

IDENTIFYING PREDICTORS OF YOUNG CHILDREN'S  
READING ACHIEVEMENT

A Dissertation  
by  
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## **Abstract**

### **IDENTIFYING PREDICTORS OF YOUNG CHILDREN'S READING ACHIEVEMENT**

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This study examined the relations among two strong, early predictors of reading achievement. Building on the work of Morris, Trathen, Schlagal, Gill, Ward, and Frye, (2013) the present study compared the predictability of a sight word task and spelling task on a contextual reading task.

Data from a previous longitudinal study (Morris et al., 2013) were used to evaluate the relations among independent variables (sight word and spelling tasks) and a dependent variable (words read correctly per minute on a contextual reading task). Student performance on the sight word and spelling tasks at three time points in first grade and one time point in second grade were evaluated on the ability to predict words read correctly per minute at the end of second grade. Relations among variables in first grade were also examined.

Descriptive statistics were used to examine the relations among variables across time. Results indicated that all relations among the sight word task and spelling task were

consistently strong and positive at all time points. While relations among the spelling task and the contextual reading task were consistently strong and positive, the relations among the sight word task and contextual reading task were stronger at every time point.

Standard Multiple Regression and several Hierarchical Regressions were utilized to further investigate the predictability of the independent variables. Results from this study show that the sight word task administered closest in time to the criterion measure was the best predictor. However, the sight word measure administered in the middle of first grade was a very strong predictor of contextual reading at the end of second grade. Further research is necessary to investigate the cut scores for determining how many sight words read in a 60 second measure is an indicator of a reader who may struggle. The same issues should be investigated regarding the spelling measure as well.

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This amazing journey would have never been possible without the support and encouragement of the Reading Faculty at Appalachian State University. Thank you for sparking my passion for all things literacy.

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Ali Wilson gave me a home away from home and has been a rock star of a friend and cheerleader. Finally, I could never have made it through this without sweet puppy cuddles from Denver and Milo.

## **Dedication**

For my Maw Maw, Paw Paw, and Granny who gave me strong roots and strong wings.

But especially for my Mama and Daddy... *you* are perfect!



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## Chapter One: Introduction

This study is concerned with the assessment of beginning reading skills. In this opening chapter, I discuss how these assessment practices have been shaped by politically-charged state and federal laws and policies. I argue that the resulting mandates and incentives aimed at reading assessment and instruction have not been in the best interests of students and teachers. I critique some of the reading assessment methods that are currently used in North Carolina and suggest possible directions for change. My intention is to trace the before-the-beginning stages of the present study with the goal of showing why I chose this dissertation topic and conclude with the purpose of this study and research questions being addressed.

### Federal and State Initiatives

Over the past 15 years, two sets of federal legislation—the *No Child Left Behind Act* (NCLB) (2002) and *Race to the Top* (Department of Education, 2009)—have greatly influenced how American children are taught to read and how they are assessed in the early grades (kindergarten through third grade).

**No Child Left Behind.** *The No Child Left Behind Act* (NCLB), a reworking of *the Elementary and Secondary Education Act of 1994*, was signed into law by President George W. Bush in 2001. Its goal was for all children, including the disadvantaged, to be reading at grade level by the end of third grade. NCLB required that students meet proficiency on challenging state academic achievement standards and state academic assessments (NCLB,

2001). Individual states also were required to monitor *adequate yearly progress* and provide *report cards* on student achievement. These report cards included information on student achievement by subgroup (e.g., students from major racial and ethnic groups; students with disabilities; students who are Limited English Proficient) and information pertaining to student achievement by district and individual school. Adequate Yearly Progress (AYP) referred to a state's measurement of students' continued growth and achievement as determined by end-of-grade standardized tests. The end goal was that 100% of students would meet grade-level proficiency on these tests by the year 2014.

Reading was the cornerstone of the NCLB Act, which included *Reading First* (2002), a grant program set up to aid states in providing quality literacy instruction and aimed to assist high poverty school districts. The program awarded grants to states, which in turn awarded subgrants to schools. The grant money was to be used for *scientifically-based* reading instruction programs and diagnostic assessments for students in kindergarten through third grade. A goal of NCLB and *Reading First* was to reduce the number of children identified for special education by providing more effective reading instruction.

**Race to the Top.** *Race to the Top* (RTTT) is a more recent federal grant program housed within President Barack Obama's *American Recovery and Reinvestment Act* (ARRA) of 2009. This comprehensive education reform uses six areas to evaluate which states receive funding: (a) Standards and Assessments, (b) Data Systems to Support Instruction, (c) State Success Factors, (d) Great Teachers and Leaders, (e) Turning Around the Lowest-Achieving Schools, and (f) General, which encompasses making education funding a priority and ensuring successful conditions for innovative schools such as charter schools. The two education reform areas that are addressed in this dissertation are (a) Standards and

Assessments and (b) Data Systems to Support Instruction. In order to meet requirements for Standards and Assessments, a state must, “adopt standards and assessments that prepare students to succeed in college and the workplace and to compete in the global economy” (Department of Education, 2009, p. 7). In order to meet requirements for Data Systems to Support Instruction, a state must, “build data systems that measure student growth and success, and inform teachers and principals about how they can improve instruction” (Department of Education, 2009, p. 8).

In addressing the reforms outlined in the *Race to the Top* competition, the state of North Carolina has taken the following steps. To meet requirements for Standards and Assessments, the state has adopted the *Common Core State Standards* (CCSS) (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). These kindergarten through twelfth grade English Language Arts and Mathematics standards have been adopted by 45 states. It is important to note that as of fall 2014, the State of North Carolina passed legislation to review and possibly replace parts of the CCSS. Other states are considering similar legislation. To meet requirements for data systems, North Carolina has adopted computer-delivered formative assessments such as *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS) (Good, Kaminski, Cummings, Dufour-Martel, Peterson, Powell-Smith, Stollar, & Wallin, 2011), and *Text Reading and Comprehension* (TRC, Amplify, 2014). DIBELS consists of measures to be used by classroom teachers for assessing students’ acquisition of early literacy skills from kindergarten through sixth grade, (Dynamic Measurement Group, 2014), while TRC uses running records to determine how students find meaning in text. Both assessments are scored using computer technology. North Carolina also has developed end-of-grade summative, standardized reading assessments.

**Excellent Public Schools Act.** At about the same time North Carolina received RTTT funding, the state legislature passed *The Excellent Public Schools Act* (EPSA) in 2012. This law put an end to social promotion at the end of third grade, requiring students who do not pass the end-of-grade reading test to either attend summer reading camps or be retained in third grade. The *Read to Achieve* section of the EPSA (2012) states that the goal in North Carolina is:

to ensure that every student read at or above grade level by the end of third grade and continue to progress in reading proficiency so that he or she can read, comprehend, integrate, and apply complex texts needed for secondary education and career success. (p. 1)

One of the goals of the EPSA (2012) is to identify children at-risk for difficulty with reading development as early as possible in their schooling. According to the Act, difficulty with reading development refers to a student being weak or delayed in one or more of the following areas: oral language, phonological awareness, vocabulary, fluency, or comprehension. Because the decision point for retention is end of third grade, the EPSA requires the use of formative assessments in kindergarten, first, and second grades. The idea is that ongoing information provided by these assessments can inform instruction and thus prevent children from falling behind in reading in the early grades.

### **The Present Study**

The aforementioned federal legislation and the state of North Carolina's responses to it provide the impetus for this study on early reading assessment. By mandating grade-level reading proficiency by the end of third grade, these laws emphasize the need for effective, focused reading instruction for struggling readers. The shape and the success of this



instruction, as the legislation notes, will depend on valid, formative assessments of children's reading proficiency. These assessments must be easy to administer and provide useful information to the teacher. This study builds on the findings of previous work by Morris, Trathen, Schlagal, Gill, Ward, and Frye (2013) that identified relations between predictors of early reading achievement and described how those relations may change over time.

To address assessment issues in grades kindergarten through third (K - 3), North Carolina's Department of Public Instruction purchased *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS) (Good et al., 2011) and mandated the statewide use of this skills-based, formative assessment. Although DIBELS is widely known and used across the nation, the assessment has many critics in the reading field (see Goodman, Flurkey, Kato, Kamii, Manning, Seay, Thome, Tierney, & Wilde, 2006; Riedel, 2007). P. David Pearson's foreword to Goodman et al. (2006) *The truth about DIBELS: What it is. What it does*, explains why he is an opponent of the use of DIBELS.

DIBELS shapes instruction in ways that are bad for students (they end up engaging in curricular activities that do not promote their progress as readers) and bad for teachers (it requires them to judge student progress and shape instruction based on criteria that are not consistent with our best knowledge about the nature of reading development).

(p. v)

Moreover, a recent study by Morris et al. (2013) suggests that there may be better ways of assessing reading skill in early grades. Morris et al. developed a set of predictive measures that included qualitative spelling, sight word reading, and contextual oral reading as alternative measures to DIBELS and compared the two sets of measures. I will refer to the Morris et al. measures as the *ASU* assessments because they were developed at Appalachian

State University. Morris et al. (2013) found that the alternative tasks were superior in both reliability and predictive validity (i.e., ability to predict future reading performance) to the corresponding DIBELS measures.

The Morris et al. (2013) study is a precursor to new methods of formative assessment of reading proficiency in early grades. Data collected for that study consisted of collection points: fall, winter, and spring of first grade; winter and spring of second grade. The analyses used data sets from first grade to predict contextual reading at spring of third grade. Data consisted of ASU assessments (qualitative spelling, sight word reading, and contextual oral reading) and corresponding DIBELS assessments (phoneme segmentation fluency, nonsense word fluency, and DIBELS oral reading fluency). These assessments were matched and compared: (a) qualitative spelling to phoneme segmentation, (b) sight word reading to nonsense (nonword) word fluency, and (c) contextual oral reading to DIBELS oral reading fluency (DORF). In both ASU and DIBELS, the contextual reading tasks measure reading fluency by calculating words read correctly per minute. Thus these measures of reading fluency represent the criterion for all other reading skill assessments.

Morris et al. (2013) found that the ASU spelling task in first grade was moderately correlated ( $r = 0.56$ ) to the DIBELS task of phoneme segmentation. In the fall, not only did the ASU measure have a moderate but stronger correlation ( $r = 0.52$ ) to the ASU measure of contextual reading than the DIBELS ( $r = 0.17$ ), but the ASU qualitative spelling measure also had a moderate correlation ( $r = 0.59$ ) to the DIBELS measure of contextual reading (DORF). Conversely, the DIBELS measure of phoneme segmentation had a weak correlation to the DORF ( $r = 0.25$ ), which is surprising since the DIBELS measures were specifically designed to predict reading fluency. ASU researchers also looked at measures of word

reading in isolation. The ASU task of sight word reading was strongly correlated ( $r = 0.76$ ) to the DIBELS task of nonword reading. The ASU measure included real words, while the DIBELS measure used nonsense words. Again, the ASU real word reading task had strong correlations to the ASU and DIBELS contextual word reading measures ( $r = 0.72$ ;  $r = 0.83$ ), stronger than the comparable DIBELS task of nonsense word reading ( $r = 0.53$ ;  $r = 0.68$ ).

Analysis of the winter data set revealed a continued strong correlation ( $r = 0.75$ ) between ASU real word reading and DIBELS nonword reading. All relations between winter measures and spring outcomes increased. ASU real word reading continued to be strongly correlated to the ASU contextual reading measure ( $r = 0.83$ ) and the DIBELS contextual reading measure ( $r = 0.93$ ). The DIBELS nonword task had a moderate correlation to the ASU measure ( $r = 0.66$ ) and the DIBELS measure ( $r = 0.69$ ), but the ASU tasks clearly had stronger relations than the DIBELS measures.

This dissertation builds on findings from previous studies of reading assessments developed for young children, especially the Morris et al. study. Currently in North Carolina, the State Department of Instruction has mandated the use of particular assessments (i.e., DIBELS) in K-3 classrooms. As such, this dissertation is influenced by the pragmatic philosophical stance (Dewey, 1916; 1961), which addresses socially-situated problems whose solutions contribute broadly to a more democratic way of life. Pragmatism allows contributions from research literature and from the world of practice to be combined in the search for solutions to problems. By grounding this dissertation in pragmatism, I can address a critical issue in North Carolina schools today—the efficiency and effectiveness of reading assessments to predict young children’s ability to read connected text. Given the critical need for effective, formative reading assessment in kindergarten and first grade, and the potential

shown by formative tasks in the Morris et al. (2013) study, this dissertation study will examine specific tasks used in the Morris study, namely *spelling (SP)* and *sight word recognition (SW)*. The purpose of this study is to see which of these two tasks, administered at different time points in first grade (beginning T1, middle T2, end T3) and one time point in second grade (middle T4), will be the better predictor of an of end-of-second-grade (T5) measure of reading fluency. Specifically, the following research questions will be addressed:

- (1) What are the relations among the variables examined in this study: qualitative spelling, isolated sight word reading, and contextual reading fluency?
- (2) Do the relations among the variables change over assessment time points?
- (3) Which independent variable (qualitative spelling or isolated sight word reading) is the strongest predictor of contextual reading fluency at the end of second grade?

## Chapter Two: Review of the Relevant Literature

The rapid recognition of individual printed words drives the fluent reading process (e.g., Adams, 1990; Perfetti, 1985; 1992; Rayner & Pollatsek, 1989). This is not a new idea. Huey (1908; 1968) pointed out that, for a developing reader, word recognition often requires time and attention to detail (e.g., the sequence of letters); however, on seeing the same word numerous times, “repetition progressively frees the mind from attention to details, makes facile the total act, shortens time, and reduces the extent to which consciousness must concern itself with the [word recognition] process” (p. 104). This perspective has long been reflected in the work of reading clinicians who include a measure of automatic word recognition in their diagnostic batteries (Betts, 1946; Durrell, 1937; Gillet, Temple, Temple, & Crawford, 2012; Morris, 2014; Stauffer, Abrams, & Pikulski, 1978).

With the advent of the cognitive revolution in psychology in the 1970s, several researchers began to carefully study the word recognition process. In a seminal article, LaBerge and Samuels (1974) described reading as a kind of *zero-sum* game in which the reader, at a given moment, must divide his or her attentional resources between word recognition and comprehension. The goal, these researchers argued, is to automatize word processing so that maximum attention can be devoted to comprehending the text. Perfetti’s (1985) *Verbal Efficiency Theory* and Stanovich’s (1980) *Interactive Compensatory Model* provided support for LaBerge and Samuels’s position. Adams (1990), in reviewing more than a decade of research on word recognition processes, stated:

Human attention is limited. To understand connected text, our [active] attention cannot be directed to the identities of individual words and letters. In reading as in listening, the process of individual word perception must proceed with relative automaticity, and such automaticity is afforded only through learning. . . . Only as the perception [of individual words] has become relatively automatic can we devote our active attention to the process of understanding them. (p. 228-229)

Closely aligned with the *automatic word recognition* perspective described above is *The Simple View of Reading* put forth by Gough and Tunmer (1986). These researchers posited that reading comprehension (R) can be characterized as the product of decoding (D) and language comprehension (L), or:

$$\mathbf{R} = \mathbf{D} \times \mathbf{L}$$

In the present context, three points warrant mention about *The Simple View of Reading*:

- (1) Decoding is defined as automatic word recognition, the ability to quickly derive, from printed input, a given word in the lexicon.
- (2) Decoding is assigned a central role in the reading process.
- (3) Decoding and language comprehension can be separated, measured, and taught.

Gough and Tunmer (1986) did not deny that the end goal of reading is comprehension, nor that language and cognitive processes contribute significantly to that goal; however, their simple view clearly highlighted the importance of automatic word recognition in fluent reading.

If the goal is to understand how word recognition develops in beginning readers, then one needs a theory—an explanation of how word recognition progresses or improves over time. In a refinement to his *Verbal Efficiency Theory*, Perfetti offers the *Lexical Quality*

*Hypothesis* (1992; 2007) and emphasizes the importance of an autonomous and fully specified and redundant representation of a word in a reader's lexicon. This knowledge of individual words is what allows fluent reading to take place. Perfetti (1992) argues that the major essential development in learning to read, then, is the acquisition of individual word representations:

Thus my suggestion is that the reading lexicon contains two sublexicons: a developing functional lexicon with representations under specified, and an autonomous lexicon with representations fully specified and redundant. A given word moves from the developing functional lexicon to the autonomous lexicon just when it becomes fully specified and redundant. This is essentially a word-by-word process.

(p. 163)

The growth in word knowledge described by Perfetti implies a systematic change to readers' cognitive processes as they gain experience interacting with texts. Jeanne Chall (1983) provides a comprehensive model of reading development that captures this growth and that has stood the test of time.

### **Jeanne Chall's Stages of Reading Development**

Jeanne Chall described readers' progression through six stages of reading in her seminal book: *Stages of Reading Development* (1983). When children interact with text and see and experience literacy activity in their culture, they progressively learn more about print and reading and advance through the stages in a predictable sequence. The earliest (Stage 0—Prereading) begins at birth and transitions to the next stage as children prepare to enter formal schooling (around age 4). Evidence of growth in this stage can be observed when children:

- discriminate and name most letters of the alphabet
- print their names and some letters dictated to them
- distinguish between drawing and writing
- “read” environmental print
- understand how to hold books, turn pages, and that stories have beginning, middle, end, and progress from front to back
- “pretend read” a favorite book and use pictures for support to retell a story as they turn pages
- understand that print in English runs left to right and top to bottom on a page, and use fingers to point to words and lines while reciting a memorized phrase or sentence
- read some words known from favorite books and begin to track print with finger more deliberately and accurately as they read favorite books

The next stage (Stage 1—Decoding) is important because children must come to understand how print maps onto speech as they learn the relations between letters and the sounds they represent. Chall describes this critical shift as becoming *glued to print*. In this stage, readers transition from pseudo-reading, where they are *reading* from their minds as they remember familiar stories and retell them with the aid of pictures but little input from the printed text, to becoming glued to print, where they are reading the printed text, in a slow, halting manner as they learn to decode print—read the words on the page. They learn to blend letter-sounds into words and learn common sight words as they gain practice in reading. Most 5 and 6 year olds move into this stage in kindergarten and first grade.

The transition from Stage 1 to Stage 2 (Fluency) is learning enough about print that the process of reading gains automaticity and fluency, and because of this the reader becomes



*unglued to print*. As readers improve their word recognition skills, they increasingly are able to read familiar texts at a faster pace and with more accuracy and appropriate phrasing. The print processing increasingly becomes automatized, allowing for the mind to be freed from the print (unglued) to focus on meaning. (In Perfetti's and Hart's (2002) terms, this is the development of quality word representations in the reader's lexicon.) Chall stresses that opportunities to read many familiar books are essential for the development of Stage 2.

. . . familiar books—familiar because the stories are familiar, the subjects are familiar, or the [story] structures are familiar. . . . Familiarity with the language patterns of these books also helps. Generally, the greater the amount of practice and the greater the immersion, the greater the chance of developing the fluency with print that is necessary for the difficulty to come—the acquisition of new ideas in Stage 3. (p. 19-20)

Most students by third grade are expected to transition from Stage 2 to Stage 3 (Reading for Learning). The first half of Stage 3 (3A) includes the ability to read beyond egocentric purposes to reading about the world in general, often characterized by reading to learn new information as part of one's education. Readers have mastered the basic print processing skills (acquired in the earlier stages) and now can concentrate on comprehending new information and learning new vocabulary as they read. They are very skilled at reading the text, but there are still limits to readers' abilities to fully comprehend the ideas expressed in complex texts with multiple points of view.

In the second half of Stage 3 (3B), readers become even more skilled at reading complex texts with increasing ease, fluency, and comprehension. They grow in their abilities to analyze text critically from multiple perspectives and their abilities to think with texts are

increased. They are beginning to read beyond the text (a hallmark of Stages 4 and 5) as they consider points of view and purposes of authors. Students in middle school are expected to read with Stage 3 characteristics. There are two more stages included in Chall's model. However, those stages do not pertain to the present study.

This dissertation is focused on assessing readers' development through Chall's Stages 0 and 1 and into Stage 2. Yet, more specific descriptions of beginning readers' development are needed for the creation of appropriate assessments. Fortunately, Linnea Ehri's (1998) model of sight word development and Edmund Henderson's model of early spelling development provide concrete descriptions of word knowledge development in beginning readers and spellers.

### **Ehri's Model of Sight Word Development**

Ehri's (1998) model of printed word learning outlines the beginnings of reading acquisition and describes developmental phases through which children progress. The model is specific to sight word acquisition, but is also closely tied to the development of spelling ability. The term, *sight word*, actually has two meanings in reading education. The first meaning refers to frequently-occurring, irregularly-spelled words (e.g., *was*, *boy*, *the*, *two*, *there*) that are often found in first-grade reading materials. The second meaning of sight word, and the one that pertains to this study, refers to printed words, of various difficulty levels, that are recognized accurately and automatically on sight. Ehri (1998) describes four phases of sight word development in young readers.

**Pre-alphabetic phase.** In the pre-alphabetic phase of word learning, the reader does not possess knowledge of letter-sound relations. The ability to recognize words rests solely on visual characteristics of a given word; for example, the "tail" at the end of *dog* or the two

“eyes” in the middle of *look*. However, reliance on arbitrary visual cues does little to solidify printed words in the child’s memory. What happens when the child is faced with other words that end with a tail (e.g., *dig, rag*) or other words that include two eyes in the middle (e.g., *spoon; book*)? He or she will be unable to differentiate between the words—unable to commit them to memory—based on visual cues alone, and this situation will lead the child to seek other means to discriminate the data, which will lead to the next developmental phase.

**Partial alphabetic phase.** As readers progress into the partial alphabetic phase, they begin to use letter sounds to help recognize and remember printed words. In this phase, the child may not know all the letter sounds (e.g., *b = /b/; h = /h/; m = /m/*) and may lack the ability to fully attend to individual sounds within words (phonemic awareness). Still, the child will use whatever letter-sound knowledge he or she possesses to help recognize printed words and store them in memory (see Stuart & Coltheart, 1988).

For example, a beginning reader in the partial alphabetic phase may recognize the word, *cat*, by processing only the initial consonant in the word (C - -). Another child in this phase may process *cat* more fully by attending to both the initial and final consonants (C - T). Importantly, the ability to process letter sounds in printed words, particularly the beginning consonant, will enable the beginner to finger-point read simple texts and improve his or her letter-sound knowledge through that contextual reading (Morris, Bloodgood, Lomax, & Perney, 2003; Share, 1995).

**Full alphabetic phase.** With phonics instruction and practice reading in context, early readers move into the *full alphabetic phase*. In this phase, the child’s phonemic awareness and letter-sound knowledge are more complete, enabling him or her to decode words synthetically by matching individual letters to sounds (e.g., *sit = s – i – t*). Note that

the medial vowel is now processed in word recognition attempts. According to Ehri, this fuller processing of letter sounds allows more printed words to adhere in memory (see also Perfetti, 1992). However, word processing in the full alphabetic phase is still slow and deliberate; it takes time to sound through words (the readers are glued to print). More immediate or automatic word recognition awaits movement into the next phase.

**Consolidated alphabetic phase.** Reading practice at the appropriate level of difficulty allows children to move gradually into the consolidated alphabetic phase. Now, they can read many words (perhaps 100 or more) accurately and automatically. These are true sight words; their letter-sound properties have been amalgamated into recognizable units. During this consolidated stage, the reader also is able to decipher a new word in text not by sounding it out, but rather by processing *chunks* within the word (e.g., bl-oom; sp-eak; tr-ack). These chunks, according to Ehri, can represent syllables, morphemes, onsets, or rimes.

Chunking is possible in the consolidated alphabetic phase because the reader has internalized a substantial sight-word vocabulary (see Perfetti, 1992) that allows him or her to read by analogy. For example, with *back* as a sight word, the reader is able to break the word, *track*, into the initial (onset) consonant blend (*tr-*) and the following rime (*-ack*). Together, the larger store of sight words and the ability to attack new words by analogy greatly increase the child's word recognition efficiency, making it possible for him or her to read more difficult texts at a faster pace.

In summary, progression through Ehri's four phases of sight word learning represents a major achievement for the beginning reader. Once children enter the consolidated phase they have acquired many high frequency sight words, and the orthographic structures

common to many words in English have been amalgamated in memory. This growth in literacy will enable future development at a more rapid pace. This marks the beginning of the transition from being “glued” to becoming “unglued” to print (Chall, 1983). In the following section, I describe a very similar progression for the development of early spelling ability.

### **Henderson’s Stage Model of Spelling Development**

In learning sight words, the beginning reader must attend to both the letters (spelling) and sounds (pronunciation) within a word (Ehri, 2005). This fact has led Ehri and others (Henderson, 1981, 1990; Perfetti, 1985, 2007; Perfetti, Rieben, & Fayol, 1997) to posit a reciprocal relationship between learning to read and spell words in English; that is, growth in one area often influences growth in the other area. The following description of Henderson’s (1990) developmental spelling model parallels Ehri’s (1998; 2005) developmental model of sight word learning.

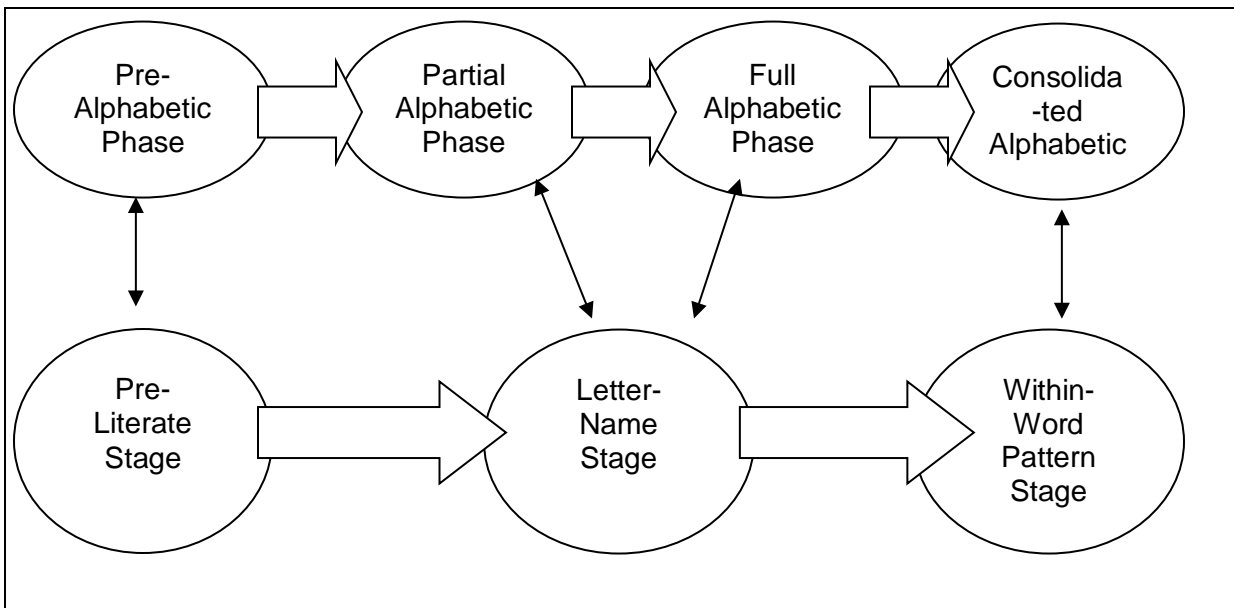
**Pre-literate spelling stage.** Henderson’s (1990) first stage of spelling development (preliterate) is initially characterized by scribbles. Later, with parental support, the child may learn to write his or her name (e.g., KATIE). Using letters from his or her name and the surrounding environment, the child eventually begins to write with letter strings (e.g., KAT3M4XE). These strings often include numbers as well. At this point, the child still does not understand the *alphabetic principle*; that is, letters map to sounds in our written language. At the end of the pre-literate spelling stage, the child may begin to include a few beginning consonant letter sounds in spellings (e.g., B for *ball*; K for *kitty*). These beginning consonant spellings indicate a transition into the next spelling stage (and a movement into Chall’s Stage 1 of becoming glued to print).

**Letter-name spelling stage.** Letter-name spelling simply means that the child uses alphabet letter names (e.g., B = /bi/, T = /ti/, F = /Ef/, M = /Em/) to represent individual sounds that he or she *hears* in a word (e.g., B for *bed*; TP for *top*; MI for *my*; FES for *fish*). Such spellings obviously depend on the child's developing phonemic awareness; that is, the child has to hear or attend to the ending sound in *top* (/p/) before he or she can represent it with the corresponding letter name (P).

Because phonemic awareness develops over time—first the beginning sound, then the ending sound, and finally the medial vowel—early spelling follows a similar course. A word like *table* might be spelled as follows over several months' time: T, TBL, TABL, TABEL. Or the word, *pet*, might be spelled P, PT, PAT, and finally, PET. Note again the progression from beginning consonant, to beginning and ending consonants, to consonants plus the medial vowel.

**Within-word pattern spelling stage.** In this stage, the young speller moves from one-to-one matching of sounds to letters (e.g., *ham* = H + A + M) to a more advanced pattern strategy. Influenced by reading practice and phonics instruction, the beginning reader's sight vocabulary increases. Moreover, the child becomes aware of patterns (or chunks) represented in his or her store of known words. Notably, the child begins to spell short-vowel words correctly, to represent consonant blends conventionally, and to place markers (extra letters) in long-vowel spellings (e.g., TAKEE, METEE and ROAP), even though the markers may sometimes be misplaced. Not only is the within-word-pattern speller moving closer to conventional spelling, he or she is beginning to process words and syllables as patterns or chunks. This is an important step forward in the development of word knowledge.

**Connections between sight word learning and spelling development.** The reciprocal nature of sight word reading and spelling development can be seen in Figure 1. During Ehri’s first phase of word reading and Henderson’s first stage of spelling development, the child employs a visual strategy. Letters or letter shapes may be used in attempts to read or write words, but the child does not yet exploit the letter-sound properties of written words.



*Figure 1.* Ehri’s Phase Model of Word Learning and Henderson’s Stage Model of Spelling Development. The arrows between Ehri’s Model (top) and Henderson’s Model (bottom) indicate the alignment of word knowledge in reading and spelling across both models.

The progression of phonetic spelling—beginning, beginning-end, beginning-middle-end—found in Henderson’s letter-name spelling stage is reflected in the partial-alphabetic and full-alphabetic phases of Ehri’s sight word model. During this period, the child becomes progressively more adept at using letter-sound relations in attempts to read and write words. Finally, we find that Ehri’s consolidated-alphabetic phase of word reading closely parallels Henderson’s within-word-pattern stage of spelling. Here, the child moves away from a letter-sound blending strategy and begins to use patterns or chunks of letters (e.g., CVC, CVCe,

CVVC) in attempting to read and spell words. This use of patterns speeds word recognition and allows for more fluent reading of text. This development marks the movement of individual words from functional to autonomous representation in the reader's lexicon (Perfetti, 1992).

Ehri, Perfetti, and Henderson were contemporaries, putting forth their respective models in the 1980s. Although they came from different disciplines (Ehri and Perfetti from experimental psychology, Henderson from reading education), each arrived at a similar conclusion. In the mind of a beginning reader there is an abstract, developing knowledge of how printed words work that serves the child's attempts to read words and spell them.

### **Share's Self-Teaching Hypothesis**

Just as the models of Ehri, Perfetti, and Henderson align word reading and spelling development, Share's (1995) *self-teaching hypothesis* adds another layer to the word identification process. Share's self-teaching hypothesis asserts that decoding, the process of matching graphemes to phonemes in order to pronounce words, is the key to beginning readers increasing their abilities to accurately and automatically recognize written words (Share, 1995; 2008). As the child develops sight word knowledge in conjunction with orthographic knowledge, the process in which spoken words are represented in written language, Share posits that a self-teaching mechanism is activated. Essentially, children learn to read by reading. Share's model addresses the issue of the "orthographic avalanche" (p. 153) beginning readers face. Simply put, too many words exist for teachers to explicitly instruct all of them. Instead, the self-teaching model posits that readers gain word knowledge by successful decoding of unknown, low-frequency words. In other words, students must have the opportunity to engage in contextual reading to increase their reading lexicon. With



some basic sight word knowledge and early knowledge of orthography, such as the one-to-one correspondences of Ehri's partial alphabetic phase, young readers can begin to decode unknown words in text. This process of self-teaching is continuous, possibly lifelong, and it begins in the earliest stages of reading acquisition.

Orthographic knowledge is critical for visual recognition of words, a process central to self-teaching. An example may help here. Think of a first grade boy reading the following sentence: *The cat likes to play with bugs*. Possessing a few sight words and some phonemic awareness, the child might be expecting the following spelling of the new word *bugs*: B-O-G-S. Upon seeing the U spelling of the vowel, the child has a chance to process, and store in memory, the correct spelling of the word. This example shows that successful decoding attempts with new letter strings (e.g., *bugs*) provide opportunities to establish correct word representations in memory (see Perfetti, 1992).

In addition, the self-teaching mechanism develops in tandem with the reader's development in word reading as outlined by Ehri (1998) and knowledge of orthography as outlined by Henderson (1990). As the reader continues to develop these knowledge sets, she acquires, through the act of decoding, the specific orthographic representations of words required for automatic recognition (Perfetti, 1992; Share, 1995). Furthermore, while the model is item-based in word recognition, the orthographic structures of successfully decoded words can be used to read novel words with the same, or similar, structures by analogy; e.g., knowing *night* and *right*, the young reader may be able to recognize *bright*.

The present study is concerned with the developing printed word knowledge of beginning readers, the accurate assessment of the development of this knowledge, and its ability to predict later contextual reading fluency. Since word knowledge is central to the

process of reading (Perfetti 1985), a decontextualized (context free) measure of word recognition should be a good assessment of the quality of that knowledge (Morris, 2014). Indeed, Perfetti (1992) cites spelling as the key measure of the quality of a given word representation. Therefore, Ehri's and Henderson's descriptions of *content* (characteristics of word knowledge phases) and Share's description of *process* (self-teaching) will both be helpful in interpreting or making sense of data collected. Furthermore, this study takes a closer look at several of the variables included in the Morris et al. study (2013), which is described in the next section.

### **Assessment of Early Reading—the Morris et al. 2013 Study**

Varying forms of reading assessment have been utilized for nearly a century (Morris, et al., 2012). Many practitioners have worked to improve upon the plethora of formal and informal assessments used with young children, while others have worked to develop new forms of assessment. As our understanding of reading processes has evolved, so have the assessment tasks used to measure the various components of reading. This study looks at the assessment of two components of early reading development: sight words and spelling. In the aforementioned Morris et al. study (2013), sight word and spelling measures were found to be more effective for predicting reading fluency than were measures from DIBELS (Good et al., 2011), which currently North Carolina teachers are being required to use in early grades.

The assessments developed at ASU were based upon the research of Perfetti (1985; 1992; 2007), Ehri (1998; 2005), Henderson (1990), and Share (1995). Sight word reading in isolation provides insight into the store of words a child is able to read automatically. Spelling measures capture the development of the child's orthographic knowledge. As noted previously, the development of sight word and orthographic knowledge are necessary for

kick-starting the self-teaching mechanism described by Share, which drives the reader's acquisition of new word knowledge during contextual reading. Measures of contextual oral reading are used to identify the level at which readers should be instructed and the level at which they can read independently. The descriptions of all tasks included in the original study follow.

**Appalachian State University Assessment Tasks.** Researchers from Appalachian State University employed a battery of assessment tasks, alphabet recognition, sight word reading, qualitative spelling, pattern word reading, and passage reading.

*Alphabet Recognition.* At the beginning of first grade, students are just beginning to acquire reading skills. The alphabet recognition task measures the early reader's alphabet knowledge, which is a strong predictor of reading achievement (Adams, 1990). For this task, the examiner provides a single piece of paper, which has the 26 letters of the alphabet typed. As the child names the letters of the alphabet, the examiner writes the substitution of any letters misidentified or makes a slash mark through any unknown letters. There are no marks made on the letters that are correctly identified. In the Morris et al. (2013) study, this task was only administered at the fall time point because by the middle of first grade, students were expected to know all letter names and sounds.

*Qualitative Spelling (SP).* Orthographic knowledge, as measured by a spelling task, can give insight into the decoding ability of an early reader (Morris, Bloodgood, & Perney, 2003). As discussed in the review of the literature, word reading and spelling develop in tandem and reciprocally. For the SP task, the examiner gives the child a practice word to establish expectations. If the child is unsure or unable to write the practice word, the examiner models writing the word. To begin the assessment, the examiner reads the target

word (e.g., *pet*), provides a sentence containing the word (e.g., *My pet is a dog*), and repeats the word a final time (e.g., *pet*). The child attempts to write the word on a numbered page provided by the examiner. This continues for ten first grade words, which follow regular letter-to-sound phonics patterns (e.g., *chin, wish*). The SP task is scored in two ways; words correct and qualitative points. Qualitative points are awarded for spelling features (letters/sounds) represented, regardless of whether or not the word is spelled correctly as a whole. For the study, SP was assessed at all time-points in first grade. At the end time-point in first grade and the middle time-point in second grade, the task included a second grade list of words that represent more complex patterns (e.g., *digging*).

*Sight Word Reading (SW)*. Reading real words in isolation is a measure of automatic word recognition. Considering difficulty of beginning reading material, if a child has a fairly large sight word vocabulary (thirty or more words), he or she can read late kindergarten and early first grade reading material (Gough & Tunmer, 1986). For the SW task, participants have 60 seconds to read as many high-frequency words as they can. There is a combination of decodable words that follow regular spelling patterns (e.g., *big, made, push*) and words that do not follow regular spelling patterns (e.g., *one, people, again*). The list of words is graded; that is, the words get increasingly more difficult as the child reads. The examiner models how to read the words left to right. The child is given the opportunity to practice, after which the examiner instructs the child to begin reading and starts her stopwatch. Both participant and examiner have a typed copy of the words. The examiner makes a slash through words that are read incorrectly and the number of words read correctly in 60 seconds is recorded. This task was administered at all time points in first grade.

*Pattern word reading.* The pattern word reading task differs from the SW task in only one way. The words to be read all represent first- and second-grade spelling patterns. This is administered in exactly the same way as the sight-word reading test.

*Contextual oral reading.* Participants read leveled passages for the contextual reading task. This task is used to measure oral reading accuracy, rate, and comprehension. There are two forms of the passage reading inventory (A and B). Each form contains passages at the pre-primer, primer, late first, and second grade level. Participants are randomly assigned a form of the passages to read orally. At the next data collection point participants read the other form of passages, ensuring they do not read the same passage twice in one school year.

All participants begin the oral reading task at the pre-primer level. The examiner provides brief instructions and a short introduction before asking the child to read a passage. The child is also informed that the examiner will ask a few questions at the end of the reading. As the child reads, the examiner marks errors on a transcript, providing the child with a word if she hesitates for longer than three seconds. At the end of the reading, the examiner makes a note of the time and asks the child several questions about the passage. The assessment continues with the child reading the primer, then the late first grade level passage, until he or she has read all three passages or reaches frustration level. An oral reading accuracy score below 90%, a comprehension score below 50%, or an extremely low rate indicates frustration level.

**DIBELS Next assessment tasks.** *DIBELS Next* tasks were developed by researchers (Good et al., 2011) to measure early reading acquisition based on phonological awareness knowledge, word attack skills, and oral reading accuracy in connected text. Each DIBELS task used in the Morris et al. (2013) study is described below.

*Phoneme segmentation fluency (PSF).* The phoneme segmentation fluency task is a 60 second measure of phonemic awareness. The examiner says a word, and the child identifies the individual sounds, or phonemes, in the word. The task begins with examiners modeling phoneme segmentation, followed by the opportunity for the child to practice. Examiners then start their stopwatches and provide the first word. As the child says the individual sounds of the word, the examiner marks the correctly identified phonemes by underlining them. PSF was administered at the beginning of first grade only.

*Nonsense word fluency (NWF).* The nonsense word fluency task aims to measure the child's word attack skill. The child is provided with regularly spelled VC and CVC nonsense words (e.g., sig, rav, ov) and asked to read the words (Good, et al., 2011). The child is expected to read the nonwords as wholes, however, she will receive partial credit for correct sounds. The examiner allows for a wait time of three seconds before marking the nonword incorrect and directing the child to move on to the next word.

*DIBELS oral reading fluency (DORF).* The student is presented with an on-grade-level reading passage and asked to read aloud for one minute. As the child reads, the examiner marks errors. The child must read at least 40 words correct per minute to continue with the retelling component. The examiner prompts the child to tell her about what was just read. The child has one minute to provide details about what was read. The DORF assessment task was given using only on-grade-level passages.

The *DIBELS Next* assessment measures were adopted by North Carolina because they were advertised as, "providing accurate, timely benchmark and progress monitoring information to ensure students receive targeted instructional support" (Good et.al., 2011, p. 4). However, the Morris et al. longitudinal study (2013) found that the formative and more

naturalistic tasks (e.g., developmental spelling, sight word reading) were better predictors of early reading achievement. The present study focuses on the SP and SW tasks in order to identify which of the two is the best predictor of reading achievement at the end of second grade (T5). The criterion measure, words correct per minute, is the measure used to determine reading achievement.

### **Words Correct Per Minute**

Words read correct per minute (WCPM) is a measure of oral reading fluency. This measure gives insight into the child's reading ability with varying levels of text. Reading fluency, sometimes referred to as reading rate, can indicate whether a reader's issues are in making meaning, which can be a deficit in vocabulary knowledge, prior experience, or syntactic knowledge, or if the issues are at the print level. Print-level deficits can stem from lack of sight word knowledge, delays in orthographic knowledge development, inadequate decoding skills, or phonological awareness/processing deficits. Guszak states: "The fluency or rate with which a pupil reads materials reveals rather clearly whether pupils are having meaning or word recognition difficulties with text" (p. 24, 1997). The minimum oral rate for reading first grade reading materials, according to Guszak, is 60 words per minute. For second grade materials, the minimum oral reading rate is 70 words per minute.

Because rate is such a useful indicator of word recognition and comprehension, it is the first screen that a teacher should apply as he observes a pupil reading self-selected text. Such verification can provide support as to whether the pupil is prospering or suffering in that text. If the rate is fast and fluent the student is obviously doing well. If, however, the rate is near or below the minimums, there is strong reason to question why that pupil is reading so slowly. (Guszak, p. 73, 1997)

The importance of reading fluency, as measured by WCPM, is supported also by the work of Ehri (1998; 2005), Henderson (1990), Perfetti (1985; 1992) and Share (1995).

### **Summary and Theoretical Framework**

Perfetti's notion of the development of quality word representations in readers' lexicons, Chall's stages of reading development, Ehri's phase model of word learning, Henderson's stage model of orthographic knowledge development, and Share's self-teaching hypothesis highlight the steps necessary to become a fluent reader. Although reading acquisition is a lifelong process, the hallmark of mature reading is the ability to read connected text with fluency, automaticity, and understanding (e.g., Ehri, 1998; Perfetti, 1985; LaBerge & Samuels, 1974). Reading acquisition begins in the earliest grades, and in order to facilitate these processes, reliable and efficient assessments must be available for use in early identification of those students who may struggle with learning to read. The assessments highlighted in this dissertation study may be used to identify these students. They also help address the reading assessment issues North Carolina public schools are currently facing.

The following research questions will be addressed:

- (1) What are the relations among the variables examined in this study: qualitative spelling, isolated sight word reading, and contextual reading fluency?
- (2) Do the relations among the variables change over assessment time points?
- (3) Which independent variable (qualitative spelling or isolated sight word reading) is the strongest predictor of contextual reading fluency at the end of second grade?



## **Chapter Three: Methodology**

The current study builds on the findings of the Morris et al. (2013) longitudinal study detailed in Chapter Two. Morris et al. found that the formative assessment tasks developed at ASU (spelling and sight words) were better predictors of early reading achievement than were corresponding and widely-used DIBELS tasks. This study takes a closer look at the Morris et al. sight word reading (SW) and spelling (SP) tasks in order to determine which of these two measures is the better predictor of reading achievement at the end of second grade. This study has the potential to highlight useful assessment tools for classroom teachers, as well as to inform reading instruction.

### **Context of This Study**

Data used in this study were collected as part of a longitudinal study that began in the fall of 2010. Initial findings from that study have been presented at a professional conference (Morris, et al., 2013). Specifically, Morris et al. were concerned with how their formative assessments compared to subtests of the DIBELS assessment (Good et al., 2011) in terms of predictive validity. A subset of the data from that study was used in the current study to examine the relations between SW and SP at the beginning (T1), middle (T2), and end of first grade (T3). I also examined SW and SP at the middle of second grade (T4), and WCPM at the end of second grade (T5). The relations between SP at T1, T2, T3, T4, and WCPM at T5 were also examined.

## **Participants**

Two cohorts (one beginning in kindergarten in 2010 and the other beginning in first grade of the same year) were participants ( $n = 265$ ) in the Morris et al. (2013) longitudinal study. Data for this dissertation comes from one of these cohorts ( $n = 127$ ), the students who were in first grade in 2010. This cohort of students was randomly selected from two elementary schools in Mountain County and two elementary schools in Foothills County. Both school districts are located in rural western North Carolina. The majority of participants are Caucasian, with a larger Hispanic population represented in Foothills County sites.

Mountain County Schools have approximately 4,400 students; 86% of students are Caucasian, 8% are Hispanic, 3% are Multi-racial, 1% are African American, and 2% are other nationalities. These figures are representative of the demographic makeup of the rural mountain region in which Mountain County Schools are situated, and the sample drawn for the current study represents that population accurately. Thirty-nine percent of students receive free or reduced lunch.

Foothills County Schools have approximately 6,000 students. The school system is more ethnically diverse than Mountain County Schools, which is representative of the general population of Foothills County. Seventy-six percent of students are Caucasian, 16% are Hispanic, 6% are African American, and 1% are other ethnicities. Thirty-seven percent of students receive free or reduced lunch. These figures are representative of the demographic makeup of the region in which Foothills County Schools are situated, and the sample drawn for this study represents that population accurately.

## **Data Collection**

The data used in the present study were collected at three time points during the 2010-2011 school year (T1, T2, T3) and two time points during the 2011-2012 school year (T4 and T5). All participants with SW and SP measures from T1, T2, T3, and T4, and the WCPM measure at T5 were included. Therefore the present study included 127 participants: 67 male, 60 female.

T1 occurred during the beginning of first grade, T2 during the middle of first grade, T3 during the end of first grade, T4 during the middle of second grade, and T5 at the end of second grade. A team of Appalachian State University Reading Education faculty and trained graduate students administered the assessment tasks one-on-one with students. I was a member of that research team. The independent variables used from this data set include: SW scores and SP scores from first and second grade. The SP variable used the qualitative score. Qualitative spelling analyzes features of the words that the child uses correctly (e.g., B, BT, or BAT for bat), as opposed to whether or not the word is spelled correctly, in its entirety. The criterion measure used in this study is WCPM from contextual reading results at T5.

**Appalachian State Assessment Tasks.** An in-depth description and discussion of SW, SP, and contextual reading assessments (WCPM) can be found in Chapter Two. Appendix B includes all ASU assessment tasks. The design of the study can be found in *Figure 2*.

	<b>Fall First Grade (T1)</b>	<b>Winter First Grade (T2)</b>	<b>Spring First Grade (T3)</b>	<b>Winter Second Grade (T4)</b>	<b>Spring Second Grade (T5)</b>
<b>Sight Words (SW)</b>	X	X	X	X	
<b>Qualitative Spelling (SP)</b>	X	X	X	X	
<b>Words Correct per Minute (WCPM)</b>			X	X	X

Figure 2. Study Design. The assessment tasks at each time point. Words Correct per Minute T5 is the criterion measure (dependent variable).

### Data Analysis

Following data collection, I screened for missing data. Participants with missing data were not included in the study. Descriptive statistics were used to examine the normality of the data and to screen for outliers. Means (*M*) and standard deviations (*SD*) for each task were computed. Correlations between each of the tasks (independent and dependent variables) at each time point were also examined in order to understand the relations between the formative tasks and student performance at the end of first grade as well as the end of second grade. These are reported in Chapter Four. The strength of relations from assessment point to the end of the first grade year and from assessment point to the end of the second grade year offers important information for the classroom teacher. This is a practical view of student performance at the end of the year and the assessment points throughout the school year where reading performance can be predicted earlier.

In order to further investigate the advantage of SW over SP revealed in the correlations, standard Multiple Regression (MR) was used to examine how much variance was accounted for by the two variables. Then, Hierarchical Multiple Regression (HMR) was

used to test for assessments and time points that accounted for most variance. Inferential statistics, specifically MR and HMR, were used in order to analyze relations between the independent variables at specific time points (SW and SP at T1, T2, T3, and T4) and the dependent variable (WCPM at T5). First, MR was conducted to examine which of the independent variables was the best predictor of WCPM at T5. Because there is more than one independent variable, MR was the most appropriate regression model for the initial data analysis. In the MR model, all variables are considered simultaneously (Huck, 2008). This allowed the analysis to present the variable(s) with the most predictive power without manipulation. Once the MR was conducted with all variables, HMR was used in order to analyze the relations among variables with strong predictive power. MR reveals the variables with the most predictive power. Then, HMR allows for controlling the order in which variables are added to the model. This allows the researcher to analyze how much more of the variance ( $R^2$ ) additional variables account for in the model (Huck, 2008).

One outcome of MR is  $R^2$ , which shows how much variance is accounted for in the dependent variable by the combination of independent variables in the model (Cohen, Cohen, West, & Aiken, 2003). The change in  $R^2$  indicates how much variance is added as each new independent variable is entered into the model. In essence, both of these coefficients measure the strength of the relations between the set of independent variables and the dependent variable, analyzing whether SW or SP at each time is the better predictor of early reading achievement, as measured by WCPM. This type of data analysis can also reveal how early reading achievement at T5 might be predicted by tasks performed at T1, T2, T3, and T4.

## **Chapter Four: Results**

Two early predictors of reading achievement, SW and SP were used in this study in order to build on the findings of Morris, et al. (2013). The purpose was to identify the relations between the predictor variables (formative assessment tasks), explore how those relations may change over time, and identify which of the predictor variables (formative assessment tasks) is the strongest predictor of early reading achievement as measured by WCPM at T5 (end of second grade).

### **Data Analysis**

Two spelling lists were used as assessments at certain time points, therefore a combined variable had to be created. SPSS (version 20) was used. At T1 and T2, only one first-grade spelling list was used. At T3 and T4, a second list was also used. Therefore, at T3 and T4, I calculated SP by computing the sum of the first and second grade scores at T3 and at T4. New variables were also created for WCPM by calculating the mean of WCPM on the primer and first grade passages at T4, and first and second grade passage at T5. The WCPM (T5) was the dependent variable in this study. A mean was computed for WCPM to reflect the variation in student reading levels. In a single classroom, students perform at a wide range of abilities; by computing the mean WCPM across two grades (below and on-grade level), scores were more reflective of student reading ability.

After computing the new variables, data were screened for outliers. There was a wide range of scores within tasks, which is typical for readers at early stages of reading

acquisition. Descriptive statistics were then computed to identify the means and standard deviations for each variable. These results are found in Table 1. The mean comprehension score of all participants at T3 and T4 was 87% ( $n = 127$ ). I report this in order to demonstrate that students were reading for understanding, not simply reading as quickly as possible. Comprehension scores were not included in any of the regression analyses because this study is specifically focused on SP and SW as predictors of reading achievement as measured by WCPM (T5).

Table 1

*Descriptive Statistics of Variables (n =127)*

Variables	T1		T2		T3		T4		T5	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SW	18.8	15.4	36.9	19.0	49.0	19.7	63.4	19.0	---	---
SP	31.5	6.3	36.9	3.93	78.0	11.7	83.6	8.1	---	---
WCPM	---	---	---	---	54.7	30.2	95.1	35.2	104.8	37.9
Comp.	---	---	---	---	87.0	27.1	86.9	18.4	88.1	24.3

Note. WCPM and Comprehension were not measured at T1 or T2. Comprehension was not used in the regression analysis.

Correlations were used to examine relations among all variables (SW at all time points; SP at all time points; WCPM at T3, T4, and T5). All variables had strong, positive statistically significant relations. These results are found in Table 2. Of particular interest in this study were the relations between SW and WCPM and SP and WCPM.

Table 2

*Correlations (n = 127)*

	T1 SP	T1 SW	T2 SP	T2 SW	T3 SP	T3 SW	T3 WCPM	T4 SP	T4 SW	T4 WCPM	T5 WCPM
T1 SP	---	<b>.63*</b>	<b>.63*</b>	<b>.63*</b>	<b>.63*</b>	<b>.60*</b>	<b>.58*</b>	<b>.54*</b>	<b>.53*</b>	<b>.44*</b>	<b>.46*</b>
T1 SW		---	<b>.50*</b>	<b>.86*</b>	<b>.47*</b>	<b>.75*</b>	<b>.83*</b>	<b>.45*</b>	<b>.62*</b>	<b>.63*</b>	<b>.60*</b>
T2 SP			---	<b>.60*</b>	<b>.81*</b>	<b>.66*</b>	<b>.58*</b>	<b>.68*</b>	<b>.57*</b>	<b>.56*</b>	<b>.56*</b>
T2 SW				---	<b>.59*</b>	<b>.93*</b>	<b>.95*</b>	<b>.62*</b>	<b>.81*</b>	<b>.81*</b>	<b>.79*</b>
T3SP					---	<b>.69*</b>	<b>.58*</b>	<b>.79*</b>	<b>.63*</b>	<b>.61*</b>	<b>.60*</b>
T3 SW						---	<b>.92*</b>	<b>.69*</b>	<b>.89*</b>	<b>.87*</b>	<b>.83*</b>
T3 WCPM							---	<b>.59*</b>	<b>.82*</b>	<b>.83*</b>	<b>.80*</b>
T4 SP								---	<b>.70*</b>	<b>.66*</b>	<b>.66*</b>
T4 SW									---	<b>.89*</b>	<b>.86*</b>
T4 WCPM										---	<b>.91*</b>

Note. \*  $p < .01$  Every correlation is significant at the .01 level.



**Correlation Analyses.** The results of the correlations show strong positive relations between both SP and SW tasks at every time point. Table 2 shows an increase in relations across time points between SP and end of first grade WCPM (T3); SP (T1) was significant ( $r = .58, p < .01$ ). The strength of the relations remained consistently strong across time points (SP (T2) [ $r = .58, p < .01$ ] and SP (T3) [ $r = .58, p < .01$ ]). Relations between SW and WCPM (T3) also were strong and positive. However, the strength of the correlation between SW and WCPM (T3) were stronger and increased across time points (SW (T1),  $r = .83, p < .01$ ; SW (T2)  $r = .95, p < .01$ ; SW (T3)  $r = .92, p < .01$ ).

Similarly, the relations between the predictor variables and WCPM (T5) (end of second grade) were strong and positive. Table 2 reflects an increase in the relations between SP and WCPM (T5) (SP (T1),  $r = .46, p < .01$ ; SP (T2),  $r = .56, p < .01$ ; SP (T3),  $r = .60, p < .01$ ). SW results also increased over time and were more strongly correlated to the criterion measure WCPM (T5) (SW (T1),  $r = .60, p < .01$ ; SW (T2),  $r = .79, p < .01$ ; SW (T3),  $r = .83, p < .01$ ).

**Regression Analyses.** First, standard Multiple Regression, conducted with all variables, was used to identify how much of the variance was accounted for in the dependent variable (WCPM (T5)) by the combination of independent variables (WP and SW) in the model (Cohen, Cohen, West, & Aiken, 2003).

The results of this test indicated that all independent variables accounted for 77% of the variance ( $R^2$ ). Table 3 shows the results of this SMR for sight word knowledge and spelling at all time points.

Table 3

*Standard Multiple Regression of all Variables Model Summary*

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>
.88	.77	.76

Table 4 shows the importance of the predictors as measured by beta weights ( $\beta$ ) and significance as measured by *p-value*. As seen in Table 4, SW (T4) was the strongest predictor for WCPM (T5). SP (T1) had a *p-value* of less than .05, which indicates significance. SW (T2) also was significant as a predictor of WCPM (T5); yet, SW (T4) was the strongest predictor of WCPM (T5).

Table 4

*Results of Multiple Regression with all Variables*

<b>Variables</b>	<b>B</b>	<b>Beta</b>	<b>t</b>	<b>P</b>
T1 Spell	-.80	-.13	-2.04	.04
T1 SW	-.15	-.06	-.67	.51
T2 Spell	.30	.03	.40	.69
T2 SW	.80	.40	2.43	.02
T3 Spell	.25	.08	.82	.42
T3 SW	-.10	-.05	-.30	.77
T4 Spell	.27	.06	.74	.46
T4 SW	1.16	.58	5.79	.00

Since one of the goals of this study was to identify predictors of early reading achievement as early as possible, I used HR to determine how much of the variance was accounted for by SW (T4). The SW (T4) variable was selected because it demonstrated the smallest *p-value* in the MR model, indicating that it might be a significant early indicator of WCPM (T5). SW (T4) was entered into the regression model first, with all other variables entered later. HR results indicated that SW (T4) alone accounted for 74% of the variance, with all predictors continuing to account for 77% of the variance. This suggests that, indeed, SW (T4) was a significant predictor of the criterion measure. The model summary is found in Table 5.

Table 5

*Hierarchical Multiple Regression of Time 4 Sight Words Model Summary*

<b><i>R</i></b>	<b><i>R Square</i></b>	<b><i>Adjusted R Square</i></b>
.86	.74	.74

Table 6 includes the *beta* weights, *t-values*, and *p-values* of all other predictor variables. In this model, SW (T2) and SP (T1) also are important and significant. Also statistically significant in the first MR was SW (T2). Therefore, SW (T2) appeared to be an even earlier indicator of WCPM (T5). In order to investigate this further, I used a second HR model to analyze the variance accounted for by SW (T2) because it was important and significant in all analyses. The second HR model revealed that SW (T2) accounted for 62% of the variance, with all predictors continuing to account for 77% of the variance. Table 7 shows the model summary, and Table 8 shows the importance and significance of all predictors.

Table 6

*Results of Hierarchical Regression with T4 Sight Words Entered First*

<b>Variables</b>	<b>B</b>	<b>Beta</b>	<b>t</b>	<b>P</b>
T4 SW	1.71	.86	18.80	.00
T1 Spell	-.80	-.13	-2.04	.04
T1 SW	-.15	-.06	-.67	.51
T2 Spell	.30	.03	.40	.69
T2 SW	.80	.40	2.43	.02
T3 Spell	.25	.08	.82	.42
T3 SW	-.10	-.05	-.30	.77
T4 Spell	.27	.06	.74	.46

Table 7

*Hierarchical Multiple Regression of T2 Sight Words Model Summary*

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>
.79	.62	.62

Table 8

*Results of Hierarchical Regression with T2 Sight Words Entered First*

<b>Variables</b>	<b><i>B</i></b>	<b><i>Beta</i></b>	<b><i>t-value</i></b>	<b><i>p-value</i></b>
T2 SW	1.57	.79	14.32	.00
T1 Spell	-.80	-.13	-2.04	.04
T1 SW	-.15	-.06	-.67	.51
T2 Spell	.30	.03	.40	.69
T3 Spell	.25	.08	.82	.42
T3 SW	-.10	-.05	-.30	.77
T4 Spell	.27	.06	.74	.46
T4 SW	1.16	.58	5.79	.00

SP (T1) was also statistically significant ( $p = .04$ ) in the first MR analysis; therefore, I wanted to investigate its relationship to WCPM (T5). SP (T1) was entered first, followed by all other variables. A third HR revealed that SP (T1) accounted for 21% of the variance, with all predictors continuing to account for 77% of the variance. The model summary is found in Table 9. Table 10 includes the *beta* weights, *t-values*, and *p-values* of all other predictor variables.

Table 9

*Hierarchical Multiple Regression of T1 Qualitative Spelling Model Summary*

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>
.46	.21	.20

Table 10

*Results of Hierarchical Regression with T1 Spelling Entered First*

<b>Variables</b>	<b><i>B</i></b>	<b><i>Beta</i></b>	<b><i>t-value</i></b>	<b><i>p-value</i></b>
T1 Spell	2.74	.46	5.74	.00
T1 SW	-.15	-.06	-.67	.51
T2 Spell	.30	.03	.40	.69
T2 SW	.80	.40	2.43	.02
T3 Spell	.25	.08	.82	.42
T3 SW	-.10	-.05	-.30	.77
T4 Spell	.27	.06	.74	.46
T4 SW	1.16	.58	5.79	.00

### **Summary of Findings**

This study investigated (a) the relations among the variables qualitative spelling, isolated sight word reading, and contextual reading fluency (as measured by WCPM); (b) if those relations changed over time; and (c) which of the independent variables was the strongest predictor of contextual reading fluency.

Correlation analyses showed the strength of SP and SW at all time points as predictors of WCPM at the end of first grade and the end of second grade. These findings support the findings of Morris et al. (2013), where they found spelling and sight word reading better predictors of third-grade contextual reading than DIBELS comparable measures. In this study these two variables (SP and SW) were highly correlated, but the strength of the correlations with WCPM (at both time points) indicate that sight word reading might be a better predictor of contextual reading fluency than spelling.

Standard Multiple Regression analysis revealed that all variables accounted for 77% of the variance in predicting WCPM (T5). SW (T4) was the best predictor and SW (T2) and SP (T1) were additional predictors of WCPM (T5) once SW (T4) was entered. Subsequent Hierarchical Regression analyses were performed to compare these three individual predictors, which were identified as relatively stronger than the others.

The first Hierarchical Regression analysis model indicated that SW (T4) accounted for 74% of the variance. A second model revealed that SW (T2) accounted for 62% of the variance, and the third model indicated that SP (T1) accounted for only 21% of the variance. A thorough examination of these findings is discussed in Chapter Five: Discussion and Implications.

## Chapter 5: Discussion and Implications

The impetus of the present study is grounded in recent federal and state initiatives. The state of North Carolina responded to requirements for federal funding outlined by *Race to the Top* by enacting *The Excellent Public Schools Act of 2012*, which included the mandate that all students achieve grade-level reading proficiency by the end of third grade. This mandate served to reemphasize the need for effective, focused reading instruction for beginning readers.

Because of the requirements for *Race to the Top*, assessment came under the spotlight at both the state and national level. In order to meet the instructional needs of children and to ensure reading success as measured by end-of-third-grade standardized assessments, valid, formative assessments of children's reading proficiency are imperative. These assessments must be easy to administer and provide useful information to the classroom teacher. Without effective assessment measures in the early grades, students who may struggle to read at grade level face the possibility of retention in third grade.

Unfortunately, the current assessments being used in North Carolina are neither easy to use, nor do they provide the most useful information to classroom teachers (Morris et al., 2013). The present study sought to address the issue of effective assessment tasks for classroom teachers. Informed by the recent legislation, previous research (Morris et al., 2013) identified two strong predictors of reading at the end of 1st



grade, a spelling task (SP) and a sight word task (SW). To build on these findings, two tasks were compared in the present study to evaluate their ability to predict reading performance at the end of second grade.

### **Major Findings**

This study utilized a longitudinal design, a gold standard of educational research, to show evidence of how using a variety of assessment measures across time and grade levels impacted student achievement. The analysis of descriptive statistics, specifically standard deviations, revealed a wide range of scores within tasks, which is typical for readers at early stages of reading acquisition. Children's literacy development in first and second grades reflects Jean Chall's (1983) transition from stage 0 to 1, where readers are decoding at a halting pace, into stage 2, where they are able to process text with a level of automaticity that enables more fluent reading. Findings from this study support findings of the Morris et al. (2013) study that early spelling and sight word reading are good predictors of later contextual reading, i.e., reading fluency.

Analysis of descriptive statistics (see Table 1) revealed that scores on spelling, sight word reading, and contextual reading improved across time as students gained experience and became more proficient in reading. SW and SP especially exhibited an increase in mean scores over time (T1 to T4). WCPM mean scores also increased from end of first grade to end of second grade (T3 to T5). Because the measures were taken across time and grade levels, these trends were expected as they mirrored the growth students were making in literacy. This growth is consistent with the development of underlying word knowledge outlined in the past research of Ehri (1998), Henderson (1990), Perfetti (1985, 1992) and Share (1995, 2008).

Comprehension score means were consistently strong, which indicated students were reading for meaning during the reading of connected text task. The end goal of reading is to construct meaning (e.g. Chall, 1983; Gough & Tunmer, 1986; LaBerge & Samuels, 1974; Perfetti, 1992, 2007; Perfetti & Hart, 2002), and a rate score measured in the absence of comprehension of the text cannot be a true measure of reading achievement. Thus, this finding was important to note since many assessments that claim to measure rate, such as DIBELS, do not require students to read for understanding, but instead to read as quickly as possible.

Correlational analyses (Table 2) demonstrated strong, positive, statistically significant relations among all variables. As revealed in Table 2, every correlation was significant at the .01 level, meaning there is less than a one in one hundred instance in which the relations among the variables occurred by chance. Correlation values ( $r$ ) of .40 to .69 are considered to indicate strong relations, while an  $r$  value of .70 or higher indicate very strong relations (Huck, 2008). Correlations among spelling (SP) scores across assessment time points were consistently strong, and correlations between SP and WCPM remained consistently strong and positive across time. And as expected, scores with the strongest correlations were those that occurred closer together in time.

Importantly, SP and SW were strongly correlated at all time points. The strength of the relations between SP and SW across time is substantiated by the work of Ehri (1998) and Henderson (1990) (see Figure 1). Children's knowledge of sight words and orthography develops similarly and, quite often, in tandem. While SP and SW were strongly correlated with each other, and SP was strongly correlated with WCPM, somewhat surprising, correlations between SW and WCPM were stronger than those

between SP and WCPM at each time point, and increased across time also. Perfetti (1992) as well as others have argued that spelling is the best early predictor of contextual reading. These data reveal that, while both early assessments (SP and SW) predict WCPM at end of second grade, SW correlations consistently were stronger. This finding suggests that sight word reading may be a stronger predictor of contextual reading than spelling.

A possible explanation for this finding is that heavy focus on spelling instruction in first grade may have influenced the impact of the spelling assessment. That is, teaching synthetic phonics may enable children to spell words they cannot read fluently. T1, T2, and T3 spelling measures all included the first-grade spelling list consisting of simple letter to sound patterns. Such spelling patterns were the focus of synthetic phonics instruction children were receiving, so students were adept at producing those patterns. Yet, children were not able to perform as well in the contextual reading task, nor were they able to perform as well on the sight word task. Whatever the explanation, these data demonstrate a distinct advantage to using the sight word task as a predictor of later reading fluency.

The strength of relations among WCPM measures was very highly correlated and increased over time. WCPM was the criterion measure for the study; rates of students reading leveled passages for meaning was a proxy for reading achievement because it captured their ability to rapidly recognize words in context. Researchers agree that this ability to accurately and automatically recognize printed words drives the fluent reading process (e.g., Adams, 1990; Perfetti, 1985; 1992; Rayner & Pollatsek, 1989). The rate measure also captured the transitions being made as children progress from Chall's

(1983) Stage 1 into Stage 2 of reading development—reflecting students’ transition from being “glued to print” to becoming “unglued,” the crucial switch that must be made in order for students entering 3<sup>rd</sup> grade to begin reading for learning (Chall, 1983).

Standard Multiple Regression Analyses (SMR) were used to reinforce the findings from the correlation analyses and to identify how well the independent variables were predicting scores for the reading achievement measure (WCPM T5). SMR analysis indicated all predictors in the study accounted for 76% of the variance for WCPM (T5). The analyses also revealed that SW (T4), SW (T2), and SP (T1) were the three strongest predictors of WCPM at T5. Surprisingly, only one of the four spelling assessment time points was a strong predictor of end of second grade reading achievement. While the SP task is still an early predictor of later reading achievement, SW knowledge proved to be a better predictor according to the SMR analysis, consistent with the correlation analyses.

Hierarchical Regression (HR) analyses were conducted to further investigate and evaluate the relations among independent variables identified as strong predictors by the initial SMR and to identify which tasks at which time points were most significant in the model. Sight Words at T4 was entered into the first HR model because SW (T4) was most significant ( $p < .01$ ) in the initial SMR model. In this first HR model, 74% of the variance was accounted for by SW (T4). This finding was not surprising given how close in time to the criterion measure time point the task was administered. The pattern seen here also was revealed in the descriptive statistics—relations among and between tasks were stronger the closer in time they were measured. The regression analyses support the findings from the correlation analyses that sight word reading is a very good predictor of children’s reading performance (measured by contextual reading scores).

The SW measure is a timed task, making it a useful tool for evaluating a child's level of automaticity (Guszk, 1997; LaBerge & Samuels, 1974). An accurate and automatic identification of a word is also indicative of the quality of lexical representation (Perfetti, 1985). And, while the acquisition of reading is a lifelong process, readers making the transition into Chall's (1983) Stage 2 of reading development can demonstrate the ability to read connected text with fluency, automaticity, and understanding (e.g., Ehri, 1998; Perfetti, 1985; LaBerge & Samuels, 1974). In fact, as early as late second grade, children must be able to read in this seemingly mature manner in order to begin reading for learning (Chall, 1983).

In summary, for early readers a more developed sight word vocabulary should indicate reading success later in one's schooling. Indeed, this study demonstrates that a simple sight word task, timed for one minute, can predict with accuracy students' reading fluency scores a year later. According to the Simple View of Reading (Gough & Tunmer, 1986), early reading skill is heavily influenced by the efficiency of the print processing aspect of their model, and this is what the sight word reading task is capturing. As reading ability develops, as Chall (1983) has outlined, the language comprehension (L) component becomes increasingly more important to the task of reading for meaning (Gough & Tunmer, 1986). But, in these early stages, print processing efficiency is paramount to the success of the reader, and accurately measuring this ability is important for teachers and students.

### **Assessment Implications**

In order for teachers and school systems to address the requirements of *The North Carolina Read to Achieve Act of 2012* and adhere to requirements to receive *Race to the*

*Top* funding, a variety of effective and informative assessments must be available. Schools in North Carolina are simply not using the best assessment measures available. Informal assessments, such as those used in this study, are more appropriate for classroom use than those currently in use. The SW and SP tasks are simple and easy to administer and interpret. Because the tasks mirror literacy development, the data mirrors every day student performance, which makes outcomes meaningful for teachers as they design instruction based on the outcomes. The use of meaningful and informative assessments can also be shared with parents more easily because teachers understand what the implications of the data are.

The formative assessments, SW and SP, identified by Morris et al. (2013) remained strong predictors of early reading achievement in this study. These tasks are not only quick and easy measures for identifying children who may struggle with reading acquisition, but they are informed by, and reflect, the best of developmental theory. These assessment tasks capture the contribution of developmental word knowledge to stages of literacy development (e.g., Chall, 1983; Henderson, 1990; Perfetti, 1985; Share, 1995). It is important to reiterate that both the SP and the SW measures were strong predictors of reading. Perfetti's (1992) assertion—"spelling and reading use the same lexical representation. In fact, spelling is a good test of the quality of representation" (p. 170)—remains true. However, in this particular study, sight word knowledge was a better predictor of end-of-second-grade reading achievement. This finding indicates that teachers should include in their assessment this sight word task but does not indicate that classroom teachers should toss out the spelling inventory as an assessment of orthographic knowledge development in favor of the SW task. Rather, this study

reiterates the need for a battery of assessments, which can provide exhaustive information regarding the instructional needs of every child. Only when classroom teachers are using effective assessments to inform effective instruction will students truly be able to read to achieve.

Further, Table 2 reflects the ability of the SW and SP tasks to predict achievement within grade levels. This information gives teachers immediate information relevant to their current students. For example, in the beginning of first grade, a classroom teacher can assess students on SP and SW and receive a clear picture of that child's reading acquisition across the first grade year. These quick, teacher-friendly assessments also offer an efficient way for classroom teachers and schools to continue collect, analyze, and report assessment data as required by *RTTP* (Department of Education, 2009) and *The Excellent Public Schools Act* (2012).

### **Limitations**

As mentioned previously, the longitudinal design is a strength of the present study. However, there are limitations to consider. One is that students were also receiving heavy phonics instruction in kindergarten and first grade that may have impacted their spelling scores. Continuous drill and practice on words with direct phoneme to grapheme spellings can yield the ability to represent words conventionally without the knowledge necessary for decoding those words whether in isolation or in context (Morris et al., 2013). Spelling measures have long been held as good predictors of reading achievement (e.g. Henderson, 1990; Morris, Bloodgood, & Perney, 2003; Perfetti, Rieben, and Fayol, 1997); however, data from this study indicate the SW task is a more powerful and consistent predictor of reading than the SP task. Replicating the study with children who

receive balanced literacy instruction (i.e., less synthetic phonics instruction) may yield different results.

Including third grade SP and SW data may also offer insight into the predictive power of the SP measure. While the data from this study is appropriate for the questions presently being investigated, the words included on the third grade list may be more appropriate for determining how well the SP measure predicts reading achievement of older students. Assessing orthographic knowledge beyond more basic spelling patterns may tap into later stages of development as outlined by Chall (1983), Henderson (1990), and Ehri (1998).

The participants were from similar school districts in western North Carolina. Although one school district has a moderately large Hispanic population, the majority of students were Caucasian. While 16% of the participants were Hispanic, there is no reason to believe this impacted the present study. Previous research (Fitzgerald & Noblit, 1999; Neufeld, Amendum, Fitzgerald, & Guthrie, 2006; Palmer, 2004) exploring the literacy development of English Language Learners in English has indicated no difference in how literacy is acquired compared to that of native English speakers. The acquisition of sight words and orthographic knowledge as outlined by Ehri (1998) and Henderson (1990) holds true regardless of the learner's first language if the child is learning literacy in English.

### **Future Research**

Although the SW measure proved to be a strong predictor of early reading achievement in this study, research is needed to determine cut scores for sight word knowledge. How many sight words read in a 60 second measure is an indicator of a



reader who may struggle? Can we use this measure to determine if a student is definitely in danger of reading failure, may be in danger of reading failure, or is on track for reading success? The same questions should be asked and investigated regarding the spelling measure as well.

As mentioned in the limitations section, the study should be replicated with students receiving balanced literacy instruction in which they are receiving ample phonics instruction as well as instruction with meaningful, connected text, and time to practice these skills. While the lack of diversity among the participants more than likely did not have an effect on the outcomes, this study could be replicated in a more diverse setting.

## **Conclusions**

Given the instructional needs of children in the early elementary grades whose literacy development can span several developmental stages (Chall, 1983; Ehri, 2005; Henderson, 1990), classroom teachers need effective assessment measures, which they can administer easily and interpret quickly. This study identified two of the strongest predictors of early reading achievement, spelling ability and sight word identification, along with assessment tasks that can be used to measure those skills. With the enactment of the *Excellent Public Schools Act of 2012*, it is time to end the “wait to fail” model. Effective assessments can be used in the earliest grades to identify struggling readers before they are caught by standardized tests at the end of third grade, which can result in grade retention.

Furthermore, the predictive power of sight words reinforces the need for a balanced literacy curriculum. Sight word acquisition is achieved through practice reading

connected text at the appropriate level for each child (Adams, 1990; Ehri, 1998, 2005; Morris et al., 2012; Perfetti, 1992; Perfetti & Hart, 2002; Perfetti, Rieben, and Fayol, 1997). Children must have plenty of opportunities to read contextually in conjunction with explicit phonics instruction in order for reading skills to develop.

Reading connected text for meaning offers children opportunities to practice the skills that are often taught in isolation (e.g. synthetic phonics). Connecting fundamental skills in the act of reading authentic texts is the key to kick-starting Share's (1995) self-teaching mechanism, allowing lexical word representations to become fuller and more redundant in the young reader's mind (Perfetti 1992, 1997, 2002). The lack of instruction and practice with connected text can be revealed by students' scores on the sight word task, and this in turn provides a powerful reminder to teachers that the goal of reading instruction is reading.

In conclusion, teachers need effective assessments to identify students who may struggle with reading. These assessments must be accurate and easy to use, and they must be administered as early as possible. Classroom teachers must use these assessments to develop effective and appropriate balanced instruction for all learners. This study found that the SW measure in the winter of first grade is a strong predictor of reading a year and a half later, providing the opportunity to identify struggling readers well before third grade. These assessment tasks are not only more effective than what is being used currently in North Carolina, but they can be implemented effectively within the parameters of state and national requirements.

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**Appendix A**  
**IRB Approval Letter**

**To:** Nora Vines  
Reading Education and Special Education (RESE) ,  
CAMPUS MAIL

**From:** IRB Administration

**Date:** 4/03/2014

**RE:** Determination that Research or Research-Like Activity does not require IRB  
Approval

**Study #:** 14-0240

**Study Title:** Predicting Early Reading Achievement

The IRB determined that the activity described in the study materials does not constitute human subject research as defined by University policy and the federal regulations [45 CFR 46.102 (d or f)] and does not require IRB approval.

This determination may no longer apply if the activity changes. IRB approval must be sought and obtained for any research with human participants.

If you have any questions about this determination, please contact Julie Taubman at 262-7981 or Robin Tyndall at 262-2692; or [irb@appstate.edu](mailto:irb@appstate.edu). Thank you.

CC:

Woodrow Trathen, Reading Education And Special Education (rese)

Jennifer McGee, Curriculum And Instruction

Carla Meyer, Reading Education And Special Education (rese)

Darrell Morris



## **Appendix B Spelling Task**

### **First Grade List**

- 1. trap (a mouse trap)**
- 2. bed (under the bed)**
- 3. wish (make a wish)**
- 4. sister (my big sister)**
- 5. drop (drop the ball)**
- 6. bump (a bump in the road)**
- 7. drive (drive the car)**
- 8. plane (a plane in the sky)**
- 9. ship (a ship on the ocean)**
- 10. bike (ride a bike)**

### **Second Grade List**

- 1. train (a train ride)**
- 2. thick (a thick board)**
- 3. chase (chase the car)**
- 4. dress (a blue dress)**
- 5. queen (the Queen of England)**
- 6. cloud (a white cloud)**
- 7. short (a short stick)**
- 8. shopping (go shopping with mom)**
- 9. cool (it's cool outside)**
- 10. stuff (lots of stuff)**

**Appendix C**  
**Sight Word Task**

**Directions: Mark through each error. Pace a large slash mark (/) to indicate last word attempted.**

is	cat	my	good	come	and
up	play	big	are	from	old
little	where	hide	cut	bad	new
need	made	eat	find	does	back
two	men	white	feed	push	again
table	class	stand	cloud	leave	into
happy	school	them	window	tail	isn't
part	children	drove	above	dug	gate
flow	change	wash	person	north	blanket
melt	asleep	dollar	blow	kept	giant
explain	coin	shade	office	straight	pillow
robber	finish	slide	print	soup	wing
prize	shoot	travel	spoon	toward	stomach
pool	vegetable	seal	accept	legend	slipper
dresser	customer	plop	further	closet	storyteller

**Appendix D**  
**Contextual Oral Reading Passages**

**LATE FIRST GRADE (F & P level J/K)**

**Examiner’s Introduction: This story is about two friends, Frog and Toad.**

One hot summer day Frog and Toad sat by the pond.

“I wish we had some sweet, cold ice cream,” said Frog.

“What a good idea,” said Toad.

Toad went to the store. He bought two big ice-cream cones.

Toad licked one of the cones. “Frog likes chocolate best,” said Toad, “and so do I.”

Toad walked along the path. A large, soft drop of chocolate ice cream slipped down his arm.

“This ice cream is melting in the sun,” said Toad.

Toad walked faster. Many drops of melting ice cream flew through the air.

**Questions**

1. What did Frog want on the hot summer day? (ice cream)
2. Where did Toad get the ice cream? (at the store)
3. How much ice cream did Toad buy? (two cones)
4. What problem was Toad having at the end of the story? (the ice cream was melting)

Words: 100

Errors: \_\_\_\_\_

Accuracy: \_\_\_\_\_%

Rate (6,000/sec): \_\_\_\_\_ wpm

Comprehension: \_\_\_\_\_%

## Second Grade

### Examiner's Introduction: This story is about a hungry fox.

One day, Fox was walking through a forest. It was late summer. He knew that berries and other fruits would now be ripe. Suddenly, Fox felt hungry. He looked up and saw a bunch of grapes on a high branch. Each grape looked red and plump.

"Those grapes look good," said Fox. So Fox jumped up to grab them, but the grapes were too high. Fox tried again. This time he took a running start. He jumped as high as he could. Still, he could not reach the grapes. Fox tried and tried. Each time he missed the grapes by inches.

Finally, Fox became tired. He decided he wasn't so hungry after all. He said, "I be those grapes are sour anyway!"

### Questions

1. At what time of year does this story take place? (spring [1/2]; summer [full credit])
2. What was Fox trying to get? (Grapes [1/2]; How did the grapes look? (red, ripe, or plump [1/2])
3. How did Fox try to get the grapes? (He jumped for them.)
4. Why did Fox quit trying to get the grapes? (He became tired. or Grapes were too high for him to reach.)
5. What did Fox tell himself at the end of the story? ("I'm not really hungry." or "Those grapes are probably sour.")

Total Errors: \_\_\_\_\_

Meaning Changes: \_\_\_\_\_

Oral Read. Acc.: \_\_\_\_\_%

Comprehension: \_\_\_\_\_%

Rate (7,320/sec): \_\_\_\_\_ wpm

## **Vita**

Nora Vines grew up in Clover, South Carolina. She earned a Bachelor of Arts in Elementary Education from Lees McRae College in Banner Elk, North Carolina in 2004. In May of 2008 she was awarded a Master of Arts Degree in Reading Education from Appalachian State University. Miss Vines was accepted into the Doctoral Program in Educational Leadership at Appalachian State University in 2010. She earned her Ed. D. in May 2015.

Miss Vines taught early elementary in Western North Carolina for five years. She is currently a clinical instructor at Appalachian State University.

Nora resides with her Person and two puppies in Knoxville, Tennessee.