the research further by separating literal comprehension skills from inferences skills. Oral language skills, measured as vocabulary knowledge, accounted for a greater portion of the variance in inference tasks than in literal recall of the text (Cain & Oakhill, 2014). Cain and Oakhill concluded that different aspects of

vocabulary knowledge, including a person's semantic network and the connections between known words, are related to comprehension, specifically in terms of inference skills.

Babayigit (2015) added to the research by comparing the relationship between oral language and reading comprehension in groups of children for whom English was a first (L1) and second language (L2). For both L1 and L2 students, oral language predicted reading comprehension; further, the group difference was not statistically significant suggesting the relationship was equally strong for both groups (Babayigit, 2015). Additionally, when the differences in oral language were controlled between the L1 and L2 groups, the difference in reading comprehension was no longer present (Babayigit, 2015). This study supports the key role that oral language has in reading comprehension. Also of interest to the present study, Babayigit found no significant difference in word reading between L1 and L2 students.

Early Literacy Skills. Storch and Whitehurst (2002) broadened the research connecting oral language and later reading skills by considering early literacy skills as a variable. The study is significant because children's oral language was measured in preschool along with code-related skills including print concepts and letter recognition. Reading ability was operationalized as reading accuracy and reading comprehension. Storch and Whitehurst (2002) used structural equation modeling to investigate the relationships between oral language, code-related skills, and reading skills in low-income children. The relationship with oral language was strongest in preschool; 48% of the variance in code-related skills, such as letter naming, was predicted by oral language (Storch and Whitehurst, 2002). While oral language was not significant in predicting reading ability in kindergarten, first, and second grades, Storch and Whitehurst (2002) concluded that preschool oral language skills indirectly impacted kindergarten code-related skills and reading skills at grades 1, 2, 3, and 4.

In a cross-sequential longitudinal study, Kendeou, van den Broek, White, and Lynch (2009) also examined early literacy skills, which they labeled as *decoding*, and oral language to determine their influence on later reading abilities. Kindergarten measures of decoding included letter recognition and phonological awareness; oral language measures focused on receptive language skills and included a unique measure of television comprehension (Kendeou, van den Broek, White, & Lynch, 2009). Like Storch and Whitehurst (2002), Kendeou, et al. found that the relationship between early literacy skills, such as letter recognition, and oral language was strongest in preschool and was insignificant by kindergarten. Further, the biggest predictor of kindergarten oral language skills was preschool oral language skills; preschool-decoding skills also explained 75% of the variance in kindergarten decoding skills. These findings led Kendeou, et al. to conclude that oral language and decoding skills represent two distinct clusters of skills. Additionally, second grade reading comprehension skills were explained by a combination of both decoding and oral language skills, which together accounted for 47% of the variance (Kendeou, et al., 2009).

Similarly, DeThorne, Petrill, Schatschneider, & Cutting (2010) studied the relationship between oral language and early literacy skills in two groups of children: children with typically developing oral language and children with a history of language delays. However, unlike previous studies, which relied on standard vocabulary measures, DeThorne, et al. (2010) measured oral language in terms of children's conversational skills by calculating mean length of utterance and number of distinctive root words from conversational samples (DeThorne, et al., 2010). Further, the early reading skills, such as phonological awareness, of children with a history of language delays were compared to those of children with normally developing language. DeThorne, et al. (2010) found that conversational language skills predicted a small,

but significant amount of unique variance in children's reading skills. Additionally, this contribution was beyond that measured by standard vocabulary measures and was most significant for children who had a history of oral language delays (DeThorne, et al., 2010).

Hipfner-Boucher, et al. (2014) conducted a more focused study examining the relationship between narrative discourse, a component skill of oral language, and phonological awareness. To measure narrative discourse, children in junior kindergarten and kindergarten were asked to retell a story that was read to them and to generate a story based on pictures. Narrative discourse was strongly correlated to phonological awareness (r = .63). Additionally, Hipfner-Boucher, et al. considered vocabulary as a variable due to its established relationship to phonological awareness; 8% of the variance in phonological awareness was attributed to vocabulary. This study provides further evidence of the strong relationship that exists between pre-reading skills and oral language.

In summary, the empirical literature examining the relationship between oral language and reading generally suggests a positive relationship. Large-scale, longitudinal studies have concluded that oral language is one of the factors that impacts children's reading abilities (Catts, et al., 1999; Catts, et al., 2000; Roth, et al., 2002; Storch & Whitehurst, 2002). Both language and reading can be operationalized in different ways, but a preponderance of evidence suggests that a relationship exists between the component skills of oral language and those of reading.

Oral Language and Word Reading

While many of the above studies include measures of word recognition as part of their larger battery of reading tests, additional research has sought to answer specific questions concerning the relationship between oral language and word reading skills. Nation and Snowling (2004) concluded that language skills were correlated with word recognition skills. Specifically,

children with low scores on oral language measures were more likely to have low scores on word recognition tasks (Nation and Snowling, 2004).

McKague, Pratt, and Johnston (2001) explored the relationship between children's oral vocabulary and their reading by focusing on decodable non-words. Through stories and games, children were exposed to non-words through a process called oral instantiation (McKague, Pratt, and Johnston, 2001). Children were more accurate in reading the orally instantiated non-words than in reading the control non-words. McKague, et al. concluded that printed words are more likely to be read accurately in initial encounters if they are already exist in a child's oral vocabulary.

Similarly, Nation and Cocksey (2009) investigated the relationship between word knowledge in the oral domain and the ability to read those words in their written forms. This study differed from McKague, Pratt, and Johnston (2001) because it focused on words from published word lists rather than non-words. At an item level, there was a relationship between words recognized orally and words that children were able to read-aloud in isolation; known words were read more accurately than unknown words (Nation & Cocksey, 2009).

Ricketts, Nation, and Bishop (2007) conducted an extensive study with a goal of determining which reading skills were specifically impacted by oral vocabulary. Specifically, the relationship between oral vocabulary and exception word reading was explored (Ricketts, et al., 2007). Hierarchical regression analysis was used to determine the relationship between oral vocabulary and reading skills, specifically reading comprehension, text reading accuracy, and word recognition skills. Oral vocabulary contributed 17.8% of the variance in reading comprehension but did not provide unique variance to reading accuracy (Ricketts, et al., 2007). Further, Ricketts, et al. (2007) examined three distinct categories of words to measure word

recognition: regular words that followed phonetic rules, exception words that did not follow phonetic rules, and nonwords that followed phonetic rules. Oral vocabulary was associated with exception word reading but did not predict regular or nonword reading. Additionally, irregular word reading did account for additional variance in reading accuracy, but did not contribute to reading comprehension (Ricketts, et al., 2007).

Wise, Sevcik, Morris, Lovett, and Wolf (2007) explored the relationship between linguistic subsystems and reading achievement with a sample of children with identified reading disabilities. One research question focused on the relationship between receptive and expressive language and word identification skills and the impact of pre-reading skills on this relationship (Wise, et al., 2007). Wise, et al. (2007) found that expressive, but not receptive language, predicted word identification skills in children with reading disabilities; listening comprehension was also related to word identification skills. Additionally, using structural equation modeling, Wise, et al. concluded that both receptive and expressive vocabulary were significantly related to pre-reading skills, such as letter sound identification, onset identification, and sound blending; however, the relationship was stronger between receptive vocabulary knowledge and pre-reading skills compared to expressive vocabulary knowledge.

Oulette and Beers (2010) examined the relationships between the varied components that define reading; these elements included phonological awareness, decoding, irregular word recognition, listening comprehension, oral vocabulary, and reading comprehension. Specifically, oral vocabulary was hypothesized to contribute to irregular word reading. Moderate correlations were found between oral vocabulary and decoding, irregular word reading, and reading comprehension (Oulette & Beers, 2010). Using data from first-graders, Oulette and Beers used regression analysis to determine unique contributions to reading comprehension; results found

45% of the variance was accounted for by phonological awareness, 20% by decoding, and 5.4% by irregular word reading. This analysis was repeated with sixth-grade data, and 17% of the variance was due to phonological awareness, none to decoding, and 12% to irregular word reading. Oulette and Beers (2010) concluded that the contribution of oral language to reading comprehension increases, while the contribution of decoding decreases, as children become more proficient readers. Additionally, oral vocabulary measures, specifically those related to vocabulary depth, contributed to irregular word reading at both first and sixth grades (Oulette & Beers, 2010).

The Language and Reading Research Consortium (2015) evaluated the simple view of reading model as well as the impact of vocabulary on reading comprehension. Word recognition and listening comprehension, a measure of oral language, accounted for 90% of the variance in reading comprehension scores. However, the two dimensions accounted for different amounts of the variance at different grade levels; in first grade, word recognition was more significant than listening comprehension, but by second grade, a shift had taken place where listening comprehension increased in significance. Further, the authors concluded that vocabulary has an indirect effect on reading comprehension through both word recognition and listening comprehension (Language and Reading Research Consortium, 2015).

When isolated from other components of reading, word reading was related to oral language. In these studies, word reading is operationalized in different ways including word reading, word recognition, and irregular word reading; however, no study specifically defines word reading in terms of sight words defined as high-frequency words.

Sight Words

One component of early reading is the development of sight words (Helman & Burns, 2008; Language and Reading Research Consortium, 2015). The term, *sight words,* refers to words that have been previously read and are stored in an individual's lexical memory (Scott & Ehri, 1990). Sight word reading is one of the processes that readers develop in order to identify written words (Scott & Ehri, 1990). "Throughout reading development, a gradual shift is seen in the processes underlying word identification from serial decoding toward parallel processing or sight word reading," (van den Boer, Georgiou, & de Jong, 2016, p. 152).

The term, *sight words,* is also used as a synonym for high frequency words (Ehri, 2005; Helman & Burns, 2008). High frequency words are the most commonly used words in the English language based on frequency counts in printed materials (Fry, 1980). For example, Fry (1980) conducted a frequency count of over 5 million words from 1,000 separate English texts and based on the information gathered created Fry's Instant Word List. Reich and Reich (1979) conducted a survey of other published word lists, including the well-known DOLCH list, and found that there was considerable overlap in the words that were included. Further, reviews of high frequency word lists reveal that many of them are function or structure words, such as pronouns, articles, and prepositions (Fry, 1980; Reich & Reich, 1979). Function words are considered difficult to learn for several reasons: many of them have similar letters and spellings, they are not phonetically regular, and they are difficult to represent with pictures (Merry & Peutrill, 1994). However**,** because these sight words are prevalent in written language, high frequency words are often the first words taught to young readers and become the initial words in their sight vocabularies (Ehri, 2005; Fry, 1980).

Sight Word Development and Processing

Frith (1985) proposed a theory of reading acquisition, which included the use of three specific strategies: logographic skills, alphabetic skills, and orthographic skills. "Logographic skills refer to the instant recognition of familiar words," (Frith, 1985, p. 306). Without using any phonics or analysis, a person is able to look at the word and recall it from memory. The Logographic stage is the intial stage in reading acquisition, and through it, readers are able to develop a significant sight vocabulary (Frith, 1985). Additionally, Frith hypothesizes that readers must complete the logographic stage before moving forward to the alphabetic stage; this transition will occur when a reader develops knowledge of phoneme awareness.

Similarly Chall's model of reading development includes the development of sight words (Chall, 1983). This model asserts that reading abilities and skills develop in stages and change over the course of a person's life. Chall's stages range from 0 to 5 and describe the gradual shift from medium to message, from a focus on decoding and word recognition to a focus on understanding the meaning of the text (Chall, 1983). Sight word recognition is a key component of the early stages. As children learn how to recognize printed words, a beginning sight vocabulary is developed in stage 1. Additionally, at stages 1 and 2, reading is focused on texts comprised of familiar high-frequency words in simple sentences (Indrisano & Chall, 1995).

Sight word recognition develops through a connection forming process in which access routes are created that allow readers to pull printed words from lexical memory (Ehri, 2005; Logan, 2006; Scott & Ehri, 1990). Within a person's lexical memory, each word is stored with multiple representations including separate phonological, syntactic, sematic, and orthographic identities (Ehri & Roberts, 1979). The phonological representation refers to the sounds that correlate to the words' written symbols; it is stored as the word's pronunciation (Barker,

Torgesen, & Wagner, 1992; Ehri & Roberts, 1979). A word's syntactic representation is the class to which the word belongs (Ehri & Roberts, 1979). The orthographic representation, also known as lexical knowledge, is visual information about the letters and letter combinations, which make up the word (Barker, et al., 1992). Semantic factors relate to knowledge about the meanings of the word (Nation & Cocksey, 2009). According to the word identity amalgamation view, all of these representations are integrated in a person's memory to form their understanding of a word (Ehri & Roberts, 1979). When a printed word is instantly matched to representations in lexical memory, a person is reading by sight (Ehri & Roberts, 1979). Orthographic, phonological, and semantic representations all contribute to word recognition (Barker, Torgesen, & Wagner, 1992; Plaut, McClelland, Seidenberg, & Patterson, 1996; Seidenberg & McClelland, 1989).

Seidenberg and McClelland's (1989) connectionist model of word recognition proposes that all words, including regular, irregular, and nonwords, are processed through a single word recognition system. Regular words follow phonetic rules while irregular words cannot be pronounced using phonological information; nonwords can be pronounced using phonetic rules but carry no meaning (Seidenberg and McClelland, 1989). In the connectionist model, three components of word identity, orthography, phonology, and semantics, interact with one another during the process of word recognition (Plaut, et al., 1996; Seidenberg & McClelland, 1989). Hulme, Quinlan, Bolt, and Snowling (1995) expand on the connectionist model and include a self-organizing map for phonemes. In this model, graphemes connect to phonemes, which are then mapped to their pronunciations (Hulme, Quinlan, Bolt, & Snowling, 1995). Through this process, readers simultaneously take in all aspects of a word, examine them, and then name the word.

While experienced readers process sight words almost instantaneously, beginning readers develop the automaticity associated with sight words over time focusing on different representations of the word in their learning process. To explore how word reading develops, Ehri and Roberts (1979) conducted a study using two different instructional experiences to see how they impacted beginning reader's word learning. Part of the sample learned words within the context of written sentences while the other group learned words in isolation on flashcards. Children in both groups learned to read many of the words; however, additional assessments revealed that they learned different aspects of word's identities (Ehri & Roberts, 1979). Children in the context group learned more about larger lexical orthographic patterns and semantics while children in the isolation group learned more about orthographic cues at a letter-sound level. Ehri and Roberts (1979) concluded that word learning occurs in different ways at different levels.

Based on her research, Ehri (1995) proposed a four-phase model for sight word development through which beginning readers progress as they learn to read words by sight. The initial phase is non-alphabetic where visual cues trigger associations with words. In the partial alphabetic phase, readers make connections between some of the letters and sounds in words. The third phase, the full alphabetic phase is characterized by full connection between letters and phonemes in memory; at this phase, word reading becomes more accurate. The consolidated alphabetic phase represents the learning of complete information about the spelling, letter patterns, and sounds associated with individual words. Ehri's (1995) four phases provide a useful heuristic for understanding how sight words develop in young readers.

Additionally, the empirical literature supports these theories and models suggesting that multiple factors, including phonological awareness and graphophonemic knowledge, impact

sight word acquisition in beginning readers (Scott & Ehri, 1990; Stuart, Masterson, & Dixon, 2000). Scott and Ehri (1990) compared the use of orthographic cues and phonetic cues on word recognition with kindergartners who had knowledge of letter names. Children learned more words when they utilized phonetic cues compared to orthographic cues (Scott & Ehri, 1990). Scott and Ehri concluded that once children had knowledge of the alphabet, they could begin using phonetic cues to recognize words. Word recognition was faster and more accurate when phonetic cues were used.

Similarly, Stuart (1990) investigated the contributions of logographic and phonographic cues as children learned sight words. Preschool students, who were non-readers, were taught to read words using flashcards with pictures. In this study, children appeared to use their knowledge of phoneme segmentation and letter-sound correspondence over logographic skills for reading words (Stuart, 1990). Stuart concluded that children could set up rule systems based on phonological knowledge and skills and use this system to aid in word recognition.

Barker, Torgesen, and Wagner (1992) investigated the contributions of orthographic and phonological skills to word recognition but broadened the research by having participants read words in both isolation and in context. On isolated word reading tasks, orthographic and phonological skills made independent contributions to performance (Barker, et al., 1992). However, while orthographic skills made a contribution, phonological skills were found to have a greater impact (Barker, et al., 1992). When the task was changed to include a timed component or to reading words in context, orthographic skills accounted for significant independent variance in reading ability (Barker, et al., 1992). This study suggests that the word reading process shifts depending upon the reading task presented and that both orthographic and phonological skills are important to sight word reading.

Herdman (1992) investigated attentional demands on different types of word recognition tasks. With a combination of high-frequency words, low-frequency words, and nonwords, participants completed both naming tasks, in which words were pronounced, and lexical decisions tasks, in which letter strings were identified as words or not words (Herdsman, 1992). In both tasks, there was a significant difference between processing times for high-frequency words when compared to both low-frequency words as well as non-words (Herdsman, 1992). Herdsman concluded that more resources were needed to identify low-frequency words compared to low-frequency words. This research supports the idea that words are learned through repeated exposures.

Using a pretest-posttest method, Uhry and Shepherd (1997) worked with children who had phonological processing deficits. Students received balanced reading lessons that included direct instruction in letter-sound correspondence, phonological awareness, guided reading, and writing (Uhry & Shepherd, 1997). After training, students made significant progress on measures of phonological awareness, sight word reading, phonological recoding, and spelling. "Significant increases in phonological-awareness ability were associated with significant gains in ability to read words and nonwords," (Uhry and Shepherd, 1997, p. 119). Uhry and Shepherd (1997) concluded that sight word reading was associated with phonological skills.

Similarly, Stuart, Masterson, and Dixon (2000) compared the sight word learning of two groups of students identified as having good and poor graphophonic skills. Students with strong graphophonic skills learned significantly more words than students who lacked these skills (Stuart, et al., 2000). Children with poor graphophonic skills relied on visual cues and learned significantly fewer words. Stuart, et al. concluded that phonological awareness and alphabet knowledge influence sight word learning. The findings of both Uhry and Shepherd (1997) and

Stuart, et al. (2000) support Ehri's (1995) phase model in which children increase their knowledge of words as their phonological skill increases.

Katz, et al. (2012) conducted a study with poor readers at the collegiate level to determine the role of sight word skill in performance on two standard reading tasks: lexical decision task (word or not?) and naming task (reading word orally). Additionally, other reading abilities, such as vocabulary and phonological awareness, were also considered as variables (Katz, et al., 2012). Katz, et al. found that both lexical decision and naming had significant positive relationships with overall word reading; 46% of the variance in word identification tasks was attributed to the combination of lexical decision and naming. Further, the performance on the naming task appeared to draw on decoding skills (Katz, et al., 2012). Finally, phonological awareness was not strongly correlated with either the naming or lexical decision tasks; instead phonological awareness, naming ability, and lexical decision ability seemed to make independent contributions to word reading. These findings support Ehri's (1995) theory that all aspects of word knowledge are consolidated in the process of word reading.

Additionally, van den Boer, Georgiou, and de Jong (2016) examined word reading in relationship to rapid automatized naming. The naming of monosyllabic words was found to be very similar to the naming of letters and numbers. The authors concluded that alphanumeric characters and monosyllabic words were processed through a single parallel system (van de Boer, Georgiou, & de Jong, 2016). Information about orthography, phonology, and semantics was taken in and analyzed simultaneously resulting in automatic retrieval and recognition.

In summary, the connectionist model of word recognition proposes that both regular and nonregular words are processed through a single system using orthographic, phonological, and semantic knowledge (Seidenberg & McClelland, 1989). Ehri (1995) proposed that beginning

readers use these cuing systems at different stages. Orthographic, or visual cues, are used first and as phonological skills are gained, readers shift to use more phonological cues (Ehri, 1995). Research supports the relationship between sight word learning and both alphabet knowledge and phonological skills (Scott & Ehri, 1990; Uhry & Shepherd, 1997). There is also evidence that as children become more proficient readers, orthographic cues are used initially but abandoned for more effective phonological cues (Barker, et al., 1992).

Theories of Automaticity

Theories of automaticity further explain how sight words are developed and retrieved from memory. LaBerge and Samuels' (1974) model of automatic information processing is a strengthening theory (Logan, 1997). It suggests that access routes are built through practice and repetition; repeated encounters with a word's visual patterns, articulation, or even meaning strengthen the connection between the written word and its pronunciation and meaning (LaBerge & Samuels, 1974). Ultimately this strengthening process allows for the automatic retrieval of the word. LaBerge and Samuels (1974) criterion for automaticity is that the reader processes the word without attention or effort.

Conversely, Logan's (1988) instance theory suggests that automaticity is related to attention and memory retrieval. Episodes, or words, are placed into and retrieved from memory unintentionally as a result of attention; each exposure is added into memory separately. The accumulation of these memory episodes allows processing to gradually shift from the effortful use of an algorithm to recall from memory (Logan, 1988). Processing is considered to be "automatic when it is based on a single-step direct-access retrieval of past solutions from memory," (Logan, 1988, p. 493). Each successive trace becomes faster; a word is considered automatic when it can be retrieved before the reader can apply a decoding algorithm. In Logan's

instance theory, automatic processing is fast, effortless, autonomous, and unconscious (Logan, 1988).

Theories of automaticity are governed by a power law, which "states that reaction time decreases as a function of practice until some irreducible limit is reached" (Logan, 1997, p. 125). Early in learning the speed for retrieval of an item is reduced through practice; however, at some point, retrieval becomes so automatic that speed no longer changes noticeably (Logan, 1997). The power law is evident in reading in terms of high-frequency words, which are practiced regularly, and read more quickly from memory than low-frequency words (Logan, 1997). When a word's processing reaches automaticity, it is considered a sight word (Ehri, 1995).

All words that can be read from memory are considered sight words (Ehri, 2005). Rather than being decoded or processed as individual letters or phonemes, sight words are read as word units (Ehri, 2005). According to LaBerge and Samuels' (1974) theory of automatic information processing, reading words by sight allows the reader's attention to focus on higher-level comprehension of text rather than on the decoding of individual words. If a reader must decode every word, then making meaning from the text becomes more difficult because attention is focused on the act of decoding (Fry, 1980; LaBerge & Samuels', 1974). Further, Logan's (2006) theory of automaticity suggests that multiple levels of reading, including letter recognition, word reading, and prepositional structures, can all become automatic. As different reading sub-processes become automatic, including word recognition, reading performance improves and reading rate increases (Logan, 2006). Therefore, reading by sight is an efficient way to read text fluently (Ehri, 2005; Helman & Burns, 2008; Rashotte & Torgesen, 1985). The development of an extensive sight vocabulary allows readers to shift their focus from decoding words to making meaning from the larger text (Ehri, 2005).

Oral Language and Sight Words

Finally, the purpose of this study is to explore the relationship between oral language and sight words. This literature review revealed only two studies that specifically examined the relationship between oral language and sight words. Burns and Helman (2009) conducted research with English Language Learners to explore the relationship between English language proficiency and the rate of acquisition for English sight words. English language proficiency was measured using the Language Assessment Scales – Oral and focused on students' oral language skills. Burns and Helman found a positive correlation and concluded that 40% of variance in the rate of sight word acquisition could be attributed to English proficiency.

Additionally, MacQuarrie, Tucker, Burns, and Hartman (2002) considered oral language as a variable in the study of flashcard intervention methods. The goal was to explore the predictive relationship between oral language and the effectiveness of various flashcard interventions (MacQuarrie, Tucker, Burns, & Hartman, 2002). Results suggested that learning through a traditional flashcard intervention was correlated with oral language skills; however, learning with incremental rehearsal was independent of oral language skills (MacQuarrie, et al., 2002). The authors recommended that the role of oral language in word learning be further explored (MacQuarrie, et al., 2002).

Inferences for Forthcoming Study

The empirical research has suggested a strong relationship between a family's socioeconomic status and a child's oral language development (Anglin, et al., 1993; Fenson, et al., 1994; Hart & Risley, 1995; Hoff, 2003; Huttenlocher, et al., 2010). Children from more affluent homes often develop oral language at faster rates than children who grow-up in less affluent homes (Fernald, et al., 2013; Hart & Risley, 1995; Huttenlocher, et al., 2010).

Further, the relationship between oral language skills and reading has been the subject of numerous research studies (Catts, et al., 2000; Catts, et al., 1999; Goff, et al., 2005; Nation & Cocksey, 2009; Roth, et al., 2002; Storch & Whitehurst, 2002). Many scholars have concluded that oral language impacts both word recognition and reading comprehension (Goff, et al., 2005; Language and Reading Research Consortium, 2015; Roth, Speece, and Cooper, 2002).

However, the research examining the relationship between oral language and reading often fails to examine socio-economic status as a contributing factor. Wise, et al. (2007) reports a socio-economic distribution for the study sample, but does not examine socio-economic status as a variable, which could impact the relationship between oral language and reading. This study will include SES is a variable and will examine whether sight word learning varies by SES group.

Additionally, the role of intelligence in reading has been explored, and Stanovich, et al. (1984) and Catts, et al. (2000) have shown that the contribution of language to reading development is independent of intelligence. Because the contributions of language and intelligence have been shown to be independent of one another, this dissertation will not address intelligence as a variable.

Further, sight word acquisition, in terms of high frequency words, is considered a key word recognition skill in early reading (Fry, 1980; Helman & Burns, 2008; Language and Reading Research Consortium, 2015). There is a strong theoretical foundation for sight word attainment in terms of developing automaticity, which supports the current study (LaBerge & Samuels, 1974; Logan, 1988). Additionally, no significant difference was found in the word recognition skills of L1 and L2 students so this study will not consider English language learner status as an additional variable (Babayigit, 2015).

Finally, the primary purpose of this study is to look at the relationship between oral language and sight words, which this literature review suggests is an under-researched topic. Wise, et al. (2007) found that receptive vocabulary did not predict word identification skills, but the study only included data from children with identified learning disabilities rather than a general population. Nation and Cocksey (2009) found a relationship between words recognized in the oral domain and words read-aloud accurately; however, the study used many nouns, verbs, and adjectives, such as cloth, cocoa, lazy, and grab, rather than the high-frequency words that are common to published sight word lists. Burns and Helman (2009) found a link between oral language skills and the rate of acquisition of sight words but the sample was limited to English language learners rather than the larger population of beginning readers. The relationship between oral language skills and the acquisition of sight words in terms of high-frequency words appears to be an area where further research is needed.

Chapter 3: Methodology

A quantitative research design is used to evaluate the relationship among socioeconomic status, oral language development, and sight word learning in a group of first-graders.

Research and Hypotheses

The research questions guiding this study are:

1. What impact does oral language have on sight word acquisition over time?
2. How does sight word acquisition vary by socioeconomic status across first grade?
3. How does graphophonemic knowledge mediate the relationship between oral language and sight word acquisition?

From these questions, it is hypothesized that oral language skills exert a direct effect on sight word learning. Further, it is expected that a positive relationship exists between socioeconomic status and sight word acquisition. Finally, graphophonemic knowledge is expected to mediate the effects of oral language skills on students' sight word learning particularly for those students from families with a lower SES.

Research Procedures

Site selection. Two elementary schools in a suburban to rural, countywide district in north central Kentucky are selected for inclusion in this study. Because socioeconomic status is a crucial part of the model, it was essential that students come from diverse socioeconomic backgrounds. To insure diversity of SES, the Kentucky School Report Card was used to select schools with significantly different populations in terms of SES. Site one is a Title I school with 50% of students receiving free or reduced-priced lunches (Kentucky Department of Education, 2015). Site two is in a more affluent area of the county with only 3% of students participating in the National School Lunch Program (Kentucky Department of Education, 2015).

Participant selection. This study focuses on students in the first grade. First-grade is selected because the majority of first graders are fluent with alphabet recognition, which is considered to be a skill that precedes sight word learning (Ehri, 2005; Stuart, et al., 2000). Further, according to Chall's (1993) stages theory, first grade is a time of sight word acquisition. Finally, in the study district, a pre-established list of high-frequency sight words is part of the first-grade reading curriculum so it is expected that first-grade teachers provide sight word instruction.

At site one, the building principal selected two first-grade classes with a total of 47 students for participation in this study. The principal at site two selected three first-grade classes with a total of 74 students for participation. Multiple classes from different schools were included with the goal of increasing variability in SES. Classroom teachers distributed an information packet including explanatory letters describing this dissertation project, parental informed consent forms, and family background surveys to all families in the selected first-grade classrooms. A total of 121 information packets were distributed, 47 at site one and 74 at site two. At site one, 26 of 47 families returned both an informed consent form and a family background survey for a response rate of 55.3%. At site two, 54.1%, or 40 of 74, families returned both forms.

A total of 53 students were selected from the pool of families who returned the family background surveys and parental consent forms to participate in this study. At site one, 16 students from classroom A and 10 students from classroom B returned the consent form and family background surveys; all 26 students were included in this study. At site two, 40 students returned forms and surveys. To achieve a balanced number of students from each class, stratified random sampling was used to select 27 students from the pool of 40 subjects. The consent forms

were sorted by class, alphabetized, and numbered; a random number generator then was used three times to select nine numbers. The students assigned those numbers were then chosen for inclusion in the study for a total of 27 students, nine participants from each of the three first-grade classrooms. At the start of the study, there were 53 children participating: 26 students at site one and 27 students at site two.

Over the course of the yearlong study, there was some participant attrition. At site two, three students were absent during testing session one and never assessed. At site one, a boy was dropped from the study after the first session as his behavior problems were such that testing was difficult even in a one-on-one setting. A second boy at site one moved out of district between sessions one and two. Finally, at site one, two girls were absent from one assessment session and were also excluded. Data for the four children who were partially assessed was not included in analysis since it was incomplete across the three assessment sessions. Therefore, at the end of the study, there were 22 children at site one and 24 children at site two for a total of 46 children participating. Of these students, 59% were male and 41% were female. At the first testing session, the mean student age was 6 years 7 months.

Measures

The assessment battery included measures of socio-economic status, receptive vocabulary, sight word reading, and graphophonemic knowledge. These measured are described in detail below. The measure for socio-economic status was conducted one time in the fall prior to the student assessments. All other measures were administered three times over the course of the school year in fall, winter, and spring.

Socio-economic status. Socio-economic status was calculated using Hollingshead's (2011) Four Factor Index for Social Status (HISS). Hollinghead's method of classification is

widely used for research in the public health and medical fields; as an unpublished paper, it was cited over 5,000 times from 1994 to 2011 (Adams & Weakliem, 2011). Additionally, Fenson, et al. (1994), Fernald, et al. (2013), and Furey (2011) used HISS in their work on SES differences and language. The index can be used to calculate a social status score based upon the following four factors: education, occupation, gender, and marital status (Hollingshead, 2011). For this study, a family background survey (Appendix A) was created that elicited information concerning the four factors in Hollinghead's Index. This survey was sent home to all families in the selected classrooms; students were only included in this study if a family background survey was completed and returned.

Because the family background survey was created for this study, additional analysis was conducted to measure its reliability. Split half reliability was used to compare the composite scores from the survey. Using SPSS, the sample was randomly split into two groups with the resulting means equal to 47.13 (*SE* = 3.48) and 52.04 (*SE* = 2.33). The difference between the two groups was analyzed with an independent samples *t*-test resulting in acceptance of the null hypothesis, $t\,(44) = -1.216$, $p = .23$. This finding suggests no systematic difference in the way parents responded to the family background survey. Further, internal reliability was measured on education and occupation using an alpha coefficient where Cronbach's $\alpha = .792$. This measure suggests that responses to items on the family background survey were highly correlated with one another and formed a reliable scale (Nunally, 1978).

Oral language development. The Peabody Picture Vocabulary Test – 4th Edition ([PPVT-4], Dunn & Dunn, 2007) is a norm-referenced test that is used as a measure of receptive language skills. Form A was used in fall and spring while Form B was used in winter. The PPVT-4 has normative data for 3,500 children resulting in reliability and validity coefficients in

the .90 range (Dunn & Dunn, 2007). This assessment is a point-to-picture task, which is individually administered using an easel with 4 pictures per page. Students must point to the picture that correctly matches the stimulus word spoken by the examiner. Testing continues until the student reaches a ceiling level, and the examiner then uses the testing protocol to calculate the student's raw score. The PPVT-4 is widely used as a measure of oral language development and is frequently used and cited by authors included in the literature review (Bradfield, et al., 2014; Catts, et al., 2000; Goff, et al., 1995; & Oulette & Beers, 2010).

Sight word reading. Two measures of sight word reading were utilized. The Sight Word Efficiency (SWE) subtest of the Test of Word Reading Efficiency – 2nd edition ([TOWRE-2], Torgesen, Wagner, & Rashotte, 2012) is an individually administered assessment that is used to measure fluent, accurate reading of sight words. Form A was used in fall and spring while Form B was used in winter. The TOWRE has normative data on 1,717 children with average reliability coefficients above .90 (Torgesen, et al., 2012). The SWE subtest measures the ability to read printed words quickly and accurately in 45 seconds; the words are presented on a card and become increasingly difficult based on frequency. The TOWRE is widely used as a measure of sight word reading (Hayiou-Thomas, 2008; Language and Learning Consortium, 2015; Nation & Cocksey, 2009).

The second measure of sight word reading is a curriculum-based measure (Deno, 2003). In a naming task, students were asked to read a list of 40 sight words. Katz, et al. (2012) found that naming tasks provide "good paradigms for studying individual differences in word identification (both sight word and decoding processes," (p. 1279). The list was created using the district sight word list from the first-grade reading curriculum. It was decided that the entire 120-word list was too long to maintain student interest and effort throughout the assessment

session. Since the words were leveled by the school district for first grade, 40 words were randomly selected from the curriculum list for inclusion in the measure; the words were listed in the order that they appear on the curriculum document and then a random number generator was used to select 40 of the 120 words. These 40 words were typed on a student word list (Appendix B) in three columns using 28 point, Times New Roman font. To create, a corresponding administrator's checklist, the words into a four-column format with three blank columns per word, one for each assessment session. The result of these procedures was the sight word$_{CBM.}$

Additionally, to insure that both the TOWRE and the sight word$_{CBM}$ focused on sight words as high-frequency words, as defined in this study, the word lists were compared to Fry's Instant Word lists (Fry & Kress, 2006). For the sight word$_{CBM,}$ 100% of the words included appear on Fry's Instant Word lists. Additionally, for the TOWRE, 100% of the words through item 44 appear on Fry's lists. The grade level equivalent for second grade, where students should approach at the end of this study, is a 42-44 (Torgesen, Wagner, & Rashotte, 2012). Further, 89% of the words through item 62 appear on Fry's lists. A raw score of 62 has a grade level equivalent of 3.2 (Torgesen, Wagner, & Rashotte, 2012).

Graphophonemic Knowledge. The Phonemic Decoding Efficiency (PDE) subtest of the Test of Word Reading Efficiency – 2nd edition ([TOWRE-2], Torgesen, et al., 2012) is an individually administered assessment of graphophonemic knowledge. The PDE subtest measures the ability to read printed nonwords quickly and accurately in 45 seconds. The nonwords are pronounceable and include common phonetic patterns that can be decoded; they are presented on a card and become increasingly difficult based on the complexity of their phonetic components. Form A was used in fall and spring while Form B was used in winter. As stated above, the

TOWRE has normative data on a large sample with average reliability coefficients above .90 (Torgesen, et al., 2012).

Assessment Procedures

Family background survey. The family background survey (Appendix A) was collected in the fall prior to the start of student assessments. Participating teachers sent the surveys home with each of their students, collected them, and returned the completed ones to the researcher. The researcher analyzed and scored the information provided by families using Hollinghead's (2011) Four Factor Index for Social Status (HISS). In cases, where the information on the family background survey was unclear, the researcher telephoned the families to gain clarification.

Each parent was give a score of 1 to 7 based on their level of educational attainment with 1 being a 7th grade education or less and 7 being a graduate degree (Hollinghead, 2011). An occupational factor ranging from 1 to 9 was then calculated for each parent using a 9-step scale and Hollinghead's (2011) extensive list of occupations based on job titles from the United States Census Bureau. The numbers for educational and occupational factors were then weighted and summed to arrive at a numerical social status factor for each parent:
(educational factor x 3) + (occupational factor x 5) = individual social status, (Hollinghead, 2011). Finally, if there were two working parents in a family, gender and marital status were used to compute an average social status (Hollinghead, 2011). Ultimately, a single numerical score was calculated to represent each participating family's social status.

To further demonstrate the use of the Hollinghead's Four Factor Index for Social Status, consider the following example based on information from a family background survey received from site two. The mother had earned a bachelor's degree and was currently working as a

registered nurse. Using Hollinghead's Index, education was scored as a 6 and the occupational factor as an 8. When entered into Hollinghead's weighted equation, (6 x 3) + (8 x 5), the mother's calculated social status was a score of 58. The father had earned a bachelor's degree and was working as an architect; education was again scored as a 6, but the father's occupational factor was rated as a 9. When weighted and calculated, (6 x 3) + (9 x 5), the father's social status was a 63. To determine the family's social status, the mean of the mother's and the father's individual social statuses was computed. Therefore, this child's family social status score was figured to be a 60.5.

For some analysis, the sample population was divided into two groups: Lower SES and Higher SES. This division was based on the median score of 53.5 obtained from the Hollingshead Index. There were 23 students in the lower-SES population with HISS scores ranging from 16 to 53 and 23 students in the higher-SES population with HISS scores ranging from 54 to 66. This method of dividing the population into two groups, rather than studying SES as a continuous variable, is supported by the work of Anglin, et al., (1993) as well as Fernald, et al. (2013).

Test examiners. Test examiners included the researcher along with one research assistant. The researcher had previously completed coursework in reading assessment including training with the PPVT-4 and the TOWRE-2. The research assistant was a retired special education teacher who had previously received training in the administration of a variety of standardized, norm-referenced tests including the PPVT. Additionally, the research assistant did not have access to the Family Background Surveys and was blind to which students were in the high and low SES groups.

Prior to the fall administration session, the examiners met to review testing procedures and practice administration with first-grade students in an afterschool program at a site not included in this study. Additionally, on the morning of each testing session, the examiners met to review the directions, procedures, and protocols for the assessments prior to working with students.

Student assessments. Students were assessed in the fall, winter, and spring of their first grade year using the same testing procedures. All assessments occurred during the regular school day, and students were taken individually from their classrooms for approximately 15 to 20 minutes at different times throughout the day. The examiner went to the classroom to greet each participant and talked generally about his or her interests while walking to the examination room. Students were assessed in a quiet room with a table and chairs away from their regular classroom. The examiner sat across from the student and read a prepared script with standardized instructions (Appendix C) while administering the three assessments in the following order: TOWRE-2 SWE, TOWRE-2 PDE, PPVT-4, and the curriculum-based sight word list. This sequence was chosen in order to separate the two sight word tasks in hopes of maintaining student interest.

In each testing session, as directed by the assessment protocol, the examiner administered practice tasks with students on the TOWRE-2 SWE, TOWRE-2 PDE, and the PPVT-4 to insure that children understood the tasks. Since the format for the Sight $Word_{CBM}$ was similar to that of the TOWRE, no additional sample items were completed for the Sight $Word_{CBM}$. On sample tasks, students were given feedback, such as, “That’s right,” or “No, try that one again,” and allowed additional attempts if they were unsuccessful on their initial tries. Once formal testingbegan, students were no longer given specific feedback, and when students asked how

they were doing, the examiners replied with general encouragement, such as, “You are working hard.”

Chapter 4: Results

Data Analysis

Raw scores were used for all data analysis, which was conducted using SPSS Statistics version 24. Each research question was examined with a separate analysis. The first question concerning the relationship between oral language and sight words was examined using an analysis of variance (ANOVA) with repeated measures in order to examine the change in the sight word and oral language variables across time. This was followed by regression analysis to evaluate the impact of oral language on sight word acquisition. For question two, a mixed design analysis of covariance (ANCOVA) with repeated measures was used to examine the variability in sight word acquisition by SES. Finally, the Barron and Kenny (1986) mediation model was used to examine graphophonemic knowledge as a potential mediating factor between oral language and sight word acquisition.

Descriptive Statistics

Table 1 shows the means and standard deviations for the measured variables while Table 2 shows bivariate correlations. Overall, the range of observed scores suggests good variability; however, additional analysis suggests that some variables are skewed. In particular, the Hollingshead Index of Social Status (social status) was negatively skewed (sk = -1.06) indicating there were more families with a high index than families with a low one represented in the study. Additionally, the Sight Word$_{CBM}$ measure showed evidence of a ceiling effect (sk = -.85) as many students knew a large number of words at the fall administration and could only demonstrate limited growth in subsequent measurement periods.

Table 1

Means and Standard Deviations for Measured Variables

Variable	Fall M(*SD*) (*n* = 46)	Winter M(*SD*) (*n* = 46)	Spring M(*SD*) (*n* = 46)
Social Status	50.01 (13.54)		
Sight Word Reading	35.15 (17.44)	43.02 (16.53)	47.89 (51.5)
Graphophonemic Knowledge	13.54 (9.39)	18.13 (11.10)	21.85 (11.08)
Oral Language	120.09 (16.13)	131.59 (14.77)	135.30 (14.08)
Sight Word$_{CBM}$	27.83 (13.89)	32.87 (10.76)	36.15 (7.79)

Note. Social Status = Hollingshead Index of Social Status; Sight Word Reading = Sight Word Efficiency; Graphophonemic Knowledge = Phonemic Decoding Efficiency; Oral Language = Peabody Picture Vocabulary Test; Sight Word$_{CBM}$ = Sight Word Curriculum-Based Measure

Bivariate correlations were then analyzed to clarify the relationships between the variables. Hopkins' (2006) scale of magnitudes was used to examine the correlations between variables. As expected, the sight word and sight word$_{CBM}$ measures showed very large correlations (r = .910, r = .824, & r = .738) that decreased across the measurement periods as increasing numbers of students reached ceiling at the end of the year on the sight word$_{CBM}$ measure. Additionally, the measure of graphophonemic knowledge shared a very large correlation with sight word reading across fall, winter, and spring respectively (r = .783, r = .876, & r = .832) and with sight word$_{CBM}$ (r = .752, r = .714, & r = .628). Again the correlation between graphophonemic knowledge and sight word$_{CBM}$ weakens at the end of the school year as more students approached ceiling. Across the three measurement periods, social status had a moderate relationship with sight word reading (r = .408, r = .374, & r = .403), graphophonemic

knowledge (r = .322, r = .339, & r = .409), and sight word$_{CBM}$ (r = .354, r = .465, & r = .397). In fall, oral language (as measured by the PPVT) had no significant correlation with sight word reading, graphophonemic knowledge, or with the sight word$_{CBM}$. However, in winter and spring, oral language had a large correlation with sight word reading (r = .625 & r = .509), a moderate correlation with graphophonemic knowledge, (r = .491 & r = .405), and a moderate to large correlation with sight word$_{CBM}$ (r = .613 & r = .474). Similarly, in fall, oral language had no significant correlation to social status while in winter and spring it had only a small to moderate correlation (r = .334 & r = .298).

Table 2
Bivariate Correlations of the Measured Variables

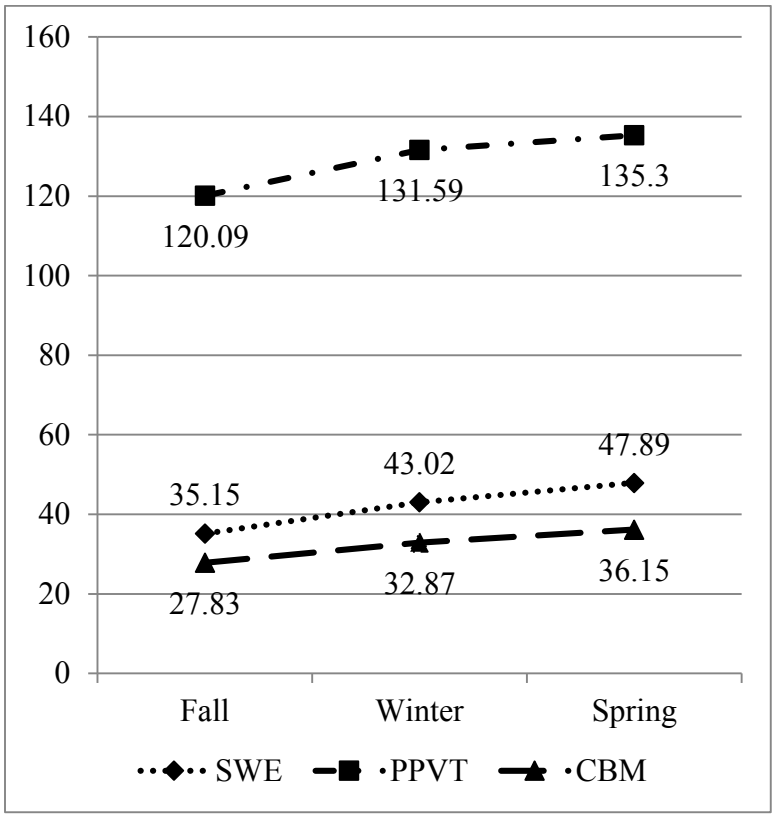
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Fall HISS	1												
2 Fall SWE	.408**	1											
3 Win SWE	.374*	.944**	1										
4 Spr SWE	.403**	.921**	.952**	1									
5 Fall PDE	.322*	.783**	.822**	.810**	1								
6 Win PDE	.339*	.847**	.876**	.864**	.893**	1							
7 Spr PDE	.409**	.715**	.797**	.832**	.873**	.862**	1						
8 Fall PPVT	.062	.252	.259	.269	.139	.168	.103	1					
9 Win PPVT	.334*	.634**	.625**	.656**	.493**	.491**	.475**	.616**	1				
10 Spr PPVT	.298*	.496**	.499**	.509**	.379**	.400**	.405**	.652**	.728**	1			
11 Fall CBM	.354*	.910**	.922**	.914**	.752**	.828**	.721**	.256	.597**	.423**	1		
12 Win CBM	.465**	.781**	.824**	.848**	.668**	.714**	.680**	.334*	.613**	.493**	.904**	1	
13 Spr CBM	.397**	.622**	.667**	.738**	.548**	.602**	.628**	.387**	.505**	.474**	.747**	.899**	1

Note. HISS = Hollingshead Index of Social Status; SWE = Sight Word Efficiency; PDE = Phonemic Decoding Efficiency; PPVT = Peabody Picture Vocabulary Test; CBM = Curriculum-Based Measure. ** $p < .01$; * $p < .05$

Research Question #1: What impact does oral language have on sight word acquisition over time?

Repeated Measures Analysis of Variance (ANOVA) was used to examine change in sight word reading and oral language across time. From fall to winter results showed that students' knowledge of sight words increased significantly on both the SWE, F (1, 45) = 85.74, $p < .001$, d = 1.97 and sight word$_{CBM}$, F (1, 45) = 30.51, $p < .001$, d = 1.18. Further, students demonstrated continued sight word growth from winter to spring on the SWE, F (1, 45) = 42.71, $p < .001$, d = 1.39, and the sight word$_{CBM}$, F(1, 45) = 19.31, $p < .001$, d = .94, although the growth trajectory slowed in the second half of the school year (see figure 2). Similarly, the results showed that students' oral language increased on the PPVT from fall to winter to spring, but at a notably slower trajectory during the second half of the school year, F (1, 45) = 32.96, $p < .001$, d = 1.22 and F (1, 45) = 5.74, $p < .05$, d = .54. Post hoc tests conducted to determine significance of within-year change were statistically significant for sight word reading ($p < .001$), oral language ($p < .001$), and sight word$_{CBM}$ ($p < .001$). These findings show that the students in this study increased both their sight word reading and oral language skills over the course of their first-grade year.

Figure 2
Means Across Time



To determine whether oral language predicts sight word acquisition, a multiple regression analysis was conducted. Separate regression analyses were then conducted for fall, winter, and spring. The results are shown in Table 3. For the fall baseline assessment, the results were not significant (p = .091) indicating that oral language did not predict sight word knowledge. In winter and spring, oral language was found to predict sight word acquisition as measured by both the SWE and sight word$_{CBM}$. Oral language explained 37.6% of the variance in sight word acquisition in winter as measured by both SWE and sight word$_{CBM}$. In spring, oral language explained 25.9% of the variance in sight word learning as measured by SWE and 22.5% of the variance in sight word learning on sight word$_{CBM}$. Oral language more strongly predicted sight word acquisition in the winter when students had the greatest growth trajectories on the PPVT,

SWE, and sight word$_{CBM}$. These findings suggest that oral language may impact sight word acquisition particularly at times of rapid growth in students' learning.

Table 3
Regression Analyses for Sight Word Acquisition Using Predictor of Oral Language

Variable	B	*SE B*	*B*	R^2	*t*	*p*
SWE						
Constant	2.377	19.101				
PPVT Fall	.273	.158	.252	.042	1.730	.091
Constant	-49.020	17.451				
PPVT Winter	.699	.132	.625	.376	5.307	< .001
Constant	-27.298	19.274				
PPVT Spring	.556	.142	.509	.259	3.922	< .001
Sight Word$_{CBM}$						
Constant	1.315	15.196				
PPVT Fall	.221	.125	.256	.066	1.760	.085
Constant	-25.952	11.485				
PPVT Winter	.447	.087	.613	.376	5.153	< .001
Constant	.643	9.999				
PPVT Spring	.262	.074	.474	.225	3.570	.001

Note. SWE = Sight Word Efficiency; Sight Word$_{CBM}$ = Sight Word Curriculum-Based Measure.

Research Question #2: How does sight word acquisition vary by socioeconomic status across first grade?

Variability in sight word acquisition by socioeconomic status (SES) was examined using an analysis of covariance (ANCOVA) with repeated measures. The covariant, SES, was

significantly related to sight word reading (as measured by the SWE), F (1, 44) = 8.550 , p < .01, η^2 = .163. Therefore, these results show that sight word reading was influenced by SES.

In covariate and repeated measures designs, the use of eta squared as measure of effect size can be problematic (Olejnik & Algina, 2003). To further understand differences by SES group, the sample was subdivided into two groups, lower-SES and higher-SES, based on families' Hollingshead Index of Social Status as described in the methodology section. Using a one-way analysis of variance (ANOVA), the means of the high-SES and low-SES groups were calculated across measurement periods (see Figure 3). Effect sizes for Cohen's *d* were then calculated using the difference of means divided by pooled standard deviations (see Table 4).

Figure 3
Sight Word Acquisition by SES Group

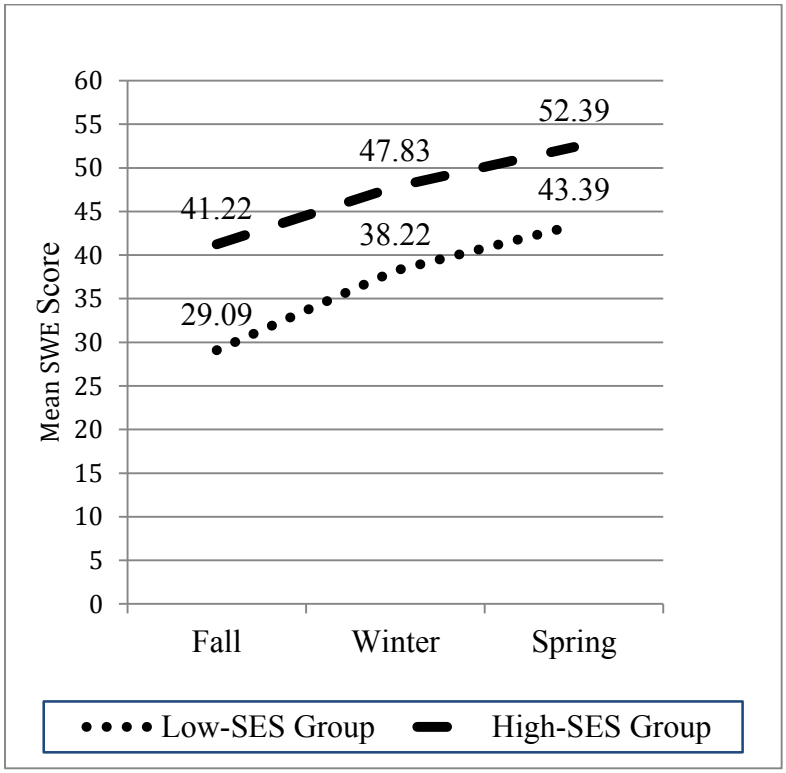


Table 4
Sight Word Means (*sd*) for Low- and High-SES Groups Across Measurement Periods

Measurement Period	Low-SES M(*SD*)	High-SES M(*SD*)	$Pooled_{sd}$	Cohen's *d*
Fall	29.09 (16.10)	41.22 (16.91)	17.33	.70
Winter	38.22 (16.42)	47.83 (15.53)	16.59	.58
Spring	43.31m(15.07)	52.93 (14.62)	15.37	.63
Cohen's d calculated as the difference between the means divided the $pooled_{sd}$				

Research Question #3: How does graphophonemic knowledge mediate the relationship between oral language and sight word acquisition?

The empirical research suggests that graphophonemic knowledge makes an independent contribution to sight word reading (Barker, et al., 1992). Additionally, gains in phonological skill are often accompanied by gains in sight word reading (Uhry & Shepherd, 1997). In the present study, the measure of phonemic decoding efficiency shared a very large correlation with sight word reading across fall, winter, and spring (r = .783, r = .876, & r = .832) and with sight $word_{CBM}$ (r = .752, r = .714, & r = .628). Therefore, a mediation analysis was conducted to determine if graphophonemic knowledge accounted for the relationship between oral language and sight word reading. Mediation analysis was conducted using the custom dialogue add-on for SPSS developed by Hayes (2013). The results of that analysis are reported in Table 5.

Table 5 Regression Results for the Mediation of the Effect of Oral Language on Sight Word Reading by Graphophonemic Knowledge – Spring

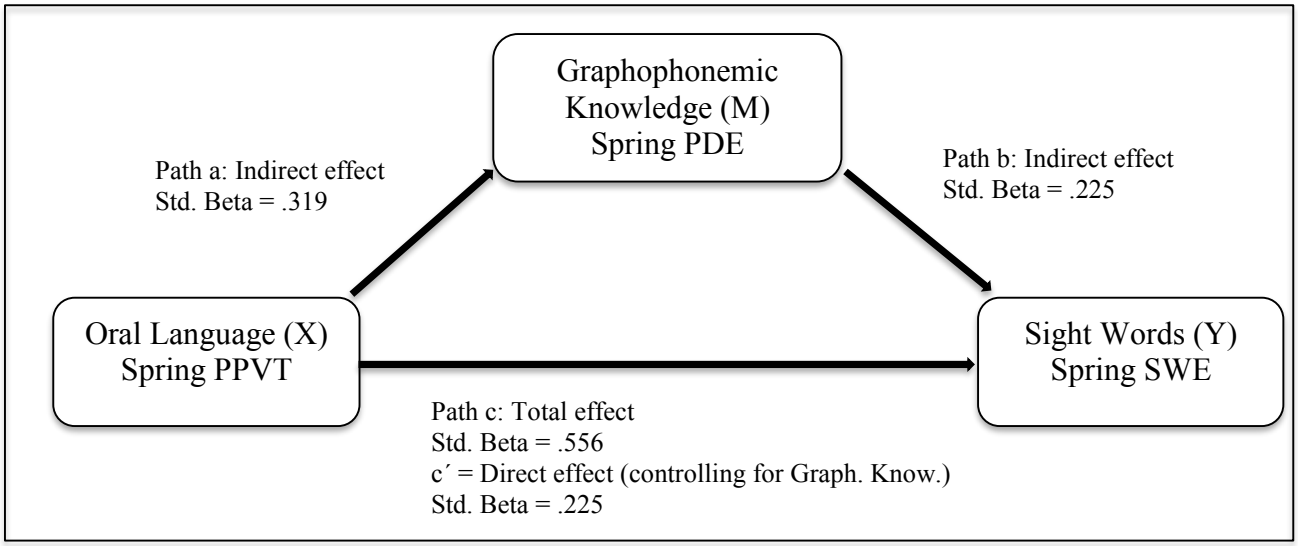
Model/(path)	Estimate	*SE*	95% CI (lower)	95% CI (upper)
Oral Lang – Phon Skill (a)	.319*	.109	.100	.538
$R^2_{M.X}$	.164*			
Phon Skill – Sight Word (b)	1.038***	.121	.794	1.28
Oral Lang – Sight Word (c´)	.225*	.095	.033	.417
$R^2_{Y.MX}$	.727***			
Oral Lang – Sight Word (c)	.556**	.142	.270	.841
$R^2_{Y.X}$	.259**			

Note. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

The path model shown in Figure 4 illustrates the potential relationship between oral language, graphophonemic knowledge, and sight word acquisition. The results of mediation

analysis were analyzed using Baron and Kenny's (1986) three-step criteria for establishing mediation. First there was a significant correlation ($p < .01$) in the direct relationship between the variables *X* (oral language) and *Y* (sight word reading). Second there was a significant correlation ($p < .01$) between the predictor variable, *X* (oral language), and the mediating variable, *M* (graphophonemic knowledge), as well as a significant correlation ($p < .001$) between the mediating variable, *M* (graphophonemic knowledge), and the criterion variable, *Y* (sight word reading). Third, when the mediator variable, *M* (graphophonemic knowledge), was controlled, there was still a significant correlation ($p < .01$) between the predictor variable, *X* (oral language), and the criterion variable, *Y* (sight word reading). Finally, the direct effect of *X* (oral language) on *Y* (sight word reading) is reduced when *Y* (sight word reading) is regressed onto *M* (graphophonemic knowledge) and *X* (oral language). Specifically, using standardized beta coefficients, the effect of oral language on sight word reading is reduced from .556 to .225 when graphophonemic knowledge is added to the model. Because graphophonemic knowledge reduces, but does not eliminate, the effect of oral language on sight words, the result is what Baron and Kenny (1986) call a partial mediation. These results show that the relationship between oral language and sight words is significantly mediated by graphophonemic knowledge.

Figure 4
Pathway of Mediation Analysis



Further, due to the instability of estimates with small sample sizes, as suggested by Preacher and Hayes (2004), bootstrapping was used to evaluate the mediation. In Table 5, 95% confidence intervals are reported for the total, direct, and indirect effects of the mediation using SPSS's bootstrap. Using a null hypothesis of $b = 0$, it can be concluded that the measured effects are significant because none of the confidence intervals includes 0. Graphophonemic knowledge has a significant mediating effect on the relationship between oral language and sight word reading.

Chapter 5: Findings

The purpose of this dissertation study was to examine the relationship between socioeconomic status, oral language, and sight word learning. The goal was to evaluate the hypothesized model (see figure 1) that links socioeconomic status to sight word learning through oral language with graphophonemic knowledge as a potential mediating factor in a sample of 46 first-grade students. This dissertation addressed three specific research questions: 1) What impact does oral language have on sight word acquisition over time? 2) How does sight word acquisition vary by socioeconomic status across first grade? 3) How does graphophonemic knowledge mediate the relationship between oral language and sight word acquisition?

The first-grade students in this sample showed significant growth in both oral language and sight word acquisition during the school year. Additionally, even though many students reached ceiling on the sight word$_{CBM}$ in spring, many of them showed continued growth from winter to spring on the SWE. The effect size for measures of sight word learning ranged from huge on the SWE from fall to winter to large on the sight word$_{CBM}$ from winter to spring indicating that first grade was a period of rapid sight word acquisition. This finding is consistent with Chall's Stages Theory (Chall, 1983) as children in first grade are typically in Stages 1 and 2, which is a time when readers are learning to recognize printed words (Indrisano & Chall, 1995).

In the hypothesized model, family socioeconomic status was expected to impact oral language development. Families' socio-economic status and students' oral language skills did share a small to moderate correlation in the winter and spring. However, given the significant body of work on the relationship between SES and oral language, it was surprising that there was no correlation in the fall and that the magnitude of the correlation was not larger in winter and

spring. Significant amounts of empirical research, including work by Hart and Risley (1995), Hoff (2003), Fernald, et al. (2013) and Goldin-Meadow, et al. (2014), has established a relationship between oral language and SES. The unexpected results in the current study may be due to limitations related to the sample. The sample had 46 subjects with Hollinghead Index scores ranging from 16 to 66, which suggests variability in socioeconomic status. However, the Hollinghead scores were negatively skewed indicating that there were more families from higher-SES households. This skewness may have potentially reduced the effect of SES resulting in the findings that SES and oral language were not correlated throughout the year and that the magnitude of the correlation in winter and spring was smaller than anticipated.

Relationship between Oral Language and Sight Word Acquisition

Oral language was correlated with sight word acquisition at two of the three measurement periods, winter and spring. In winter, when growth trajectories were highest, there was a large correlation between oral language and sight word acquisition on both sight word reading and sight word$_{CBM.}$ In spring, there was a large correlation between oral language and sight word reading, but a moderate correlation between oral language and sight word$_{CBM.}$ There was a noted ceiling effect on the sight word$_{CBM}$ with many students achieving high scores early in the study with limited potential for future growth; this ceiling effect may be responsible for the diminished correlation between oral language and sight word$_{CBM}$ in the spring.

These bivariate correlations are in line with the previous work of Ricketts, et al. (2007) and Oulette and Beers (2010), who concluded that oral language is related to word reading. Ricketts, et al. (2007) found that expressive vocabulary shared a large to moderate correlation with exception word reading. This is similar to the present study because many high-frequency words are exception words; however, it differs because Ricketts, et al. correlated sight words

with expressive rather than receptive vocabulary. Additionally, Oulette and Beers (2010) also found moderate correlations between vocabulary breadth and irregular word reading. Both the present study and Oulette and Beers used the PPVT, a measure of receptive vocabulary, as the instrument for measuring oral language; however, Oulette and Beers used a list of irregular words, such as stomach, sugar, deny, and vague, that are more difficult than the high frequency words used in this study. The present study adds to the established research by extending the correlations between oral language and word reading to include receptive language in relationship to high-frequency sight words.

Additionally, in the winter and spring measurement periods, oral language was found to have a significant impact on sight word acquisition for the students in this sample. Overall, oral language predicted 22.5% to 37.6% of the variance in sight word acquisition. This finding suggests that oral language is an important factor in sight word acquisition. Within the theoretical framework of the Hoover and Gough's (1990) simple view of reading, sight word acquisition is one component of decoding and oral language is one facet of linguistic comprehension. Therefore, this finding supports that there is interaction between the two components of the reading process, decoding and linguistic comprehension. Further, the present study suggests that linguistic comprehension may have a limiting effect on decoding.

It should be noted that the relationship between oral language and sight word acquisition was inconsistent over the course of the school year. At the fall measurement period, when baseline data was gathered, there was no significant correlation between oral language and sight word reading in this sample of first graders. Additionally, oral language more strongly predicted sight word acquisition in the winter than in the spring. These inconsistencies reflect similar inconsistences in the literature when receptive vocabulary is used as a measure for oral language.

When Hill and Launder (2010) used receptive vocabulary as a measurement of oral language, they found no significant relationship between oral language and reading. Further, Wise, et al. (2007) found that word reading was related to expressive language, but not to receptive language. However, Oulette and Beers (2010) used receptive language as a measure of vocabulary breadth and found it to be related to irregular word reading. Goff, et al. (2006) found that receptive vocabulary, as measured by the PPVT, predicted reading comprehension. These contradictory findings suggest that a single measure, like the PPVT, may not capture all of the variability in large constructs like oral language. A more effective research design, such as the one used by Catts, et al. (2000), might include multiple measures of oral language including both receptive and expressive language as well as vocabulary and grammar. In the current study, if the PPVT did not capture all of the variability in oral language, then it may have underestimated the variability, which could mean that the relationship between oral language and sight word acquisition was also underestimated.

Sight Word Acquisition and Socioeconomic Status

Sight word acquisition, as measured by both sight word reading and sight word$_{CBM}$, had a moderate correlation with socioeconomic status across the three measurement periods. When socioeconomic status was used as a covariant, it did significantly predict sight word acquisition (as measured by SWE). Further, when Cohen's *d* was calculated for the means of the low-SES and high-SES groups across measurement periods, medium effect sizes were found in fall, winter, and spring. However, Cohen (1988) and Olejnik and Algina (2003) caution against strict adherence to categorical interpretations of effect size particularly with repeated measures. Instead, Cohen asserts that the researcher must use knowledge of the study and previous research outcomes to appropriately determine the effect. In the present study, the distribution by

socioeconomic status was negatively skewed; more students were from high-SES families. If the distribution of SES had been more equitably distributed along the normal curve, the effect of SES may have been higher.

Additionally, the analysis of covariance (ANCOVA) resulted in an effect size of $\eta^2 = .163$. While this effect might appear small in traditional categorical schemes, deficits can often be viewed in terms of a cumulative effect. In his work on Matthew Effects, Stanovich (1986) suggests that in reading, there is often a snowballing effect with individual differences growing over time. In the current study, when the sample was split into high-SES and low-SES groups, the spring mean for the low-SES group (43.39) was only slightly higher than the fall mean for the high-SES group (41.22). After a whole year of instruction, the low-SES group knew on average about 2 more words than the high-SES group had known at the start of the study. If this gap persists and snowballs as Stanovich suggests, then the effect of .163 has practical significance for first-graders and their teachers.

Together these findings suggest that socioeconomic status had a significant influence over sight word acquisition. Additionally, this influence was detected despite a skewed sample; more students in the study were from high-SES families. This fact could have potentially reduced the overall effect of SES. These findings are important within the context of the larger problem that students from low-SES families lag behind their more affluent peers on the National Assessment of Educational Progress (United States Department of Education, 2014). The NAEP is not administered until students reach the 4th grade; however, the present study shows that as early as first grade, students' progress in reading is influenced by their families' socio-economic status.

Additionally, reading is measured in this dissertation study in terms of high frequency, sight words; sight word acquisition is critical to efficient reading. Even a small effect can be seen as significant because these words comprise many of the texts that children read early in their reading development (Indrisano & Chall, 1995). Further, according to LaBerge and Samuels' (1974) theory of automatic information processing, reading words by sight allows reader's attention to focus on higher-level comprehension of text rather than on decoding of individual words. If sight word acquisition in beginning readers is related to SES, then difficulties in acquiring high frequency, sight words could impact later reading development.

Mediation by Graphophonemic Knowledge

Graphophonemic knowledge was shown to partially mediate the effect of oral language on sight word acquisition; after controlling for graphophonemic knowledge, the effect of oral language was reduced by approximately one half. This finding suggests graphophonemic knowledge and oral language make independent contributions to sight word acquisition, which confirms the mediation portion of the hypothesized model.

This finding is in line with previous work on word recognition, which suggests that each representation of a word is accumulated in memory until the word can be retrieved in a single-step progress (Barker, et al., 1992; Ehri & Roberts, 1979; Logan, 1988; Seidenberg & McClelland, 1989). Specifically, Ehri and Roberts (1979) hypothesized that words are stored in lexical memory with multiple representations including phonological and orthographic identities. This study suggests that students who have strong graphophonemic skills are able to create phonological and orthographic representations of words, which contribute to their acquisition as sight words. Because students have more representations and more varied memories of the word,

they are able to reach the point where the word is automatically retrieved through a single-step process as suggested in Logan's (1988) instance theory.

Further, research has shown that oral language is often a product of a child's home environment (Hoff, 2003; Huttenlocher, et al., 2010). However, graphophonemic knowledge is often the subject of direct instruction in preschool and elementary school (Kendeou, et al., 2009). If graphophonemic knowledge can mediate the relationship between sight words and oral language, then there is the potential for direct instruction in graphophonemic knowledge to serve as an effective intervention when children arrive at school with deficits in oral language.

Implications

The current study illustrates that the early primary grades, specifically first-grade, are a time of rapid sight word growth as students develop automaticity with high-frequency sight words. Acquisition of these words is related to oral language and does appear to be influenced by socioeconomic status. Together these findings make a compelling argument for the direct-instruction of sight words in primary classrooms. Students need practice with reading and writing sight words in varied contexts to strengthen their knowledge of these words and improve automaticity. Further, research is needed to determine which pedagogical methods are most effective for teaching sight words.

Additionally, as oral language does appear to impact sight word learning, as well as many other facets of reading, it is important that primary classrooms are language-rich environments. Many children with low-levels of oral language do not have severe enough deficits to be considered learning disabled and are not receiving services from a speech and language specialist (Schuele, 2001). Therefore, regular classroom teachers must provide explicit instruction to enrich their students' language. Teachers should serve as models for appropriate speech using complex

vocabulary, and students should be encouraged to speak and try out new words. Further, teachers need to read a wide variety of texts aloud to their students in order to expose them to diverse vocabulary. With these read-alouds, teachers need to employ specific methods for introducing and extending students' vocabulary, such as those described by Kindle (2009).

Further, teachers need to provide opportunities for students to participate in productive talk within their classrooms. Students cannot improve their oral language skills if they are expected to spend their school day sitting silently and listening to teacher talk. Structured, purposeful opportunities for conversation, such as interactive read alouds (Wise, 2011), provided students with scaffolded practice in oral language. These types of conversation are critical for building oral language and vocabulary, which in turn impact reading skills, including sight word acquisition as the present study revealed.

Limitations

There are several limitations to this dissertation study, which limit the generalizability of the findings beyond this sample group. This study was not a randomized sample; due to the school district's requirement that parents sign informed consent forms, the sample was limited to those students who returned a form. Therefore, the sample was limited to children from families with the requisite literacy skills to read and complete the forms independently. Additionally, the sample size for this study was relatively small (n = 46). To form the low-SES and high-SES groups, the sample was split resulting in two groups with only 23 participants in each. Further, the overall SES of the sample, as measured by the Hollingshead Index of Social Status was negatively skewed; families tended to have higher scores indicative of higher social status.

An additional limitation is that instruction was not investigated as a variable in the current study. Students in the sample were chosen from five separate classrooms in two different

schools so variability in instruction was expected. However, there is no way to determine whether the differences in sight word acquisition were the result of differences in the instruction that students received in reading or any specific instruction on sight words.

A final limitation is that only one measure was used to for the oral language variable. Oral language is a broad construct that includes both receptive and expressive oral language. This study examined receptive language because children learn to recognize words before they learn to speak them, and thus receptive vocabulary was considered to be a broader measure of oral language. Additionally, the Peabody Picture Vocabulary Test (PPVT) was selected because it appears frequently in the literature as a valid, reliable measure of oral language. However, a single measure was potentially inadequate for measuring all of the variability in receptive oral language. As a result, the oral language variable is inconsistent in its correlation with socio-economic status across the measurement periods. Additionally, if oral language was more accurately measured, there is the potential that the magnitude of the effects on sight word acquisition seen in this study could be even greater.

Future Research

This study examines sight word learning during the first-grade year; however, many students begin learning sight words in kindergarten. Future research might seek to investigate the hypothesized model with kindergartners. Additionally, Ehri (2005) and Stuart, et al. (2000) suggest that alphabet recognition is considered to be a skill that precedes sight word learning so future researchers might consider alphabet knowledge as an additional variable to determine if it might be a contributing factor in the influence of SES on sight word acquisition.

Additionally, instruction was not considered as a variable in the current study. The type and quality of instruction plays a significant role in students' learning and progress. Therefore,

future research should consider how sight words, specifically in terms of high frequency words, are introduced and practiced in early elementary classrooms.

Finally, future researchers might attempt to replicate this study with larger sample. More students would sufficiently power the study so that the hypothesized model could be analyzed using a full factorial analysis of covariance. The 46 students in the present sample were insufficient for this type of analysis, which would have more fully analyzed the interaction between the variables in the model.

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Appendix A

Family Background Survey

The information below is being collected as background information. It will be coded, and neither your child's name nor your name will ever be specifically mentioned in connection to this information. Only students who return this survey will be included in the larger study. Thank you in advance for your participation.

Child's Name _____

School _____Teacher _____

Parent/Guardian #1

Name _____

Gender _____

Marital Status _____

Highest Level of Education Completed _____

Occupation & Employer _____

Parent/Guardian #2

Name _____

Gender _____

Marital Status _____

Highest Level of Education Completed _____

Occupation & Employer _____

Appendix B
Curriculum-Based Sight Word Assessment

left	pretty	green
white	eat	far
every	people	keep
ride	home	thing
sit	play	more
say	book	yes
made	part	car
while	find	call
anything	man	night
sleep	best	house
small	than	try
bring	round	door
those	live	
each	same	

Appendix C

Assessment Script

Introduce self.
Ask student name. Ask a general question about a kid-friendly favorite (team, character, etc.) Try to build rapport.
Today we will be doing some activities to see what you know about words. Some of them will be easy, and others will be harder. Just try your best.

TOWRE (Taken from TOWRE Manual)

Sight Word Efficiency Practice Test: *I want you to read some lists of words as fast as you can. Let's start with this practice list. Begin at the top, and read down the list as fast as you can. If you come to a word you cannot read, just skip it and go to the next word. Use your finger to help keep your place if you want to.*

Sight Word Efficiency Test List: *Ok, now you will read some longer lists of words. The words start out pretty easy, but they get harder as you go along. Read as many words as fast as you can until I tell you to stop. Begin here* (Turn over card and point.) *and read down the list (draw finger down list) before you start on the next list* (point to top of second column).

Read the words in order but if you come one you can't read, skip it, and go to the next one. Use your finger to keep your place if you want to, and if you skip more than one word, point to the word you are reading next. (turn the card back to the practice list). *Do you understand? Ok, you will begin as soon as I turn over the card.*

Start the timer for 45 seconds. Stop student when time expires.

If student is taking longer than 3 seconds, say "Go on."

Mark a 1 for correct words and a 0 for skipped words, incorrect words, or words taking longer than 3 seconds.

Phonemic Decoding Efficiency Practice Test: *I want you to read some made-up words that are not real words. Just tell me how they sound. Let's start with this practice list. Begin at the top, and read down the list as fast as you can. If you come to a made-up word you cannot read, just skip it and go to the next word. Use your finger to help you keep your place if you want.*

Phonemic Decoding Efficiency Test List: *OK, now you will read some longer lists of made-up words. The made-up words start out pretty easy, but they get harder as you go along. Read as*

many of them as you can until I tell you to stop. Begin here (Turn over card and point.) *and read down the list* (draw finger down list) *before you start on the next list* (point to top of second column).

Read the made-up words in order, but if you come to one you can't read, skip it and go to the next one. Use your finger to keep your place if you want to, and if you skip more than one word, point to the word you are reading next. (turn the card back to the practice list). *Do you understand? Ok, you will begin as soon as I turn over the card.*

Start the timer for 45 seconds. Stop the student when time expires.

If student is taking longer than 3 seconds, say "Go on."

Mark a 1 for correct words and a 0 for skipped words, incorrect words, or words taking longer than 3 seconds.

Peabody Picture Vocabulary Test (Taken from PPVT Manual)

Now we are going to do some work with pictures to see what you know about words.

Training Page B: *Look at the pictures on this page.*
B1: *Put your finger on the picture that shows laughing.*
B2: *Put your finger on sleeping.*

If B1 or B2 is answered incorrectly, do additional training items.
B3: *Put your finger on hugging.*
B4: *Walking.*

Now we'll do some more. You can point to the picture or say the number.
Turn to Set 5 (Start Age 6): page 49 (or other page highlighted on record sheet based on student age)

Put your finger on _____.

Mark student response by circling the number.
Put a slash through the E if the response is incorrect.
If a student takes longer than 3 seconds, mark the item as incorrect.
Student must get ALL items correct in Set 5 to establish a basal; if they do not, go back to Set 4.
STOP testing when a student has missed 8 or more items in a set.

CBM First Grade Sight Word List (Based on TOWRE instructions)

These are some words that you read in books. You are going to read each word to me. Begin here (point) *and read down the list* (draw finger down list) *before you start on the next list* (point to the top). *You will read all of the words to me. If you come to a word that you do not know, say, "skip" and go on to the next word. Do you understand what to do? Begin.*

If student is taking longer than 3 seconds, say "Go on."

Mark a 1 for correct words and a 0 for skipped words, incorrect words, or words taking longer than 3 seconds.

At end, thank you so much for working with me today. You know a lot about words! I will walk you back to class.