

THE EFFICACY OF SOUNDS FIRST READING SYSTEM IN CONTRAST TO AN ORTON-  
GILLINGHAM APPROACH FOR CHILDREN WHO HAVE LANGUAGE LEARNING  
DISABILITIES

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Abstract

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This is the first study to explore the efficacy of Sounds First Reading System (SFRS). The study is of SFRS in contrast to an Orton-Gillingham (OG) approach for 18 children with language learning disabilities. The study compares the results of 5 subtests of the *Woodcock-Johnson III Tests of Achievement* (WJ III ACH) (Woodcock & Mather, 2001) over two years with a matched sample. The study is a record review of archival data on 36 children who attended a private school exclusively for children with language learning disabilities. Eighteen were matched controls. The data consisted of three occasions of the 5 assessments (Letter-Word Identification, Word Attack, Passage Comprehension, Reading Fluency and Spelling) on three occasions over the course of two years; the Baseline, Assessment 2 after a year of OG instruction and Assessment 3 after a year of SFRS instruction for the SFRS sample and a second year of OG instruction for the matched sample. Two-way ANOVA with between and within subjects factors was run to determine if there were differences in the patterns of achievement in raw scores of the WJ III ACH test for the SFRS sample in comparison to a matched sample.

As a study on archive data there were limitations due to a lack of a random sample and a small sample. There were no significant differences between the two groups however, there were significant changes within the factors and there was evidence that SFRS was as effective as OG for this group of children.

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## CHAPTER 1

### Introduction

Reading is a fundamental component of education. Because education is compulsory, in the United States, reading is central to the life of every child and how best to teach reading has been debated, and at times the debate has been impassioned. (Adams, 1990; Chall 1967; Goodman, 2011; Robinson, 1977). The debate has emerged from an attempt to find the most successful key to unlock the alphabetic code for all children. Three primary approaches have dominated reading pedagogy in the United States. The primary focus of the debate has been whether instruction that has a child immersed in literature (Elley, 1997; Huey, 1973; Smith, 1992; Trelease, 1989) and relies on incidental learning as the primary tool to inform the code is adequate, or does reading acquisition require direct instruction with carefully monitored exposure to phonetically controlled text (Aaron, 2005; Henry, 2003; Pollard, 1897). In addition, there has been a separate endeavor to look for instructional approaches that will address the needs of the delayed or reader with disabilities (Gillingham & Stillman, 1934; McGuinness, McGuinness & Donohue, 1995; McIntyre & Pickering, 1995; Monroe, 1936; Myers & Hammill, 1969; Orton, 1966; Shaywitz, 2003). From each of these divergent perspectives of reading pedagogy a wide array of methods has emerged, but there are many children who fail to attain a reading level adequate to support their education (Baer, Kutner, & Sabatini, 2009; Carroll & Chall, 1975; Gray, 1984; National Reading Panel, 2000).

A primary issue that must be addressed in all reading instruction is how one decodes unknown words. Word decoding, often referred to as word attack skills, was universally weak among adults who were assessed through the National Reading Council (NRC, 2005). In 1992 and in 2003 the NRC conducted an adult literacy survey to gain insights into adult literacy levels in the US population. The 1993 survey was called the National Adult Literacy Survey (NALS) and the 2003 survey was called the National Assessment of Adult Literacy (NAAL). Both

surveys were conducted with large samples (26,000 and 19,714 respectively). The samples included various social groups of the population identified through questionnaires, including a portion of the prison population. The surveys were unique because they included an actual assessment that assessed the respondents' English literacy levels. The ability to read unknown words, which was assessed using non-words with common word patterns, was weak, even when the other literacy indicators were within higher ranges. The NAAL 2003 survey gave all respondents a fluency assessment in which the oral responses were recorded. Respondents had one minute to read individual words, short passages, and lists of pseudo words. These three scores were combined to form a Basic Reading Skills (BRS) score. The average for the BRS among all respondents was 97 words a minute. The average for Passage Reading was 154, for Word Reading was 105 while pseudo word decoding was 51 (Baer & Kutner, 2009).

The weakness in decoding unknown words indicates that the entirety of the population prior to 2003 had not been taught rules that inform decoding. Therefore, consideration of the mode of instruction in decoding unknown words is essential when examining reading pedagogy. The focus on decoding unknown words is important because it provides insight into how one is able to add new words to his or her lexicon. Good readers have little difficulty discerning the pronunciation of new words encountered in print, but many readers in the United States do not possess a level of decoding that allows them to pronounce unfamiliar words (Badian, 2005; Baer et al., 2009). This is a similar concern that led other non-phonetic languages to develop phonetic keys. Mandarin Chinese has a code known as Pinyin that provides an articulation key and Japanese has a number of Roman letter keys known as Romaji. Such keys have been developed to allow a phonetic basis for pronouncing the characters (Lin, McBride-Chang, Shu, Zhang, Li, Zhang et al., 2010). Once one learns a word, there is no longer a necessity to decode it; however, many people, even when told the pronunciation of a word, are later unable to read it or recall its meaning. The reader benefits from seeing the word in context but, without studying the word, is unable to recall the word later or connect it to spoken language. People who have been able to manage in their work and education despite poor decoding skills often compensate by

recognizing the meaning of words in context but not being able to pronounce them. There is evidence that how one approaches unknown words reflects how they were taught to read, whether it was phonetic or primarily through incidental learning (Cunningham & Stanovich, 1997; Lomax & McGee, 1987). Inadequate decoding knowledge has a long-term effect on formal education as well as lifelong implications for vocational and social functioning (Baer et al., 2009; Stanovich, 1986).

The methods of decoding unknown words can be broadly divided into three trends, whole language, phonics and linguistics. *Whole language* relies heavily on a child's memory and improving reading through exposure to print which is elicited by a child's desire to read engaging literature. Through reading, the child gains adequate exposure to memorize specific words while, simultaneously making connections of patterns within the words to inform decoding. If a child does not know the word, he/she is encouraged to use context cues, visual memory, and other tools to gain insight but ultimately would need to skip the word, rely on partial text or be given the word (Adams 1990; Chall 1967; Hoffman, 1986; Maslin, 2007; Trelease 1989). Skipping over unknown words and inferring meaning is a very common compensation for weak decoders well into adulthood. From a historic perspective, Whole Language has its earliest roots in the "look and say" methods which became popular during the late 19th and early 20th century (Chall, 1967; Huey, 1973; Pitman & John, 1969).

The second most common trend in decoding unknown words is broadly referred to as *phonics* instruction. While equally referred to as the whole language approach in the reading debate it is not as prevalent in classrooms (McGuinness, 2005). The English alphabetic code is orthographically opaque and, except at a superficial level, requires specific training. Many teachers, even at the early elementary school level, have little or no training in phonics (Bishop, Brownwell, Klinger, Leko, & Galman, 2010; Stanovich, 2000). Phonics instruction implies the direct teaching of patterns of letters that inform the sounds of the words. With phonics, a child is taught decoding skills and therefore, when approaching an unknown word, relies on these skills to pronounce the word. An element of memorization remains, but through direct teaching of

rules and patterns the necessity of pure memory for individual words is lessened. As patterns are taught, the reader gains more skill in being able to pronounce unknown words and thus adding them to his/her lexicon. Early in the instruction of phonics, text must consist primarily of the patterns being taught and the reading material must be specifically written to allow examples of the individual skills to be practiced (Henry, 2003; Rome & Osman, 2004). Words with a consonant, vowel and a consonant (CVC) pattern are the most common in one- syllable words and are generally the first taught (Arena, 1968; Bannatyne, 1973; Gillingham & Stillman, 1934; Lindamood, Bell & Lindamood, 1997; Pollard, 1897; Williams, 1916). New readers are also taught non-phonetic words as “sight words” which must be memorized. And while nearly 85% of English is phonetically consistent (Cox, 1980; Gillingham & Stillman, 1934; Rome & Osman, 2004), it takes a number of years to learn the rules informing the different spellings of sounds. While teaching methods vary there are 42 multifaceted rules involved in basic language (Rome & Osman, 2004). Most general education classes only include a phonics component through the first grade and into the second grade (Maslin, 2007). Higher level words are usually learned incidentally or through morphemes in upper elementary or high school (Badian, 2000; Gillingham & Stillman, 1934; Orton, 1966; Rome & Osman, 2004)

When using simple text, a student has a number of options to approach a word which includes decoding individual sounds, dividing the word into syllables or approaching the word as groupings of morphemes. Once a word is learned, which occurs with frequent exposure, there is no need to decode it. Until well into the course of phonics, most students would rely on being told the word if they are unable to decode it. Further, as a child increases in reading skills, phonics becomes more of a tool for spelling and vocabulary particularly when utilizing morphemes and affixes, than a tool for decoding (Adams, 1990; Byrne, 1996; Chall 1967; Henry, 2003; National Reading Panel (NRP), 2000; Verhoeven & Perfetti, 2011). However, if phonetic skills are mastered, they will provide a lifelong tool to decode many unknown words.

The third trend, the *linguistic* approach, addresses issues relating to the opaqueness of the alphabet in order to make it easier to decode (Arena, 1968; Bannatyne, 1973). This perspective

stems from the orthographic difficulty of the English alphabet and predates both phonics and whole language. There were periods of national debate which led to actual changes in American English (Huey, 1973; March, 1881; Pitman & John, 1969; Sandel, 1998). Among the arguments that supported a reconsideration of the alphabetic code for English was a mathematical equation that demonstrated 596,580 different spellings for the word scissors (Pitman & John, 1969) and, according to spelling reformer, A. J. Ellis, there are 658 different spellings of the 42 phonemes of English (Pitman & John, 1969 p. 43). More recently, Paulesu et al. (2000) attributed 1120 different spellings of 40 sounds (p. 91). And while there is not currently an active debate seeking a reform of the English alphabet active within reading pedagogy, there is increasing acknowledgment of the complexity of the English alphabetic code when considering the reading problems in the classroom. Within linguistic approaches of reading pedagogy, one of the most widely known at its peak in the U.S. during the 1970s was the Initial Teaching Alphabet (ITA) (Chall, 1967; Crown, 2000; McGuinness, 2005; Pitman & John, 1969). This alternative alphabetic code was developed by Pitman and his colleagues out of frustration and as a compromise in the movement to change the alphabetic code to be more transparent (Pitman & John, 1969). The ITA, along with other similar methods, relied on an adapted alphabet font to inform the reader of the specific sounds. The simplifications of the English alphabet as an aid to reading included new fonts, the use of color, italics and emboldened letters. The development of the enhancements intended to make the alphabet easier to read, were designed over the course of nearly two centuries. (Bannatyne, 1973; Bell, 1867; Chall, 1967; Crown, 2000; Huey, 1973; Leigh, 1874; McGinnis, 1988; McGuinness, 2005; Pitman & John, 1969; Sandel, 1998).

This study will compare the efficacy of Sounds First Reading System (SFRS), in contrast to an Orton-Gillingham approach. SFRS is a technique developed by the author of this dissertation, which takes elements of each of the three trends described above and provides a new approach, informed by a pronunciation key made up of actual spellings of the sounds, to overcome the most fundamental barrier in reading English, which is decoding.

### **Failure in Reading Acquisition**

In the ongoing debate about reading pedagogy, reading is emphasized as more than decoding. Reading as a skill ultimately relates to gaining knowledge through text. However, without decoding, one cannot read. Adams (1990) used an analogy “that the system that supports our ability to read is like a car. Within this analogy, print is like gas. The engine and the mechanics of the car are the perceptual and conceptual machinery that make the system go.” (p. 3). Similarly, the most common reason a student fails to learn to read is that he/she fails to learn the alphabetic code. Some children, despite being able to easily decode, are limited in their ability to gain meaning from print. This less common disability, while still requiring decoding, additionally requires consideration of a language deficit. And while decoding is required in all languages, it is far more difficult in some languages than in others (McGuinness, 2005; Pitman & John, 1969; Soule & Wheeler, 1866; Stanovich, 2000). English is one of the most difficult languages to decode (McGuinness, 2005; Paulesu, McCrory, Pesenti, Gallaher, Perani, Price et al., 2000; Pitman & John, 1969; Rayner, Foorman, Perfetti, Petsky and Seidenberg, 2001) and therefore there is a significant challenge in teaching children to read English. As such, the discussion in this proposal is focused exclusively on the instruction of reading in English.

Why a child fails to acquire the ability to translate the alphabetic code can be attributed to a wide variation of deficits (Shapiro, Accardo & Capute, 1998). The most common skill, and one that is often monitored in early readers, is phonemic awareness (Anthony & Lonigan, 2004; Shaywitz, 2003; Torgesen & Mathes, 2000). A weakness in phonemic awareness, which can predict difficulties in reading, can stem from weak auditory processing (Henry, 2003; Lindamood & Lindamood, 1997). The deficits that contribute to poor phonemic awareness also contribute to a lack of reliance on auditory information as a good tool for language acquisition and vocabulary. The same skills that are a barrier to decoding for students are a barrier for them to learn reliably through many media tools (Rayner, et al. 2001; Stanovich, 1986). Most non-readers rely on auditory memory for language. A person who lacks literacy, be it because they have not yet been taught or because they have failed in education, does not have a clear

understanding of individual words (Rayner et al., 2001; Verhoeven & Perfetti, 2011). Therefore, it is difficult for such a learner to isolate words so they can be produced in a different context. Weak vocabulary is another factor in reading acquisition failure (Rayner et al., 2001). An English vocabulary deficit may be due to lack of exposure to print and varied adult conversations (Blachowicz, Fisher, Ogle & Watts-Taffe, 2006; Chall, Jacobs & Baldwin, 1990; Rivers & Lombardino, 1998), growing up in non-English speaking homes (Carlo, August, McLaughlin, Snow, Dressler, Lippman, et al, 2004; Doherty & Hilberg, 2007), an unidentified hearing loss (Dickenson & Neuman, 2003; Money, 1962), a significant attention weakness (Duane, 1999), or a central auditory processing disability (Bannetyne, 1973; Lyons & Moats, 1988) among other possibilities. But what contributes to the lack of skill development often accompanies the learner throughout life and therefore makes compensation very difficult (Byrne, 1996; Geva & Zadeh, 2006; Stanovich, 1986).

Visual memory is another underlying weakness that is associated with reading delays and disabilities. In the early literature regarding reading disabilities, visual weaknesses were assumed to be the primary deficit (Anderson, 2001). Indeed, most of the early case studies in reading disabilities were written by ophthalmologists (Robinson, 1977). More recent understandings of reading delays have focused on the weaknesses associated with phonemic awareness, as opposed to a visual memory deficit. Children who fail in attaining reading proficiency are generally students with weak phonemic awareness (which is associated with auditory processing) when entering school (Anthony & Lonigan, 2004; Lindamood et al., 1997; McGuinness, 2005; NRP, 2000; Shaywitz, 2003) or weak visual memory (Badian, 2005), or both. Because of the weakness in auditory processing, such students would, in fact, rely heavily on reading to reinforce vocabulary acquisition; this becomes a cycle of failure. Reading acquisition is greatly impacted by vocabulary and at the same time reading is essential for vocabulary acquisition (Aaron, 2005; Coltheart, Rastle, Langdon, & Ziegler, 2001; Stanovich, 1986).

## **Overview of the Components of Sounds First Reading System**

Sounds First Reading System (SFRS) is both a reading tool and an instructional system. The name reflects a unique approach to teaching reading in English. Most phonics programs are organized by spellings (i.e. types of syllables) that inform pronunciation. SFRS is fundamentally different because it uses the phonemes sounds to organize multiple spellings. Further, the instruction to the student is focused on a child first learning the 42 phonemes and therefore the name, sounds first, is a description of both the system and the teaching methodology.

SFRS is designed to allow people who are delayed readers or have reading disabilities more rapid access to general text so they can rely on written text for all areas of instruction. Through a transparent code, reading is more predictable and therefore offers a written support to decode English, a very opaque code. The instruction is a process of directly teaching the 42 sounds of English with a unique, but actual, spelling. In the process of teaching the sounds, the student is directly taught phonemic awareness in blending words and in discriminating the sounds from the whole. The instruction of individual sounds is coupled with whole word instruction and spelling. The coded words are always accompanied by the English spelling and therefore allow for incidental learning of both phonetic and sight word reading. Further, allowing a delayed reader to more easily access complex text allows for important instruction in comprehension throughout the day. The general education text can be adapted to be informed by the SFRS code.

Sounds First Reading system is a pronunciation respelling code similar in intent to the International Phonetic Alphabet (IPA), shorthand, and Pinyin. These are linguistic systems that provide one symbol for each speech sound. These instructional modalities provide speech sounds without regard to spelling. The SFRS code is distinct from previous phonetic respellings, such as ITA, because it is made up exclusively of actual spellings for the sounds. The spellings comprise one, two and three letters. The code is in green and red above the actual text, and it only appears above words that are not consistent with the SFRS code.

### **Rationale of the Study**

There is some evidence that reading scores are in decline (National Reading Council, 2005; Obama, 2011), but this impression of decline in reading may also be at a level of urgency because of increased awareness due to increases in testing data (Goodman, 2011). Previous to the implementation of No Child Left Behind (NCLB) there was not uniformity in measuring achievement within each state, much less within the country (Law 107-110, 2007). Therefore, the data on school children's performance on standardized reading assessments that are being presented lack historic comparisons and therefore do not provide a reliable assessment of actual progress. Further, the tools being used to measure progress in total school reading achievement are inappropriate measures to rely on making decisions for individual students and schools (Polikoff, 2010). The state mandated testing is based on normed tests with specific cut scores (Kavale, Kauffman, Bachmeier, & LeFever, 2008). These norm referenced tests rely on results producing a predictable bell pattern which by definition requires a specific percent to fall in the bottom percentiles. Such a test cannot have 100% of the children above the cut score. Therefore, the test is automatically a prescription for the bottom percentiles to fail. These are also predictably the students from the poorest communities (Foorman et al., 2006; Polikoff, 2011).

The children with the greatest risk of school failure will be retained and ultimately will seek alternative avenues to survive in society (Vanderstaay, 2006). The response to retain a student insinuates that something different will happen during the second round. An intensive remedial program, with clear alternatives in instruction, such as offered by Orton-Gillingham approaches, taught with fidelity or SFRS, would hopefully better meet this need than delaying progression and sending a message to a child that he or she is unsuccessful in school. The potential social impact of retention and the lack of sensitivity of testing to inform instruction are not easy to understand and therefore, are misconstrued by the public (Kaniuka, 2009). The public can accept laws that require children to be on grade level. It does not sound unreasonable that all children must read at the third grade level before advancing to fourth grade. But what is

a third grade level? Third grade has been traditionally seen as the transition year between learning to read and reading to learn (Adams, 1990; Chall et al., 1990). Therefore, by the end of the third grade, if a child is not able to use reading as a learning tool it is often perceived the child should be retained.

Third grade also happens to coincide with the typical age in which neurological efficiency is believed to mature which contributes to lifelong reading efficiency for most readers (Shaywitz, 2003), and this adds another element to the urgency of having students reading at a proficiency level that will meet this need. While there remains much that is not understood of the complex neurological processes that are employed when one reads, there is mounting evidence that biological differences in the brain are responsible for reading difficulties and reading failure in some individuals. These differences have been seen in specific regions of the brain and patterns of activation, seen through functional Magnetic Resonance Imaging (fMRI). The images taken from children and adults while reading provide evidence that there are differences in brain activation between a child who is learning to read and an efficient reader (Shaywitz, 2003; Shaywitz, Morris and Shaywitz, 2008). There are three neural pathways that have been associated with reading. Two are slower and relate to analyzing phonological patterns: the parieto-temporal and frontal. These are associated with beginning readers (Shaywitz, 2003; Shaywitz et al., 2008). The occipito-temporal pathway is active in experienced and skilled readers. (Shaywitz, 2003). This pathway responds rapidly and is more efficient in its use of energy. In people with learning disabilities in reading it is the slower, energy inefficient, pathways that are still relied on into adulthood. As people with disabilities in reading mature they develop alternative pathways that are different from typical (Shaywitz, 2003; Shaywitz et al., 2008) efficient readers. Many attain accurate but slow reading skills (Shaywitz, 2003; Shaywitz et al., 2008). Therefore, while they compensate for their disability, the disability or difference remains (Ferrer & Shaywitz, 2010; Shaywitz, 2003; Shaywitz et al., 2008; Zillmer & Spiers, 2001). Further evidence from studies using fMRI data indicate that children who initially do not show evidence of reading disabilities may not develop the more efficient reading patterns

if they are not initiated early in the child's education (Shaywitz et al., 2008; Stanovich, 2005). Therefore children who lack fluency at the end of third grade, regardless of the cause of the delay, may remain slow and inefficient readers (Shaywitz, 2003; Shaywitz et al., 2008).

In addition to the climate of consequences resulting from statewide testing, is the evidence that such failure has lifelong consequences for a person's ability to be resilient and to feel connected to society (Vanderstaay, 2006; Goldberg, Higgins, Roskind & Herman, 2003). Converging research connects long-term outcomes in antisocial behavior with reading achievement in school (Goldberg et al., 2003; Vanderstaay, 2006). Such studies, when looking beyond the traditional periods of reading achievement provide evidence that students who bond with teachers early in their education can display resilience later in their education. This resilience can make the difference between a student choosing societally accepted tools and not. A growing body of evidence is shifting the focus not only to the change of achievement, but to the attitude of the institution toward a child's failure (Cappella & Weinsyein, 2001; Kanuka, 2008; Kavale, Kauffman et al 2008; Vanderstaay, 2006). Therefore, the need to have educational options that meet all children's needs is critical. Such practice can be described on a continuum of tiers of intervention that is growing in popularity in schools. Such tiers must reflect real differences in instruction to allow real growth for the students who are receiving such interventions (Kavale et al., 2008). Therefore, a child not progressing in reading must progress to an age-appropriate level at a higher tier, which is an alternative to the instruction of same aged peers. If not, the move to the more individualized or alternative approach does not reflect an intervention but a separation from peers. If a move to a higher tier does not close the gap, then it is nothing more than a less vigorous curriculum. If education reform, such as the policies associated with legislation regarding individual test performance (i.e. Law 107-110, 2002; House Enrollment Act No. 1367, 2010), does not result in bringing low performing students closer to the average, the gap between those who achieve and those who fail in school widens (Kaniuka, 2008; Kavale, 2008).

Despite decades of research into reading and reading pedagogy and the pressures of

individual consequences for schools, teachers and children regarding failure in acquiring reading, there are still children in our schools who fail to learn to read. There remains a shortage of truly alternative interventions to address this need when teaching reading in English.

### **Significance of the Study**

Sounds First Reading System (SFRS) provides a new perspective in reading instruction and as of yet, no research has been conducted on the efficacy of this approach. There is research that links reading skills to generalizations of instruction in basic CVC words (Rivers, 1998) and clear evidence that phonemic awareness is closely correlated with early reading success or failure (Aaron, 2005; Adams, 1990; Anthony & Lonigan, 2004; Badian, 2005; Coltheart et al., 2001; Dilorenzo, Rody, Bucholz & Brady, 2011; Henry, 2003; Shaywitz, 2003; Stanovich, 2000; Torgesen, 2000). Also, it is understood that phonemic awareness does not simply occur naturally for all children and that students lacking in this awareness can be directly taught (Adams 1990; Henry, 2003; Torgesen, 2000). SFRS is a method that brings together a number of reading theories, including components of both whole language and phonemic instruction. This study is seeking to explore the efficacy of SFRS instruction as measured by traditional reading tools.

In addition to the challenges in the public education system, there is a great need for support in adult literacy skills. Between 1990 and 2000, the percent of households in which a language other than English was spoken, rose from 13.8 to 17.9% of the population over 5 years old (NAAL, 2006). Because of the transparency of the code, SFRS would likely provide an instructional technique that would allow more adults to self-teach English reading. Because SFRS focuses on the need to learn only 42 sounds in order to efficiently blend together words, adults who have literacy in another language will likely be able to use this code to support the language growth to be enhanced by coded written material. Further, SFRS is a tool that hopefully would allow young readers to have a better chance to keep up with peers.

Sounds First Reading System may be easier for teachers to implement than some of the other methods currently in use. SFRS was primarily designed to be used with previously

identified delayed readers, those who have failed with Tier one and Tier two interventions. With these students there may be a need for individual support. However, SFRS has good potential to be expanded for larger groups of children as an alternative small group instruction in the second tier. Such a program would be warranted when, despite direct instruction in phonics, a child is unable to generalize the instruction and is not incidentally learning common sight words.

### **Research Questions**

**Research Question 1.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Word Identification using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS?

**Research Question 2.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Word Attack using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS?

**Research Question 3.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Passage Comprehension using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS?

**Research Question 4.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the of the WJ III ACH test of Spelling

using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS?

**Research Question 5.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Reading Fluency using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS?

### **Overview of the Study**

This study was seeking to examine archival data collected on 18 specific students at a private school for children with language learning disabilities in the Midwest with whom SFRS and an Orton-Gillingham approach had been implemented. The sample students in this study were chosen because they received an Orton-Gillingham approach as instruction for one year followed by a year of SFRS as an instructional tool. These students received this latter intervention because, despite a year or more of intensive individualized instruction interventions, they remained significantly below age level peers in reading skills. The control group was matched from previous students from the same school who received the existing intervention, an Orton-Gillingham approach (Gillingham & Stillman, 1934; Rome & Osman, 2004), for two years. All of the students at the school have an identified language learning disability, although not necessarily dyslexia. The data that are being evaluated in this study are drawn from individuals who were severely delayed readers who had previous group and individualized interventions.

### **Limitations of the Study**

This study evaluated data collected in a small private school serving children with language-based learning disabilities. These children have a history of school failure and of varied attempts for remediation, which have failed. These attempts have been both school based

and through private tutoring services. All of the children have had some level, often extensive, of direct instructions in phonics.

The participants in the intervention as well as the control group were not randomly selected. The original 18 participants were chosen because of their specific educational needs. The 18 control subjects matched, to the closest degree possible based on age, gender, and educational profile, from existing data of previous students of the same school. The lack of a random sample as well as the small sample size, is the primary limitation of the study. As such, this study should be considered a pilot study to provide a preliminary investigation into the implementation and measurement of SFRS. As such, this pilot represents an opportunity to explore the response of students to this novel intervention. Further, this study is examining an intervention that is being used in a private school setting that specializes exclusively in teaching children who require alternative and individually designed instruction. As such, many of the materials were created specifically for these students and therefore the interventions were not consistent in material, in that the reading levels were adjusted to the level of the student.

### **List of Terms**

Central Auditory Processing Disorders is a deficit identified primarily through audiological assessments that impacts one's ability to efficiently process information presented auditorily. When tested by psychologists, the same individual would likely be identified as having a Nonverbal Learning Disability. Such individuals tend to have difficulty translating words into meaningful information. They will hear directions and appear to understand them until they go to act on such information. Such individual's often have no difficulty with decoding, which results in their being unidentified until later in their education. They will often first be identified because of difficulties in mathematics.

Decoding is the translation of a code into a sound. Decoding is the most basic element of reading. It is the production of language from symbols. While reading implies gaining meaning from text, decoding does not. It is the production of sounds. One can decode a word but not

know its meaning.

Delayed readers are children who have not been identified with a specific learning disability but are not able to read at a level that would be expected of their age. The reason for the delay may include no access to an appropriate education, no fluency in English, a physical disability, such as a hearing loss, coming to school with no concept of print. Such children, while not meeting the definition of a specific learning disability, require similar interventions if they are going to close the gap necessary for them to be successful in school (Cunningham & Stanovich, 1997).

A reading disability implies a child or adult has what is believed to be a neurological difference that contributes to difficulties with reading. These individuals, despite not having a physical disability such as a hearing loss, have English fluency, and have been exposed to print but are unable to learn to read in a predictable manner. Such differences meet criteria of a Specific Learning Disability within specified criteria.

Diacritical Marks are symbols used to inform word pronunciation. Diacritical marks are used in many languages. In English they are used most often to identify an accented syllable or to distinguish the pronunciation of a vowel.

Encoding is the production of written symbols from sounds. Most commonly it is identifying what letters are needed to form the written version of a spoken word or utterance.

International Phonemic Alphabet (IPA) is a linguistic tool that attaches a symbol to each language sound to allow the study of language between languages.

Linguistic approach refers to a perspective on reading that addresses the origin and structure of the language to inform it. Linguistics is the study of language.

Literacy has been an elusive term that represents the level of reading skill needed to be functional in a society. This is a changing target and in the 2003 investigation into adult literacy in the United States, the Committee on Performance Levels for Adult Literacy attempted to address the complex topic in a pragmatic way that stemmed from four descriptive segments of the U.S. population. What percent of the population:

Have very low literacy skills and are in need of basic adult literacy services, including services for adult English language learners?

Are ready for GED (general educational development) preparation services?

Qualify for a high school diploma?

Have attained a sufficient level of English literacy that they can be successful in post-secondary education and gain entry into professional, managerial, or technical occupations? (2005, p. 5)

Further, in order to define the broad implications of literacy the the Committee on Performance Levels for Adult Literacy separated the data into three separate areas of literacy with five delineations. The focus is not uniform among individuals and therefore this approach provides clearer understanding of potential solutions in addressing the specific needs. The work by this committee was unique because the survey performed was an actual reading and math assessment as well as an opportunity to gain specific knowledge.

Prose literacy is the knowledge and skills needed to understand and use information from texts that include editorials, news stories, poems, and fiction; for example, finding a piece of information in a newspaper article, interpreting instructions from a warranty, inferring a theme from a poem, or contrasting views expressed in an editorial.

Document literacy — the knowledge and skills required to locate and use information contained in materials that include job applications, payroll forms, transportation schedules, maps, tables, and graphs; for example, locating a particular intersection on a street map, using a schedule to choose the appropriate bus, or entering information on an application form.

Quantitative literacy — the knowledge and skills required to apply arithmetic operations, either alone or sequentially, using numbers embedded in printed materials; for example, balancing a checkbook, figuring out a tip, completing an order form, or determining the amount of interest from a loan advertisement.

Literacy levels:

Nonliterate in English indicates an individual may recognize some letters, numbers, and/or common sight words in frequently encountered contexts.

Below Basic indicates an individual may sometimes be able to locate and make use of simple words, phrases, numbers, and quantities in short texts drawn from commonplace contexts and situations; may sometimes be able to perform simple one-step arithmetic operations.

Basic indicates an individual is able to read and understand simple words, phrases, numbers, and quantities in English when the information is easily identifiable; able to locate information in short texts drawn from commonplace contexts and situations; able to solve simple one-step problems in which the operation is stated or easily inferred.

Intermediate indicates an individual is able to read, understand and, use written, material sufficiently well to locate information in denser, less commonplace texts, construct straight forward summaries, and draw simple inferences; able to make use of quantitative information when the arithmetic operation or mathematical relationship is not specified or easily inferred.

Advanced indicates an individual is able to read, understand, and use more complex, written, material sufficiently well to locate and integrate multiple pieces of information, perform more sophisticated analytical tasks such as making systematic comparisons, draw more sophisticated inferences, and can make use of quantitative information when multiple operations or more complex relationships are involved.

Morphemes are the smallest units of meaningful text. A morpheme can be a word or a part of a word. Words can have multiple morphemes including a prefix, a root and a suffix.

Multisensory Education is a term that is used to describe specific methods within student instruction that relies on more than one mode of learning. Within approaches based on the work of Samuel Orton and Anna Gillingham, simultaneous multisensory methods are utilized. This would include making the shape of a letter while saying the sound thus using both touch and verbalization. Grace Fernald advocated the use of touch as a primary intervention in her methods for reading remediation. Multisensory instruction was one of the first interventions

prescribed to address the learning needs of disabled readers. The senses referred to are visual, auditory, and tactile/kinesthetic.

Opaque language code is one that does not contain orthographic consistency. Such conditions make reading and spelling difficult because it is not easy to shift between the symbol and the sound and therefore a reader must rely heavily on memory to associate a specific word with a group of symbols. Among languages that rely on the Latin alphabet, English is notably opaque.

Orthographically is according to the proper spelling rules.

Phonemic awareness is a subset of phonological awareness. Phonemic awareness applies specifically to the ability to hear and manipulate individual sounds.

Phonics are the symbols that represent speech sounds. English relies on the twenty six letters to form its 42 speech sounds. What those 42 or so sounds are differ among practitioners and will change over time. Phonics relates specifically to the spelling of sounds and in English that includes far more than 42 spellings. Such instruction is structured in a progression that builds in knowledge and provides rules to guide the reader to the appropriate pronunciation of a word.

Phonological Awareness is defined as the ability to recognize, manipulate and separate words into smaller units such as sounds and syllables. In young children, phonological awareness can be identified in the ability to recognize sounds that are the same in two or more words. More complex phonological awareness is identified in the ability to combine sounds into words or groupings and in being able to separate out sounds from a word or a grouping of sounds. While many children gain this awareness through early literacy practices and language development, some children require direct instruction in this. Such awareness can be taught through rhyming and ultimately through direct instruction in phonics. However, phonological awareness alone is not adequate for preparation in reading. Phonological awareness in conjunction with alphabetic knowledge is among the most important skills for acquiring fluent reading (Anthony & Lonigan, 2004; Rivers & Lombardino, 1998).

Pinyin is a phonemic code that was developed to inform the sounds of Mandarin Chinese. The first version was unveiled and put to use in 1958. There have been a number of revisions but it is now a prevalent code that aids native speakers in learning new characters and provides a tool for non-native speakers to speak and write Mandarin Chinese. Another primary purpose for Pinyin is to allow Mandarin Chinese to be used in data collections that require the Roman alphabet.

Romaji is a phonetic code used by the Japanese to allow their language to be written by the Roman alphabet. There are a number of versions. The code is not purely phonetic, in that it focuses more on the basic syllable nature of their language.

Shorthand is a phonemic respelling of English that provides one mark for each sound in English. The first of these codes was developed by Sir Isaac Pitman in 1837. This allowed for rapid accurate note taking. Pitman was an advocate for alphabet reform and was active in the movement to simplify the alphabet.

Whole language approach is a theory of reading pedagogy that rejected phonics instruction in favor of a child learning the alphabetic code through incidental learning encouraged by the child's desire to read good literature. Whole language advocates, at their peak of influence in American reading education, advocated that reading was a natural act, as is speech that a child would come to given appropriate exposure and personal desire. While the use of literature remains a primary focus in reading instruction, scientific studies have rejected the hypothesis that reading is natural (Stanovich, 2000), and best practices recommended by the National Reading Panel include the direct instruction of phonics as a necessary aspect of reading pedagogy.

## CHAPTER 2

### **History of Compulsory Education in the United States**

When examining modern education it is difficult to imagine a different kind of education, one that did not focus on reading and writing but one that focused on actual outcomes in the production of goods. This education was most formal in apprenticeships that could be held over the course of decades for highly skilled trades. Education, prior to the most recent centuries, was not focused in a classroom but in a work place. However, when looking at the growth of the institution of education in modern times, it is in regards to formal education that would begin with the basics: reading, writing and arithmetic. In the United States, prior to the American Revolution, education was primarily by men and for men (Robinson, 1977; Warren, 1989). Only urban settings in the New England region had a population that was able to support formal schools and until the end of the eighteenth century, these were nearly all male institutions. For much of the rural communities of the colonies, education was within the home and instruction was by tutors, nearly all male, who traveled between wealthy homes (Warren, 1989). As the Midwest was settled, small schools supported by the farming community, which were increasingly taught by women emerged (H. A. Robinson, 1977; Warren, 1989).

Horace Mann (1796-1859) was a strong advocate for compulsory education in the United States (Warren, 1989). He lobbied for and ultimately oversaw the implementation of the first state mandated and funded education law in Massachusetts. By arguing that without such a system, democracy was doomed and by further arguing that such a system would pay for itself in increased revenues, the law passed in 1852 (Mann, 1867). In 1867 a federal bureau of education was established but the authority in requiring education rests in the state government. Each state independently established their education system; the last state to adopt mandatory education

laws was Mississippi in 1918, indicating this country is still in its first century of universal education. However, for much of that century, the system under-served and even excluded many individuals. Rectifying the imbalances within and among state education systems has relied on the federal court in defending individual civil liberties and the government creating mandates (Carroll & Chall, 1975; Chall, 1967; McGuinness, 2005).

Research in educational methods and reading was rare prior to the mid-1800s. According to Gray (1984), the earliest inquiries published regarding the nature of reading were in 1844 when Valentius became interested in the nature of reading. Writing in 1941, Gray reported that 1,951 scientific studies relating to reading had been published in the United States and England since 1880. Gray pointed out that with this increase in attention toward reading; there are more questions than answers (Gray, 1984).

The pattern of reading research growth, documented as rapidly growing by Gray in 1941, continued to increase into the 1960s and beyond (Gray 1984). With the increase in knowledge on specific theories, the pressure for classroom conformity increased. In 1967 *The Great Debate* was published in which Chall (1967) attempted to present a balanced discussion on relevant reading research into the mid-1960s. During each decade there were similar calls for reforms in reading. In 1970 the *Reading Crisis: The problem and suggested solutions* (Pine & Neill, 1970), was published as an attempt to raise awareness of the pending reading crisis. James E. Allen, U.S. Commissioner of Education, proclaimed that the seventies would be the education decade (Pine & Neill, 1970). In 1975 another example of the ongoing calls for reading reform came in the publication of *Toward a Literate Society* which was published by the Committee on Reading of the National Academy of Education (Carroll & Chall, 1975). In 1990, members of the National Governors' Association set a goal that by the year 2000 every adult American would be literate and possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship. The following year, Congress passed the National Literacy Act of 1991 (Snyder, 1993). This led to a national survey that included tasks that projected the reading skill level of the person completing the questionnaire (Baer, 2009).

The tool was less than perfect but it was the first evidence of national literacy levels based on actual achievement data. Previous government surveys were based solely on individuals reporting their ability (Adams, 1990; Carroll & Chall, 1975).

During the 1970s there was a growing movement within education that would be dubbed in reading literature the Whole Language movement. The term “Whole Language” was popularized by a group of Canadian public school educators in Winnipeg, Manitoba in the late 1970s (Goodman, 2011). This education movement espoused a general philosophy of student-centered education and ultimately a philosophy of teaching reading that relied on developing a desire within the child to read as the primary ingredient to success. This philosophy grew in popularity and, especially during the 1990s, there was ongoing debate within schools and the academic community that were to be known as the reading wars (Stanovich, 2000). This conflict, which extended beyond reading instruction into broad philosophies of education, was primarily poised as phonics versus whole language (Adams, 1990; K. Goodman, 2005; Henry, 2003; McGuinness et al., 1995; Stanovich, 2000).

In 1990, Adams published *Beginning to Read, Thinking and Learning about Print*. This book updated the research and again provided a direction for modern reading instruction. Adams’ work is typically referenced by all schools of reading pedagogy. With this work there is evidence of how children can best be taught reading but also a message that in the classrooms teachers continue to use the methods in more generalized ways to supplement their methodology with which they are comfortable. One of the most prevalent tools being utilized by teachers was the basal reading series (Adams, 1990; Maslin, 2007) that had been seen as the outmoded phonics instruction in the 1970s and 1980s. These series are continuously adapted to reflect the trends of the times and had evolved to embrace more engaging literature as a response to the Whole Language movement, while still including classroom and individual projects to accommodate multiple teaching styles (Adams, 1990; Maslin, 2007).

Reading instruction has been impacted by trends and by individual student needs. Adams (1990) emphasized that skillful reading is not a unitary skill but a whole complex system of skills

and knowledge. Within this system, the knowledge and activities involved in visually recognizing individual printed words are useless in and of themselves. The visual recognition of words is valuable and in a strong sense possible only as words are guided and received by complementary knowledge and activities of language comprehension. Conversely, unless the processes involved in individual word recognition operate properly, nothing else in the system can. Ultimately, the consensus among education researchers is that children need a diverse set of skills and those lacking in any area will experience some level of reading failure separate from any disability in reading (Stanovich, 2005; Swanson, Harris, & Graham, 2003). Therefore, the expectation, which may be unreasonable, is that the classroom teacher is able not only to recognize a child's reading and language deficiencies but is able to address them individually with specific interventions (Adams, 1990; Kavale et al., 2008).

Understanding the most effective method of teaching reading has thus been a primary focus of educational research. The volumes and perspectives on the subject are extensive and the outcome of the research remains controversial. In 1997 Congress organized the National Reading Panel (NRP) to review existing research and make recommendations for reading instruction in the United States. This panel was comprised of researchers, educators and parents. The panel evaluated over 100,000 studies published since 1966 and another 15,000 that had been published prior to that. The findings however, were based on a much smaller sample of studies that were able to meet research design criteria set by the panel (McGuinness, 2005, National Reading Panel, 2000). For example, the panel reported that of the 1,072 studies on methods of reading instruction, only 75 survived a preliminary screening consisting of basic criteria. The criteria were that the study had been published in a refereed journal, a comparison was between at least two methods, there had been random selection of subjects into comparison groups, and statistical analysis was sufficient to compute effect sizes. On further scrutiny, only 38 of these studies were found to be methodologically sound (McGuinness, 2005; National Reading Panel, 2000). The example of the NRP is evidence of the breadth of the topic and the complexity of the issues that must be explored when considering outcomes (McGuinness, 2005; National Reading

Panel, 2000). Further, the number of studies excluded by the NRP is evidence of the lack of reliable information available to judge the efficacy of reading programs.

Despite the difficult task of summarizing the vast numbers of studies on reading, the panel was able to make general recommendations of components of reading pedagogy that were effective in reading instruction. These recommendations included teaching children to break apart and manipulate the sounds in words (phonemic awareness), teaching them that these sounds are represented by letters of the alphabet which can then be blended together to form words (phonics), having them practice what they have learned by reading aloud with guidance and feedback (guided oral reading), and applying reading comprehension strategies to guide and improve reading comprehension. The panel did not make recommendations of specific approaches but acknowledged that a number of approaches were effective as long as they included these components. Further, the NRP commented on a number of modern practices, such as the reliance on silent reading and multi-sensory methods as instruction tools, for which it had no valid research to support or to refute. In the report, the NRP acknowledged that these practices in reading pedagogy may well be effective strategies but the NRP could not find research to support or deny that efficacy (McGuinness, 2005; National Reading Panel, 2000).

The work of the NRP, while comprehensive, does not imply that there is now unity on best practices for reading instruction in the general education classroom or for remediating reading delays. The report of the NRP provides a model of practice from the extensive literature and gives a testimony that there are a number of effective tools to teach reading. That being said, many students continue to find themselves in secondary education without basic reading skills. This is because, despite a model of practice and valid theories of practice, the only methods that matter for a student are those that the child's teacher has available for the child. For example, while understanding that improving phonemic awareness will increase the likelihood of a student learning to read, it does not assure that a teacher knows how to improve phonemic awareness for a student. Therefore, the tools a teacher has are those which will ultimately impact the children in the classroom.

The report from the NRP was not universally supported (K. Goodman, 2005; McGuinness, 2005) but it has had a significant effect on education in that it provided adequate evidence to support a more unified approach to reading instruction. The work of the NRP in part led to the adoption of major education reform, No Child Left Behind (Shaywitz, 2003), which was signed into law by President George W. Bush on January 8, 2002 (Law 107, 2002). This legislation provided mandates to states for tracking educational progress and creating assessments that not only impact schools and districts but were tied to individual children being able to graduate from public high schools.

In sum, the great challenge in the classroom is what options exist to prevent reading failure and, equally important, assure reading acquisition in a predictable timeframe. This debate has existed since the inception of public education. To fully acknowledge all that has led to current practices would fill volumes, but instead, this chapter elucidates a few streams of thought through the perspectives of current theories. By and large, teachers face a group of students daily and therefore, they must rely on personal knowledge, regardless of the source, and easily accessed materials (Chall, 1967; Chall, Jacobs & Baldwin, 1990).

### **The Alphabet Method of Reading Pedagogy**

Reading pedagogy has not always been seen as requiring specific tools. Prior to the late nineteenth century, reading instruction materials were very limited. When English speaking people first came to North America it was with tools primarily from Great Britain. The readers (books intended for reading acquisition) were very basic and included little in the way of instruction. These books would typically have the alphabet listed and reading passages, nearly always of a religious nature (Alexander, 1983). Prior to the middle of the nineteenth century most homes had very few books outside of the Bible (Robinson, 1977). Reading was not seen as necessary but as a luxury. The cost of books was often prohibitive. In 1844 the third level of the McGuffey reader (McGuffey, 1836) was 75 cents but at that time daily wages averaged 50 cents a day (Vail, 1911).

Within the early history of the United States, reading instruction remained limited.

Materials were produced in the United States but remained expensive and without in-depth instruction for teachers. There is a general consensus that the primary method used to teach was the Alphabet Method (Adams, 1990; Alexander, 1983; Gray, 1984; Henry, 2003; Hoffman, 1986; Huey, 1973). This method, according to historians of reading pedagogy, had been the primary teaching method for centuries before (Adams, 1990; Gray, 1984; Henry, 2003; Hoffman, 1986; Huey, 1973). The Alphabet Method entailed teaching the names of the letters and using them in words that the student first learned to spell and then read. For example, “g, g is for glass.” This method was very regimented and relied on a student learning through individual letters, then syllables and eventually whole words before actual text was introduced (Adams, 1990; Huey, 1973, Robinson, 1976; Soule & Wheeler, 1866).

The Alphabet Method began with rote learning in naming letters both forward and backward. Once the student knew them well enough to repeat them from memory, they were then required to point out the individual letters in the alphabet and as they appear in words. After mastering all the letters, the student would work on pronouncing and memorizing organized groups of consonant-vowel clusters ba, be, bi, bo, bu, and so on (Robinson, 1977; Shute, 1830). These clusters of sound patterns were called syllabariums. These, however, were not based on affixes but purely on sound clusters (McGuffey, 1836; Robinson, 1977). After learning the vowel clusters the next step in word reading instruction was using the ability to name the letters in spelling out lists of short words. This practice was intended as a means of instruction for pronouncing the words as well as reading them (Alexander, 1985; Pollard, 1897). Students would then progress to the memorization of sentences and selections. Many of the readers would have long passages that the student was to memorize. The students were required to recite these without benefit of text. In some cases, students would answer general questions about selections. The rote work, which would have been very difficult for students with weak working memory, a primary contributor to reading failure, was not of rules or word parts that would assist with decoding (Pollard, 1897; Soule & Wheeler, 1866). Instruction focused primarily on first learning words in isolation and then applying that skill to reading in context (Robinson, 2002; Vail,

1911).

In 1836 William Homes McGuffey, a lawyer, educator and ordained Presbyterian Minister, published his set of Eclectic Readers (McGuffey, 1836). McGuffey was an advocate for universal education. He wrote the readers so that they could be produced in the country's western regions, Ohio, Indiana and Illinois, at a more reasonable cost. At that time transporting books was more expensive than producing books. Because books were bound by hand the publishers only required a printing press and a labor force. The first set of readers, published in 1836, included four readers. The primer included primarily one-syllable words and included word lists of new words being introduced. The word lists served a purpose in teaching reading but far more emphasized was the articulation of words. The exercises in reading and rereading were not to teach phonics as a reading skill, but as proper enunciation and inflection on the words. For this purpose, diacritical marks (symbols designed to inform specific pronunciations of letters within words) were used and there were lists of correct and incorrect pronunciations (Akin, 1940; McGuffey, 1836; Vail, 1911).

The McGuffey Readers were not the sole resource available to teach reading. There were numerous publishers offering readers. However, the McGuffey Readers were popular because they were inexpensive (Vail, 1911) relative to other books, and offered teaching methodology. Later editions were more lessons-oriented than the first edition. McGuffey Readers were unapologetically designed to teach a moral lesson, be it religion or patriotism (Huey, 1973; Robinson, 1977; Vail, 1911). The purpose of reading was primarily to learn to read the Bible and hold onto the morality that was seen as the foundation to the countries democracy (Chall, 1967; Robinson, 1977; Warren, 1989). The long-term success of these readers gave credence to the establishment of what is now called basal readers (Chall, 1967; Vail, 1911).

### **Whole Language Method**

While the term Whole Language was not present until late in the 1970s, the philosophy of education embraced by the leaders of the movement can be traced back to Mann (1867) and Dewey (1897) and their perspectives of education (K. Goodman, 2005). Dewey (1897)

developed a perspective of learning that was experiential. He envisioned learning that would encompass a child's curiosity and insight. He saw learning as a natural process that needed to be ignited and allowed to flourish (Dewey, 1897). Such learning was an active process. He wrote, "The progress is not in the succession of studies but in the development of new attitudes towards, and new interests in, experience." (Dewey, 1897, p.78) He was concerned that education was child-centered and that what came from books or a teacher were not of benefit if they did not connect with the social life of the child. He believed that the placement of practical learning, such as cooking and sewing, were ideal for mimicking the roles and natural learning that is in society. Therefore, he considered not only the content to be important but also argued more important was the actual process that it afforded the children. He saw education in which the child was a passive learner as being a destructive force (Dewey, 1897).

Dewey presented a perspective that education should not be seen in chunks of knowledge to be learned over segments of time but that learning is tailored to the appropriate age, and therefore way of thinking of the child (Dewey, 1897; 1931). This was a strong acknowledgment of the developmental changes in a child and therefore in the perspective of the content. Dewey (1931) described a need for material to be presented in a manner that gives a child a desire to see how others thought about the subject and therefore a desire to read. However, Dewey did not see reading as the central tool of learning. Dewey (1897) warned against the overuse of reading because it compromised a child's confidence in his own thinking. Dewey (1897) wrote about the need for a child to develop reflective attention. He points out that the strengths and interests of a child must be nurtured; attention does not just happen (Dewey, 1897). If a child constantly requires a teacher to direct their attention for them the child will not internalize the act of orienting towards the relevant stimuli (Dewey, 1931; Huey, 1973). Dewey focused his attention on general philosophies of education intertwined with development. He attributed a failure to learn to read to a lack of motivation. He acknowledged that some phonics instruction was helpful but needed to be kept at a minimum. It is the child centered and directed educational philosophy, as well as the lack of attention given to decoding and encoding print, that attaches

the early works of Dewey to the modern Whole Language movement.

Edward Burke Huey published *Reading Research and Pedagogy* in 1908. This was the first book dedicated to psychological research on reading (Robinson, 1977; Blumenthal, 1970). A second edition, with a foreword by John B. Carroll and an introduction by Paul A. Kollers, was published in 1968. In the foreword of the second edition Carroll acknowledges that, while the research had been surpassed, the conclusions by Huey (1973) remained relative. Huey's (1973) theories were broad in reach and represented thinking on all aspects of reading. He drew from his own research as well as his contemporaries. Huey's book (1973) was a common text in instructing teachers and provided scientific support for broad assumptions in reading pedagogy. Because Dewey greatly influenced the thinking of Huey on general reading instruction, and Huey's book remained a primary influence in education well into the 1980s, these views became the basis of many arguments among educators in the Whole Language movement on assumptions of reading pedagogy (Blumenthal, 1970; Huey, 1973; Robinson, 1977; Robinson, 2002).

One broad conclusion was Huey's (1973) acceptance of what unit, letter, word or sentence, was primary in reading. In the Word Method, also referred to as the look and say method, the whole sound of the word is associated with the word's total visual appearance, and is suggested just as the name of any other object comes to mind on seeing the whole object. This theory argued that children learn the name of a word about as quickly as that of a letter (Alexander, 1983; Huey, 1973), and recognize the whole word about as quickly as they recognize a single letter (Adams, 1990; Chall, 1967; Huey, 1973;). This method was recommended by Huey (1973) because the research by contemporaries demonstrated that individual words could be said and memorized as easily as individual letters. Therefore, it was concluded by Huey (1973) that there was no need to learn individual sounds when one could be learning words that have meaning. The understanding of using memory for each word was also the basis for rejecting phonics instruction made by whole language advocates in the 1990s (Smith, 1994).

The Sentence Method took the Word Method further (Adams, 1990; Chall, 1967; Huey, 1973). It was reasoned by Huey (1973) that the goal of reading is to portray meaning and therefore reading is learned best in the context of meaning and therefore the best way to learn would be through sentences. This approach, still used to some degree in modern classrooms, begins with the child telling a story (Casteel, 1989). When applying the sentence method the teacher writes a sentence that is meaningful to the students. The students then read it naturally and with expression because it is in the child's own words. Other sentences are suggested by the students, written by the teacher, and then read by the students. This process can create a story or a series of stories that are illustrated by the child. These are then re-read by the child over a period of time and the child then has a book of stories they can read.

During the period of Huey's work eye movement was the focus of reading research and Huey (1973) had developed a new method of tracking eye movement. By tracking eye movement across a page, Huey refutes the understanding of decoding by letters. Huey (1973) describes eye movement, which he saw as making a number of leaps across a page, as being evidence that reading did not involve letter decoding. His primary thesis was that reading as whole sentences should be the primary way in which to teach reading. This idea was further supported by research described by Huey (1973) in which subjects were asked to remember slashes, first in random positions and then in predictable patterns. The patterns were then able to be reproduced far more easily than the random groups. He argued that the ease of recognizing patterns supported the need for reading to be learned in the patterns of words and even more ideally, in sentences (Huey, 1973).

These assumptions were further supported by the work of Huey's (1973) reports of his contemporaries. One such experiment conducted by Ribot (1899) involved having individuals first read words in isolation on cards and then read them in a strip which formed a sentence. The readers got little emotion or visual response to the word reading but they got emotional responses from the grouped words. Huey's use of emotional response likely related to the concept that the basic level of language was the sentence which was a basis for understanding the inner self of

humans as expressed by Wundt (Blumenthal, 1970; Huey, 1973). This further supported his hypothesis that reading is processed on the level of sentences. In the discussion regarding the Sentence Method, Huey (1973) wrote that the response to reading is truly an emotional response and has little to do with visualization (Huey, 1983). Huey's understanding of a sentence could have been influenced by the work of Wundt, (Blumenthal, 1970). Wundt explored the relationship between human insight and language (Blumenthal, 1970). The sentence was deemed by Wundt to be the most basic insight into a human's understanding especially considering young children can state a complicated meaning such as a request in one word (Blumenthal, 1970). Huey's (1973) work supported general reading instruction that would teach reading through words and phrases with little emphasis on phonics. This understanding of the need for meaningful text is a foundational perspective of the Whole Language advocates. The philosophy espoused by Huey (1973) is the same philosophy that rejects the notion that reading words in lists is a measure of reading competence. According to Goodman (2005) only reading for meaning can be the measure of reading. Goodman further states that because reading is language, it can only be what the reader represents it to be. Reading is an extension of language which places value only in what is communicated. Therefore, reading lists of words, void of meaning, does not represent reading and cannot be a measure of reading ability (Goodman, 2005). While writing much earlier than the Whole Language movement, Huey (1973) stated that reading follows the same process as language. Goodman (2005), a primary advocate of Whole Language and the author of numerous books on the subject, equates reading to language as well and therefore freely accepts philosophies of language as pertaining to reading (Goodman, 2005; Stanovich, 2000).

Another topic emphasized by Huey (1973), and other reading specialists, was to equate the history of written language to the process of an individual child learning to read. While Huey (1973) did not state that reading is a natural process for children, his work would support that conclusion in defense of the Whole Language versus phonics debate that was emerging at the time of the final printing of his book. The description Huey gave of a child discovering the

relationship between symbols and language is much in the same manner as the human race first using hieroglyphics to communicate in writing and eventually develop written language. This same process of discovery, similar to the discovery of spoken language leading a child to understand written language, remained a theme throughout the modern Whole Language movement (Goodman, 2005; Smith, 1992).

Huey (1973) also shared a perspective that reading should be taught in the context of general learning rather than as a subject. This perspective voiced by Mann (1867) and Dewey (1897) was also a core understanding of the Whole Language philosophy. Particularly, the practice of teaching phonics as a subject was rejected by Whole Language advocates (Goodman, 2005; Smith, 1994; Smith, 1992). When Huey (1973) described an ideal educational setting, two schools, The Horace Mann School of Teachers College, Columbia University, and The Francis W. Parker School in Chicago, were given as examples. In these descriptions the students are presented with enriched experiences, such as visiting a farm, and developing educational opportunities directly from what was encountered. In this example, while at the farm the teacher takes photographs to support the children's memories and to provide visual cues for written compositions. Science is brought in by verifying what was learned and investigating more details from the outing. Huey stated, "Thus reading and writing and drawing are learned in the service of what the children are doing as a social community. Reading is not made an end in itself, and does not gather the mannerisms and the debris of technique that accompany reading done for its own sake and by 'Reading's' own special methods"(Huey, 1973, p. 300). This vision of the classroom is based on innovative teachers finding opportunities to stimulate individual and collaborative learning among the students.

Early in the twentieth century, the new emphasis was on silent, rather than oral group or individual reading in the classroom (Chall, 1967; H. A. Robinson, 1977). The use of phonics, which was also being broadened in general teaching methods, was looked upon by proponents of whole language as an outmoded procedure. Reading instruction focused on simple vocabulary stories in a basal reader or children dictating their own stories (Chall, 1967). Also during this

period, systems began to be developed to assist students in comprehending what they read. These methods, like phonics, evolved with theories. In the 1920s a popular method, primarily a silent reading period, was Free Reading (Robinson, 1977). This focused on a child's having access to broad materials through which they would find interest and transition into reading. Names that described similar methodology that followed were Individual Reading and The Language Experience (Alexander, 1983; Russell & Fea, 1963). These silent reading programs were developed from research conducted in the 1930s that looked to address the nation's weak reading skills that had been exposed through the reading deficits of the troops during World War I and then later during World War II. The silent reading methods were created as all inclusive programs. In practice, most silent reading methods were being conducted simultaneously with other instruction in many classrooms (Adams, 1990; Alexander, 1983; Gray, 1951).

While it can be argued that Whole Language evolves from a general area that rejected phonics instruction, such a rejection does not extend throughout its history. William S. Gray, writing in 1941, stated some children are able to learn very well without any systematic training in phonetics. Gray also wrote other children in the same class fail because they are unable to recognize words independently, but when given supplementary training in phonetics and word analysis, they are able to make up their deficiencies. He further stated that the second cause of reading failure is inadequate attention to content and that phonetic drill had been carried beyond the point where it was useful. Instead of being a tool to recognize words, it had become an end in itself, and really blocked the recognition of the meaning of words. This is an area in which the Whole Language movement would agree (Smith, 1999). Gray, with a team of other researchers and writers, developed the famous Dick and Jane (Elson & Gray, 1934) series (Chall, 1967) which began in 1930 and were used in schools until the early 70's. This series was based on a look-say method with very little phonics instruction (Chall, 1967). However, they were very simple texts that ultimately were rejected by whole language instructors (Chall, 1967; Smith, 1994) as being too controlled and not engaging for students.

Jim Trelease, another of the primary advocates of Whole Language, earned notoriety

when he published his handbook on reading out loud (Trelease, 1989). The practice of parents reading out loud to their children became a primary ingredient in allowing children to desire reading as well as having appropriate exposure to text prior to coming to school. Trelease espoused a theory that oral reading at home was the necessary ingredient for future literacy. He further encouraged teachers reading aloud in school as a way to support children's desire to read to themselves (Trelease, 1989). This ingredient became an explanation for reading failure when Whole Language programs encountered failure in schools (Smith, 1999; Stanovich, 2005).

Overall, the Whole Language movement had a distrust of research (K. Goodman, 2005; Smith, 1999; Stanovich, 2005), seeing it as counter to gaining real insight into children. The limited research supported by this movement was based in classroom settings and used assessment tools to gain insight into the reader. A primary method to gain insight into a child's acquisition of reading is known as Miscue Analysis (K. Goodman, 2005). These methods have a child read a story and then retell it. A miscue is a word that does not support the text. It provides insight into how the readers perceive the text. According to this theory, reading a different word than is printed is not an error, because reading is an individual act and the miscue is evidence of the perspective of the reader. Ultimately, a good reader would realize that the miscue did not support the content and reread the passage (Goodman, 2005).

According to Smith (1999), a major proponent of Whole Language, there is no role for phonics instruction. He wrote:

Apologists for phonics and other fence-sitters sometimes argue for a combination of methods, or even for "the best of both approaches" as if such a concoction were possible. But it would be like serving a slightly diluted poison with a heavily diluted antidote. (Smith, 1999 pp. 154-155).

Research has presently shifted school practices back towards phonics. Stanovich (2005) shared that he was initially very enthusiastic about the philosophy of the Whole Language movement but he was unable to demonstrate its effectiveness through research. The Whole Language movement was adapted to acknowledge the need for some phonics instruction and can

be seen today in current basal reading series that focus on full renditions of stories previously sold as books within text books with teachers' manuals that teach phonics skills as words are encountered within the text. This tool, still most prominent in modern classrooms, while teaching some structure of language, continues to focus on the child's desire to read and the content being of primary concern over controlled syntax and phonology.

### **Phonics in Reading Instruction**

Essential in understanding the complexity of the task of universal education in the United States, is the understanding that American English is a very difficult language to read. An alphabetic code is one that allows specific symbols to represent specific sounds. An ideal code is one that easily translates to one symbol representing one sound. The transparency of the code or clearness allows it to be most understandable. That code, in the instance of English, is not clear. English was developed from a number of languages and has adapted words in their entirety. Therefore, while English has approximately 42 sounds, there are multiple regular spellings of most of those sounds (Allred, 1977; Gillingham & Stillman, 1934). The long a sound, for example, has eight regular spellings as in; able, make, maid, stay, eight, reindeer, they. In other languages, such as Italian, Spanish, German, and most Scandinavian writing systems, there is one way to write (spell) each phoneme in the language, and one way to decode each letter or letter pair called digraphs (sh in ship). These languages have transparent alphabet codes and are far easier to learn. Therefore, in countries where these languages are used there is less difficulty in teaching decoding. In English, decoding is complex, and knowing how to pronounce specific letters in different placements within the word is not reliable. This issue of lack of transparency in American English is further complicated by the fact that many vowel sounds are not emphasized which renders spelling that much more difficult. Thus, comparing reading between one country or language and another is not helpful in gaining insight to the primary difficulty in reading English (Byrne, 1996; Huey, 1973; Leigh, 1874; March, 1881; McGuinness, 2005; Pitman & John, 1969; Share, 2008; Soule & Wheeler, 1866; Williams, 1916). This is vital in understanding some of the issues that are unique to English speaking countries.

In addition to the non-transparent or opaque code of English, the size of the language and the ease with which words are added to the language is a factor in teaching reading. The English language is arguably the largest language and it adapts words regularly. Therefore, if there is a rule for a specific spelling in English, one will always be able to find an exception. This makes the task of breaking the code of the English alphabet that much more daunting.

According to the Barnhart Concise Dictionary of Etymology (1995) the word “phonics” was first recorded to refer to the method of teaching reading in 1908, though the system occurred as early as 1844 (Barnhart, 1995 p. 564). Rev. G. Shute (1830) wrote that he had discovered a method to teach reading that could be directly taught from the sounds of the letters rather than the names of the letters. Shute's book, *Organic pronunciation or Reading Made Easy on a Plan Adapted to the Instruction of the Deaf and Dumb of Children in General and also of Foreigners* (1830), does not use the word phonics, but in fact describes phonics. The author developed the method in response to teaching a girl to read who was born deaf. He realized that such a method made more sense for teaching anyone to read than the tradition of teaching through the names of the letters. In his brief introduction he describes the challenge of having to move from the names of the letters to the syllables which rely on the sounds in the conventional instruction of reading (i.e. the Alphabet method). Shute shared that subsequent to writing the book he learned of others who were aware of the benefits of this method. He went on to acknowledge the assistance he had

derived from Mr. Young's little treatise on the ‘ Method of instructing the Deaf and Dumb,’ and from which I have borrowed some expressions in explaining the sounds of the letters; but it was not until I had digested the system according to my own ideas, that I became acquainted with any plan of a similar kind, and can only now say, I am glad to find I am not singular in my opinion, as it confirms me in the propriety of my own, and encourages me to hope, that by combining my efforts with theirs, and introducing the subject again to the notice of the public under a new arrangement, the present mode of instruction will at last be

abandoned.(Shute, 1830, p. iv).

In his book, which is a very early example of a phonics text, Shute briefly introduces the enunciation of the letters by describing the movements of the mouth. He approaches the subject exclusively from the perspective of sounds from the initial alphabet and then includes some diphthongs. The relationship is from spelling to sound. There is no indication of the awareness of the unique aspects of English spelling being particularly difficult. The book goes from a brief description of the sounds into word lists intended for teaching specific spellings of the sounds. Shute understands that what he proposed in this book challenged the educational establishment.

For if it be answered, that children taught alphabetically, according to the usual mode, do learn to read, and in time, many of them (read) well; still I would suggest, as a matter of experiment to prove the relative merits of either mode of instruction, that one child be instructed alphabetically, as the plan now is, to say the letters; and another organically to sound them, according to the method proposed. And then place cl-ock, ch-urch, str-ength, before them; and I cannot be hazarding much in saying that the latter child will give you, at least something like the proper sound of these words (Shute, 1830, p. 13).

This may be one of the earliest records of the use of phonics to teach reading. This description is clearly an early example of phonics being used as a teaching tool; however, it predates the use of the word phonics to imply a teaching method. The word phonics does not appear in Shute's book.

Another early record of the use of phonics for a reading tool was in the United States in a book by Soule and Wheeler (1866), *First lessons in reading: A new method of teaching the reading of English by which the ear is trained to discriminate the elementary sounds of the words, and the eye to recognize the signs used for these sounds in the establish orthography*. Soule and Wheeler reported the originator of phonics, Rev. John C. Zachos, was too busy using the method to write it down and therefore they were doing so. In Shute (1830) and Soule and Wheeler (1866) the authors instruct that children should not be taught the names of the letters of

the alphabet until after they have been taught the sounds of the letters. The Soule and Wheeler book, like Shute's, laid out a process of teaching the multiple spellings of English. Soule and Wheeler (1866) revealed more understanding of other work regarding the sounds of the English language. Soule and Wheeler demonstrated an understanding of the issues with learning to read in English because it is, to some degree, organized around spelling rules indicating a more sophisticated system that would have been understood primarily from an extended use and development. Soule and Wheeler (1866) began with a chart delineating 41 sounds of the English language. (The 41 sounds in this book are the same sounds as are in Sounds First Reading System (SFRS) except SFRS has an additional sound /or/.) This book falls within the time frame that phonics, as a method of teaching reading in English, was taking hold, be it under different names.

Another example of a Phonics reading instruction method developed in the late nineteenth century was the Synthetic Method developed by Pollard (1897). This was a method that clearly looked at word patterns and families as a basis to organize English into teachable sections. Pollard (1897) described, "Since accurate pronunciation and correct spelling are of the utmost importance, what can be more desirable than a method based upon the rules of orthoepy and orthography? Instead of teaching the word as a whole and afterward subjecting it to phonic analysis, is it not infinitely better to take the sounds of the letters for our starting point, and with these sounds lay a foundation firm and broad, upon which we can build whole families of words for instant recognition?" (Pollard, 1897, p. 3) Pollard's manual is comprised of tables in which word families are listed. It has names designed to describe groups of words. Further it provides specific instructions on how a child is to be approached when providing this instruction. The instruction is designed to accompany the readers being published in that period and is not isolated to specific readers. However, she expressed opposition to readers that have diacritical marks, because she believed a child must be taught to produce their own marks as a precursor to reading the passage (Pollard, 1897; 1898).

By the early twentieth century phonics was in the mainstream of education. The debate

over how and when to use phonics was underway. In *How to Teach Phonics* (1916), Lida Williams' first sentences are:

"Phonics is not a method of teaching reading, but it is a necessary part of every good, modern method. It is the key to word mastery, and word mastery is one of the first essentials in learning to read. Knowledge of the sounds of letters, and of the effect of the position of the letter upon its sound, is an essential means of mastering the mechanics of reading, and of enabling children to become independent readers." (Williams, 1916, p. 2)

Williams (1916) explained that reading is taught through meaningful expressions and therefore the word and sentence method would be the primary form of instruction; however, knowing the sounds is an important aspect and therefore should also be taught. She suggested two 15-minute lessons a day. These lessons, which are explicitly laid out in the book, include repeating long lists of sound groups leading up to combinations that form words. She was clear that, with the exception of a child who is not born in the United States, the exercise is to enhance reading but is not part of the reading lesson. Williams' book is evidence of the tension within education over the level of phonics instruction and its role within the process of teaching reading. One benefit of a program such as Williams presented was that it could be used in tandem with other reading instruction methods, including basal readers.

Basal reading series are age-sequenced by difficulty. An early example of this was the McGuffey Readers; however, modern series include extensive instruction support for classroom teachers, presented in expanded teacher's editions for each grade level, as well as a scope and sequence for the entire school (Alexander, 1983). The series take aspects of a number of reading theories generally using an integrated phonic method with sight words. The phonics instruction within the general lessons remains an option for teachers to use as needed. So despite little influence of phonics, many people came to associate basal readers with phonics. What was and is unique about the basal series and what keeps them popular today is that the readers are accompanied with a teacher manual including a large variety of whole class exercises and

student workbooks. The exercises include a variety of tasks that can allow a teacher to use whole class and small group instruction (Beck, Omanson & McKeown, 1981). As popular theories began to be supported in teaching literature, the basal readers incorporated it into the next edition (Chall, 1967).

Phonics instruction came in and out of fashion in the general education classroom. Chall (1967) is among the most known and referenced psychologists who researched reading and reading acquisition. Her book, *The Great Reading Debate* (1967) was a major work that attempted to highlight much of the relevant issues in reading up to her time. It looked at how reading was taught and the implications of such research on reading instruction. Chall (1967) conducted a national reading search by personally visiting hundreds of classrooms throughout the United States. She reported that teachers were teaching reading using many methods but primarily supported by basal reading programs. There was a pervasive professional consensus on the one best way to teach reading. This consensus de-emphasized the use of phonics and concentrated on teaching children to recognize whole words and sentences. Chall predicted there would be a swing back toward phonics but warned teachers, schools, and textbook publishers not to over emphasize teaching phonics and not to jettison comprehension and good stories. She recommended phonics only as a beginning reading method, a method to start the child reading in the first two grades, followed by a quick transition to reading good stories. She predicted that if schools over emphasized phonics instruction, there would be a counter-reaction, and a movement would rise up against the overemphasis on systematic phonics (Chall 1967).

### **Linguistic Reading Methods**

Linguistics is the study of language. When relating it to a reading methodology, it is one that acknowledges the sounds of the language as the focus more than the multiple spellings. The opaque nature of the English alphabetic system is not always considered and the result is that the skills of the teachers and the children are brought into question. However, it is the opaque nature of the alphabet system that is at the core of the reading problem in the United States and other English speaking countries (McGuinness, 2005; Share, 2008).

An obvious solution therefore would be to change the alphabet. Such attempts have been made. Some earlier attempts to reform the alphabet include efforts by Sir Thomas Smith (1568) who was the Secretary of State to Queen Elizabeth and John Wilkins who was the brother in law of Cromwell and Benjamin Franklin (Comstock, 1855) to name a few. These efforts were generally made by adding marks to the existing alphabet or by using capital and small letters. Such proposals were not easily adapted because they required unique type sets for printing and would replace completely the existing alphabet (Pitman & John, 1969).

The work of Isaac Pitman (Pitman & John, 1969) to change the alphabet to a new system known as Fonotypy was likely the most well-known attempt to change the alphabet but certainly not the first attempt. Pitman (1969), who had derived a simpler writing system by assigning a specific stroke mark to each of the 42 sounds of English known as shorthand, spent most of his adult life and much of his fortune trying to convince English speaking countries to adopt a more precise alphabet. Pitman produced his simple system of shorthand by the age of 24. He spent time publicizing his invention of shorthand as his vocation, but his avocation (Pitman & John, 1969) was to convince others of his collaborative effort in developing an alphabet that worked for the English language. Fonotypy was a system of writing that made the writing more phonetic. In an effort to promote Fonotypy a number of Bibles were printed in the font. While the system was met with wide acceptance, it was not widely adopted (Pitman & John, 1969). Two outcomes of his work are noteworthy. The group who ultimately created the International Phonetic Alphabet (IPA) was an outgrowth of the spelling reform movement and the International Teaching Alphabet (ITA) was a direct outgrowth of his work by his grandson Sir James Pitman (Pitman & John, 1969).

Huey (1973) raised the concern of the specific difficulty of the English language. His comments are evidence of the agreement that the alphabet needed to be reformed. He described, "The unreasoned and unreasonable devotion to our irrational English spelling in itself robs the child of probably two whole years of school life, and makes him and all of us read an extra book for every five or six that are necessary." (Huey, 1973, pp. 301-302) There is a long history of

scholars who worked to make the English language more uniform. While such movements may exist today, at the turn of the nineteenth century it was more broadly debated among scholars and was being actively pursued by leaders in education (March, 1881; Pitman & John, 1969). Huey expressed his confidence that the English alphabet would be reformed. Further, he predicted, with the progress in technology, reading would be obsolete and a device in which “an author may talk his thought directly into some sort of graphophone-film book which will render it again to listeners, at will; reproducing all the essential characteristics of the author's speech...” (Huey, 1973, p. 429).

Huey shared a few brief descriptions of phonetic methods that were being used to some degree. Included in these are methods, such as *The Pronouncing Orthography* by Edwin Leigh (1874) that he described as phonetic but in fact it was an alternative typeset (font) that informed the alphabet (Leigh, 1874). This work, an example of an adapted alphabet, was not intended to replace the entire alphabet but was a font designed to inform the pronunciations. Leigh spent years developing a print that informed the reader of the particular pronunciation of the words. He had a print set specifically for the pronouncing orthography and took existing readers and edited them by using his print. This system, very similar in concept to the Initial Teaching Alphabet (ITA), used combinations of thin lines to add to letters for pronunciation. It was done in a fashion that the original word remained visible. Further, with these books was more specific instruction for teaching.

Leigh (1874) expressed a theory that by offering this print it would enable children to learn to read and then transition into a regular alphabet. Leigh's print was a font that used hair line letters when those letters were silent, accents marks were used on the second syllable when the first syllable was not accented. Further, he hyphenated articles to the nouns in order to indicate that in the sentence they were unaccented. The instructions in Leigh's reader had the teacher begin with exercises to train the eye using a sequence of lines and shapes. This was followed by the student repeating sentences and then words. Then the teacher would begin having them hear individual sounds and identify them orally within the word. As lessons progressed, Leigh had

them learn the word orally before they would see it in type. Leigh began publishing these works late in the 19th century. He had secured a patent for his typeface (Huey, 1973; Leigh, 1874). However, at that same period, as expressed by Huey (1973), the Word and Sentence Method were becoming popular and therefore Leigh's work was apparently abandoned.

Another example of an adapted alphabet was one created by Nellie Dale (1899). Dale developed readers that provided additional information to the vowels by using a color code. Her books were also very carefully written to provide the most predictable code from the existing alphabet.

In 1969, Sir James Pittman, grandson of Sir Isaac Pittman the founder of shorthand, published *Alphabets and Reading*, the initial teaching alphabet. This work was the culmination of decades of work by him and others in dealing with the challenges with the English Alphabet. Pittman described first the effort, by himself and others, to simplify English spelling. This effort was very popular and led to America's adoption of a number of new spellings for individual words (Pittman & John, 1969). Pittman described this as a worsening of the condition because it differentiated British English from American English and therefore added to the complexity of the English language. He ultimately abandoned his work in this field and instead focused on methods that would allow people to more easily read English. Isaac Pitman's work to change the alphabet, which was done in consultation with linguists in England and the United States, culminated with his publishing *Alphabets and Reading: Initial Teaching Alphabet (ITA)* (Pitman & John, 1969). He published this under a copy write that he permitted anyone to use. His desire was that this would become a tool widely used to increase literacy. In addition, seven texts using the ITA font/system were published. In the book Pitman gave testimonials from teachers and researchers in both the United States and Great Britain to the effectiveness of the method. However, while it reached a peak in the late 1960s and early 70s, it never rose to a level of universal acceptance.

The ITA represented to Pittman an alternative to a phonics method because any text could be adapted. The ITA is based on a branch of reading insight that focused more on

linguistics as the core perspective. Pittman and other linguists, (Bell, 1867; Comstock, 1855; Leigh, 1874) desired that children not be constrained by controlled texts. Pittman described the debate of look-and-see methods versus phonetic methods. He stated that his own preference for the general instruction would be look and see but he also noted that there was clear evidence that it was not universally successful for all students. The ITA provided a bridge between these two methods.

### **Specific Reading Disabilities and Reading Acquisition**

Among alphabetic languages, English is known to be opaque, or to have orthographic depth; a complex system of spelling. Because English is the blending of a number of languages, and because it accepts words in whole from other languages, the alphabet is inadequate and requires complex phonemic and morphologic word patterns. This difficulty makes reading and writing English a challenge so that up to 20% of children in classrooms are failing to learn to read at a level adequate to support them in a general education classroom (Anthony & Lonigan, 2004; Shaywitz, 2003; Stanovich, 2000). Failure in reading acquisition has been described in a subsection of the broader reading pedagogy debate which previously focused on a group of students who demonstrate patterns of strengths and weaknesses that would support a diagnosis of a specific learning disability in reading. This was first formally acknowledged within the public education system with the initiation of the Assistance for Education of All Children with Disabilities which later became known as the Individuals with Disabilities Education Act (IDEA) (2004) that was passed in 1975.

The earliest known documentation that recognized reading to be effected by neurological injury was by a Prussian physician Johannes Schmidt in 1676 (Anderson, 2001). Schmidt described the case of a patient who lost the ability to read as a consequence of a severe stroke. This patient ultimately recovered from the stroke but had lost the ability to read words or name letters, although he was still able to write them. Other early stories identifying the relationship between reading loss and brain injury were reported but in nearly all instances (Anderson, 2001) it was among adults who had lost the ability. A practice became to conduct an autopsy on such

people so the specific regions of the brain could be identified, although the focus of such research was primarily on language in general. A German physician, Adolf Kussmaul (1877), first used the terms word blindness and word deafness to refer to cases of acquired reading disability in adult patients who could not read in spite of normal sensory acuity and average intellect. Kussmaul reported on ten cases involving word blindness that were attributed to various regions of the brain. Kussmaul is attributed (P. L. Anderson, 2001; Hinshelwood, 1900) with turning focus from reading disability being a component of acquired aphasia to it being an independent disability. The term *dyslexia* first appears in the work of Berlin (Anderson, 2001), a German ophthalmologist, who reported on cases beginning in 1884 in which patients, despite normal language skills, were unable to read. These were all adult patients and the loss of reading stemmed from brain injuries. When these patients died, autopsies revealed that the injury appeared in similar regions of the brain (Anderson, 2001; Blumenthal, 1970).

The work of Kussmaul led to an ongoing dialogue that linked specific brain injuries to loss of various language tools, including reading and writing. Early in the 20th century physicians in the United Kingdom associated word blindness to children. Hinshelwood was among these pioneers in the recognition of word blindness among children (Anderson, 2001; Hinshelwood, 1900, Orton, 1929). Hinshelwood was the first to make the distinction between acquired word blindness in adults and congenital word blindness in children. Hinshelwood not only described the symptoms of congenital word blindness, he began making recommendations in how best to teach such children. He warned against blaming the children and introduced the idea of presenting instruction with multisensory support. Additionally, because of cases in which there were large numbers of siblings and multigenerational trends, Hinshelwood was among the first to acknowledge that congenital word blindness could be inherited (Anderson, 2001; Robinson, 1977).

As the acknowledgment of this difficulty in children was recognized, so were the revelations that have led to current understandings of dyslexia and other causes of reading failure including the lack of orthographic transparency in the English language. Interestingly, according

to Anderson in *Early Case Reports of Dyslexia* (2001), it was a German ophthalmologist Peters who in 1908 arrived at the conclusion that the higher incidence of reports coming from English speaking countries was due to orthographic irregularity. During this same period there were a number of physicians, primarily ophthalmologists who were making specific educational recommendations (Anderson, 2001). Multisensory instruction was among the most common recommendations (Anderson, 2001); this included using manipulative materials such as clay, to form letters in order to support the visual memory. An American ophthalmologist, Clairborne (1906), referred to word-amblyopia to describe children who had word blindness but were still able to appropriately use numbers. He made a recommendation that children with this condition should change the hand they use for writing. During the same period that the understanding of reading disorders were emerging so was the movement toward universal compulsory education in the United States (Anderson, 2001; Robinson, 1977).

Much of the debate described thus far specifically recognized children who fail at reading acquisition as having average intelligence, and some above average. However, this was not universally understood. One German physician, Berkhan (1885) saw reading and writing difficulties as signs of slow learning and was instrumental in the establishment of schools for such slow learners. He thought that a child who did not learn how to read after 2 years of school must certainly be "feeble-minded" and should be sent to a special school (Shapiro et al., 1998).

In 1918 American ophthalmologist Heitmuller provided a summary of the literature on word blindness. He identified five observations that seemed to emerge "(a) normal to above-normal intelligence, (b) reading and spelling problems of varying degrees, (c) typical mathematical ability, (d) higher incidence in males, and (e) hereditary influence" (Anderson, 2001 p.12). These observations were accumulated by in large from case studies produced by ophthalmologists. And while the concern was addressed by ophthalmologists because of the association being made between vision and reading, it was clear that vision, as in clearness of sight, was not a primary deficit contributing to this reading failure.

In 1925 Samuel T. Orton made a presentation to the fifty-first annual meeting of the

American Neurological Association, at Washington, D. C. In this paper, which marks a shift from ophthalmology toward neurology, Orton articulated the debate between sight word teaching versus phonics and he ends with an optimistic note that an effective method will be established to meet the needs of these students. "It is obvious, however, that to be effective such methods must be developed in consonance with a sound neurologic background and be adequately controlled by careful observation and experiments in training. This program we expect to extend in the immediate future." (Orton, 1966, p. 51) This ending comment referred to the theories he and his colleagues, including Anna Gillingham, a school psychologist in New York City, were developing in the direct instruction of phonics with multisensory support. These theories after his and Gillingham's deaths would be referred to as the Orton-Gillingham approach. Orton's theories of learning disabilities and their origins did not end questions regarding the cause or function of learning disabilities but further contributed to an understanding that the cause was neurological and the treatment was educational. This conceptualization was further debated regarding the physiology of reading as well as an understanding that there were true barriers to reading that had physical manifestations and were not related to intelligence. The neurological implications remain a debate but the educational implication was legitimized in 1975 (IDEA, 2004) with the passage of Public Law 94-142 (Education of All Handicapped Children Act), landmark recognition of the rights of students with and without disabilities to receive a free and appropriate education.

While reading disabilities have been documented to have neurological roots and therefore are present regardless of the language (Shaywitz, 2003), the impact on education is greatly varied by the transparency of the language of literacy in which a child is born. Dyslexia is a more significant disability in countries that rely on more orthographic opaque languages. In countries where the language is more transparent, (Spanish, Italian,) there are far fewer incidents of reading failure than in English speaking countries (McGuinness, 2005; Paulesu et al., 2000). However, neurological issues are not the only reason a child may fail to learn to read. Lack of exposure to reading prior to entering school is another major factor that contributes to reading

failure in English speaking countries (Shaywitz, 2003). When children come to school with little exposure to print, it is very difficult for them to learn to read. Evidence based on brain imaging shows the brain adapts to reading (Shaywitz, 2003; Shaywitz, Mody & Shaywitz, 2006; Shaywitz et al., 2008) and becomes efficient. If a child does not learn to read within a window of time, estimated as the end of the third grade, then they may never be efficient or fluent readers (Shaywitz, 2003; Shaywitz et al., 2008).

Prior to the passing of NCLB, students who came from homes in which reading was not emphasized or where a language other than English was dominant, would be excluded from special education. Both of these factors, lack of exposure to print and/or lack of English proficiency, were considered exclusions from special education and therefore many of these students were pushed through school, despite the failure to acquire adequate literacy. Research demonstrates that these children, despite a lack of a biological or neurological basis, respond successfully to the same interventions that are being employed for children with reading disabilities (Shaywitz, 2003; Stanovich, 2000; Stanovich, 2005; Torgesen, 2000). The need for interventions for children with delayed reading being the same as those effective for children with reading disabilities has blurred the contrast between general education and special education. In many low socioeconomic classrooms the number of children who are failing to acquire reading skills within the first three years of school exceeds 50% (I read 3, 2012). Therefore, strategies previously seen as only relevant for children with reading disabilities have become, in some form, mainstream.

Much of the history of interventions designed for people with reading disabilities or delayed reading predate the recognition by the public school system. During the 1920s and 1930s, there was innovation in the area of remediating children with reading and language disabilities. Direct teaching of phonics with multisensory support (Fernald, 1988/1943; Gillingham & Stillman, 1934; McGinnis, 1988/1963) while initially designed for specific populations of students who experienced reading failure; provide evidence of emerging knowledge regarding reading instruction (Lass & Davis, 1985; McGuinness, 2004). These

methods designed for smaller populations, provide early evidence of ways in which the English language could be organized into a systematic approach as well as tools to assist students in attaining automaticity. These specialized methods also provide an understanding of the wide range of interventions that are and have been available to meet the needs of children with delayed reading.

The Associative Method was developed by McGinnis (1988/1963), a teacher for the deaf in St. Louis Missouri. McGinnis developed the Associative method for children who were deaf as well as for children with other severe language disabilities. This method used precise definition of individual sounds and taught sound symbol relationships in a highly structured, synthetic process. The method coupled the work of a speech and language pathologist with written language (McGinnis, 1988). Etoile DuBard, who worked under McGinnis towards the end of her career, further developed the method (McGinnis, 1988; McIntyre & Pickering, 1995) and went on to establish The University of Southern Mississippi DuBard School for Language Disorders in 1962. The Associative method was primarily taught by teachers who were trained speech and language pathologists. Instruction was multisensory which includes the use of auditory, visual, tactile, and motor-kinesthetic cues for learning.

In the Associative Method the Northampton Symbol system (McGinnis, 1988; McIntyre & Pickering, 1995), a phonetic spelling of the basic sounds developed for deaf students a century earlier, is used for teaching sound-symbol relationships for reading. Students are taught cursive writing for initial instruction. Children learn to read manuscript, but write only in cursive. A slower rate of speech is used to give the children more time to understand what is being said and more time to observe the speaker's lip movements. Precise articulation of the sounds is required from the beginning. Colors are used to differentiate between the sounds in a word. An individual child's book is made as he/she progresses through the method. This provides both a document for the progress as well as references for review. The method is implemented in a manner that is incremental and systematic. Instruction in phonetic rules is delayed until the upper levels. Instruction progresses from the teaching of individual sounds to syllables, words of

gradually increasing length, basic sentences and questions, more advanced sentence structures, and the corresponding questions. Ultimately, when sufficient language skills have been achieved, a transition is made to traditional textbook formats for instruction. While originally developed for deaf and hard of hearing children, the method has been adapted to teach children with a wide range of language based disabilities as well as people learning English as a second language (McIntyer & Pickering, 1995). While still in use today, this method requires very specific instruction and is not commonly known by classroom teachers (McGinnis, 1988).

Fernald, who ran an institute dedicated to teaching reading for those who had failed previously, developed a systematic multisensory approach. This method (Fernald, 1988/1943) was reliant on the use of the alphabet and teaching spellings but added a process of tracing letters while saying them aloud. Fernald insisted that if a child could spell a word, they could read it. She published *Remedial Techniques in Basic School Subjects* in 1943 and gave numerous testimonials to support the efficacy of her system. This system included the children tracing words until they could write them without needing to look. Fernald stressed that throughout a reading intervention the reading materials are suited in terms of vocabulary and content to the child's intelligence level rather than to his reading skill. This developed into “high interest, low vocabulary” reading material (Adams, 1990). Fernald developed a theory for remediation of tactile kinesthetic support. In her work at a clinic in California she gave case studies of total remediation usually within a year's time by this method. She supported teaching reading ultimately through phrases but began with the word method supported by tactile kinesthetic remediation. She would have a student tell a story and then teach them to write the words. They learned by tracing the word with their finger until they could produce it by memory in writing and they would then write the story. The teacher would then type the story and the student would read it. They would also develop cards with their own handwriting of the words they learned (Fernald, 1988/1943).

Samuel Torrey Orton, a neurologist and psychiatrist, in the early 1920s began his work to gain insight into people who had difficulty learning to read without other apparent disabilities

(Orton, 1929; 1966; Rome & Osman, 2004). By 1925 Orton had developed a neurological theory of the basis for this failure and had begun his work in creating alternative methods for such children to gain reading skills (McIntyre & Pickering, 1995; Orton, 1929; 1966). Orton began his work at the University of Iowa but in the early 1930s he was involved in the Language Research Project of the New York Neurological Institute where Anna Gillingham was his research assistant. In 1937, Orton published *Reading, Writing and Speech Problems*. In this work Orton attested that while the cause of the reading disability, that he called word blindness, was a neurological difference, and therefore medical, the treatment was educational and included direct instruction in phonics with multisensory support. Orton stated that he was not an authority on teaching reading to the general population but only in teaching people who failed to learn in the general education setting.

Gillingham and her colleague Stillman published a manual for teaching English in 1936. This manual relies heavily on many elements of the alphabet method but incorporates direct instruction into the sounds of letters and adds a multisensory component. This approach relied on the teaching of explicit phonics that addressed basic sound symbol concepts as well as advanced theories of the English language. The manual provided detailed instruction in how to proceed with a student in order to teach more than rudimentary sound symbols but to address more of the intricacies of the language. Gillingham continued to develop her methods with each new edition of her manual (McIntyre & Pickering, 1995). She took consulting roles at various schools and trained practitioners to use this approach. Ironically, two institutions Anna Gillingham was involved with were the Teachers College of Columbia and The Francis W. Parker School in Chicago; both described decades earlier by Huey (1973) as exemplary programs using the sentence method. After the death of both Orton and Gillingham the name the Orton-Gillingham Approach was coined by June Lyday Orton (McIntyre & Pickering, 1995), Orton's widow who was also an influential figure in developing this approach to instruction. However, the name Orton-Gillingham is not trademarked and therefore is used to describe the work of many individuals and programs.

The general assumptions have also been published into systems or methods that are more scripted. Among these specific methods are *Wilson Reading System* (McIntyre & Pickering, 1995), *Alphabetic Phonics* (McIntyre & Pickering, 1995), *Project ASSIST*, *The Spalding Method*, *Starting Over* and *Project Read* (Ritchey & Goeke, 2006). Some of the unique aspects of these approaches which can be traced back to Gillingham and Orton, are a sequence that proceeds from concrete to abstract theories, phonetic skills that are presented from most common to least common, building on known concepts to unknown, and always presenting material with simultaneous multisensory support. Gillingham and Stillman described their work as constructing trails by which the entire language would ultimately be revealed. Ramalda Bishop Spalding (2006) was influenced by the work of Orton and developed a program for general education that introduced language skills first through writing. She described her method as a Unified Phonics Method that begins with teaching the grapheme with the sound. The program is designed for first grade students who do not yet read. The names of the letters are not taught, only the sounds. Spaulding believed that by immediately providing a tactile kinesthetic association with the sound reading would follow naturally. This method is used in a general education setting but is easily adapted for remediating purposes (McIntyre & Pickering, 1995).

As phonics became more understood it became a more common classroom instruction tool. Charts, breaking reading elements into smaller units, continued to be used for initial instruction in reading. Gates (1927; 2002) correlated various aspects of reading, spelling, handwriting, and school achievement with scores on tests of visual perception and intelligence to get at the “what and why” of both reading and spelling failure. Gates developed a program for training in word perception. It was based on a number of principles: He believed the method should be simple and self-teaching. It should not be overused and should not rely on teaching what is already known. He believed little time should be devoted to phonetic training and that the associations between letter combinations and sounds came, as a rule, without special effort. Gates wrote that the difficulty is not in the association between the word and the sound but in acquaintance with the form of the word (Gates, 1927). An acquaintance with many small words

as wholes should precede training in word analysis. Gates described that phonemic training should be understood as a means of analytical work to develop a habit of seeing a word as a group of familiar and simpler parts and of seeing it more clearly, rather than seeing it confusedly or vaguely as one would at first perceive a complicated Chinese character (Adams 1990; Gates, 1927).

Monroe, a psychologist who also participated in the creation of the Dick and Jane series of basal readers wrote *Children Who Cannot Read; the Analysis of Reading Disabilities and the Use of Diagnostic Tests in the Instruction of Retarded Readers* (1932). She looked more toward the personal characteristics of backward readers for causes. Monroe's remedial program for the most challenged students made use of procedures considered outmoded and even harmful for ordinary beginning instruction: a heavy dose of synthetic phonics and motor responses like finger pointing, articulating and subvocalizing. Re-examinations of children taught by these methods showed that after the initial start in reading are made, the children became more and more like typical readers (Monroe, 1936). She described that the selection of remedial methods was made with a view to overcoming, if possible, the impediments which had prevented the child from learning to read. Drills and devices were arranged to reduce the child's excessive errors in reading, to assist in building up, as far as possible, the discriminations which the student failed to make, and to enable the student to utilize to the fullest extent the discriminations which he was able to make successfully.

Monroe (1936) acknowledged that the complexity of the reading process offered the possibility of a variety of methods of learning; reading, like thought, may be accomplished in many ways. Just as two individuals may think of the same object in entirely different modes of representation, so many different individuals learn to recognize a printed symbol in an entirely different way (Monroe, 1936). This demonstrates a building in the understanding that there was a need for a variety of modes of reading instruction.

We (Monroe and colleagues) tried to teach the children who had trouble in learning to read to utilize the possible secondary or vicarious steps in word-

recognition which are not usually presented in ordinary instruction. For example, the child whose visual discriminations were precise for small patterns, such as letters, but not for large ones, such as words, was taught by a method which began with the small units and built up the larger ones gradually. The child who had trouble in recognizing the spatial orientation of patterns was taught to use a manual cue to give the position of the pattern. The child who failed to discriminate precisely the sounds of words was taught the movements of placing the speech organs to obtain the desired sounds and hence to rely on the kinesthetic cues of articulation rather than on audition. The child who had difficulty in recalling an auditory symbol (the word as heard) when presented with a visual symbol (the word as seen) was taught to associate each with the same overt response, and hence to build up the desired associations by a secondary link. The child whose motor control of the eyes was inaccurate for keeping the place of reading was taught to utilize a combination of eye-and-hand movement in developing the desired habit.(Monroe, 1936, p. 111)

The insight of Monroe demonstrated that the theoretical basis for understanding reading failure was broad and thus requires a broad spectrum for intervention, is not a new concept. The challenge then and now is getting the theory to connect to the needs of children in classrooms. This, of course, requires such knowledge to be in the hands of teachers.

In 1986 Lindamood and Bell incorporated the Lindamood-Bell Learning Systems. Lindamood developed an approach, today known as LiPS (Lindamood Phonics Sequencing), which directly taught phonemic awareness by directly teaching the articulation of the speech sounds. This program, like Orton-Gillingham, then introduces phonology in a sequenced, multisensory fashion. Additionally, Lindamood and Bell developed the Visualizing and Verbalizing (VV) program that directly teaches a person to be able to bring understanding to text by picturing what is being asked. Visualizing and Verbalizing is a systematic approach to

teaching individuals to process language (Bell, 1991; McIntyre & Pickering, 1995). This was an acknowledgment that, while decoding is essential to reading, it does not guarantee reading comprehension. Dyslexia is the most prominent form of reading disability but non-verbal disabilities that relate more to language processes can be argued to be the most challenging to overcome (Lindamood et al., 1997).

The need for a higher level of education and thus a need for more reliable reading instruction has forced educators to examine a policy of special education that previously required failure prior to special education services. Schools have had to look at frequent assessments that more accurately assess a child's reading acquisition in order that children are kept from failure. Within the past decade schools have implemented, in addition to annual standardized testing across broad subjects, regular criterion referenced tests on specific reading skills. Such programs, including Dibels (Dynamic Indicators of Basic Early Literacy Skills) (University of Oregon, 2012) and Aimsweb (Academic Intervention Monitoring System) (aimsweb.com, 2012), allow a district to screen all first grade students on basic skills (Goo, Watt, Park & Hosp, 2010). Such tracking can also be employed to assess if a child is responding to a specific intervention. These practices, in addition to preventing children from becoming too far below the norm before receiving support, provide more data on reading progress. This kind of data is changing the perspective on reading interventions and provides an alternative such as failure to respond to intervention and access to special education services. At the same time, the benchmark testing is producing a large amount of data to analyze and increase attention on reading and reading failure. The increased testing has numerous consequences, including the perceived ability to differentiate more precisely between the performances of different schools and specific teachers. The danger is in oversimplifying data and drawing inaccurate conclusions.

The above litany of interventions introduced to children having difficulty learning to read English is but a small sample of the programs available to address the learning needs of children and adults who fail to learn to read. Despite these interventions, even those that have been demonstrated to be effective, some children with average intelligence still fail to learn to read at

a level that will support grade level educational goals. Researchers have reported that 20% to 30% of children at risk for reading difficulties, and more than 50% of children with disabilities do not respond adequately to generally effective early reading intervention (McMaster, Fuchs, Fuchs, & Compton, 2005). While this number can decrease with additional intensive interventions to include all but 25% of those remaining children (McMaster et al., 2005), it is only with intensive instruction. Such intensive instruction, beyond a third tier program, is not available to the degree needed at the schools where the largest numbers of children are failing.

### **Sounds First Reading System (SFRS)**

What is common among all of the approaches to remediating reading delays is a process to help children learn to read new words quickly as well as permanently as possible. That is the same goal of SFRS. But what SFRF offers is an easy code laid over a difficult code. The simple idea is to make reading English easy because everyone needs to be able to do so and within the first two years of elementary school.

Sounds First Reading System (SFRS), most simply stated, is a phonemic respelling for English that is based on some of the actual spellings of the sounds of English. It provides a reliable tool for pronouncing some of the less obvious spellings in English as well as a tool to allow early readers more rapid access to complex text. Code that uses actual spellings of the sounds of English contributes to a person's overall learning of the phonetic code. The frequency of the spellings is consistent with other phonics programs (Rome & Osman, 2004). Further, because the code is only used as support, and the actual spellings are always the primary presentation, it has the potential to provide incidental learning of English without having to learn the complex rules of English phonics (C. B. Smith, 1994; F. Smith, 1992; Spare, 2008; K. Goodman, 2005). Early reading habits are linked with stronger reading skills in longitudinal studies (Cunningham & Stanovich). Because the code can be used on any text, there is the potential for a child to access material that is of interest to them and can lead to early interest in reading and a more likely lifelong engagement with text.

Sounds First Reading System provides a clear code through which words can be

pronounced. The informing code is always distinguished from the traditional code, unless they are the same, which is true for a significant portion of the words, especially when using phonetically controlled texts. The distinction is obvious through the use of color, green or red, and a specific font (Comic Sans). When one decodes, be it from an alternative code, the word is learned more rapidly than if given the word. By having the alternate code available, instead of learning the word by rote memory, the decoding of the word is being processed and therefore can be learned more easily. Further, the decoding of the word can be done within the context of sentences and meaning so that with the correct pronunciation the meaning is also informed by the context of the passage. Such a process, in which the mechanism used to learn the word is different from the mechanism used to retrieve a word falls theoretically within existing two-cycle models of reading (Berent & Perfetti, 1995; Stanovich, 2000). Two-cycle models of reading attribute the learning of reading to be a related but different neurological process than the process used for the fluent reading of text (Share, 2008).

Reading pertains to a broad understanding of gaining information through print. However, there is much speculation on what the underlying cognitive mechanisms are those that support fluent reading. Reading involves decoding when dealing with unfamiliar words; however, once a word is known, it no longer is decoded but is recognized. Therefore, while phonemic awareness and decoding contribute to reading, they are primarily relied on in order to learn to read. A dual route model entails relying on a phonemic initiation, how a word is retrieved appears to rely on other cognitive mechanisms (Share, 2008; Stanovich, 2000). To provide an adequate account for the decoding of regular and exception words, reading models must distinguish the relative contribution of stipulated versus productive information in decoding these two types of words. According to dual-route models (Berent & Perfetti, 1995), although the assembly of phonology is indispensable for the decoding of non-words and new words, it is not necessary for familiar words whose phonological forms can be obtained by retrieving their stored representation from the mental lexicon. When reading for fluency, using decoding skills is not only not necessary but is sometimes detrimental to recognition (Berent & Perfetti, 1995;

Stanovich, 2000).

Dual route models acknowledge the feasibility that how a word is recalled can be different than how the word is decoded or learned. Different schemes that address the neurological processes of reading are beyond the scope of this chapter, but through experience most people can relate to a difference in first encountering an unknown word and then knowing that word at a later time. The process of seeing the unknown word in print can be helpful but not always. Sounds First Reading System provides a more accessible tool to learn the word so that the reader can maintain a level of focus to benefit from the word in the context of the text. Once a word has an auditory connection, while it may be still difficult to spell, one can read the words. What separates SFRS from other reading interventions is the ability for the correction or support for reading to remain visual and therefore support the original route by which a word is being processed. Based on observation, this allows the word to be more rapidly internalized by the student and then more rapidly become a word that is retrieved with automaticity.

## **CHAPTER III**

### **Methodology**

This research is to explore the efficacy of Sounds First Reading System (SFRS), a new method of teaching reading developed by this author, through a review of existing records of 18 participants previous to and after receiving SFRS in comparison to 18 matched students from the same school who received two years of the existing intervention. SFRS was developed over the course of six years during which time it was used in instruction with much delayed adolescent and adult readers. In April, 2010 SFRS was registered with the U.S Register (registration number TXu 1-683-931). The participants in this study were among the first students to be taught by someone other than the author. All of the students and teachers involved in this study are at the school in which the author is employed.

### **Participants Selection**

The 36 children in the study were all students at a not-for-profit private school in a Midwest city exclusively for children with language learning disabilities. Eighteen participants of the study were selected because they had received SFRS instruction in the course of their school day. The school had selected them to participate with SFRS as part of their curriculum because they were not making adequate progress in reading skills. All of the students had received specialized reading instruction over the course of their education. They were selected by a team that included the school psychologist, the Head of School, and the classroom teacher with input from the parents. The 18 students in this study were selected from a lower school population of 58 children ranging in grades 1 through 8 because these 18 children made ideal participants due to a weak response to Orton-Gillingham (OG) instruction, which was the intervention the students had most recently been receiving. Eighteen other participants were chosen as a control. The control students were chosen through records and matched based on the profile (age, sex, academic profile) of children who received two years of OG instruction. Progress in the efficacy of OG instruction in reading and spelling skills was measured in part by scores on five subtests of the *Woodcock Johnson III Tests of Achievement* (WJ III ACH;

Woodcock & Mather, 2001). Standard scores below 85 (mean 100, Standard Deviation 15) on one or more of the reading subtests (Word Attack, Word Identification, Passage Comprehension or Reading Fluency) of the WJ III ACH after a year of intervention with Orton-Gillingham reading instruction were chosen to participate in Sounds First Reading System (SFRS). Participants who were selected to participate with SFRS instruction had all been at the school for at least one year prior to participating in SFRS. During the year prior to participating in SFRS all of the potential participants received Orton-Gillingham instruction, which is direct instruction in phonics. Sounds First Reading System was introduced at the school as a higher tier intervention and therefore the expectation was that the effect would be more rapid than the previous tier.

### **Instrumentation**

Five subtests of the WJ III ACH were used as measures of progress for the study. These subtests were administered on three occasions with each child. The subtests given that are part of the study were four in the WJ III ACH basic battery; Letter-Word Identification, Reading Fluency, Passage Comprehension, and Spelling and one from the extended battery, the test of Word Attack.

The WJ III ACH is a nationally standardized assessment designed to evaluate people between the ages of 2 and 90 years. The standardization sample included over 8,000 individuals with demographic and community characteristics closely matching the general U.S. population (McGrew & Woodcock, 2001). The WJ III ACH includes a total of 22 subtests in two forms (form A and form B). The subtests that were used in this study are appropriate based upon the participant's age and grade level. In addition the WJ III ACH is designed to be both a research tool and a clinical tool. Raw scores can be converted to standard scores with a mean of 100 and a standard deviation of 15. Standard scores range between 54 and 146. Standard scores of 69 and below are described as Very Low, standard scores between 70 to 79 are described as Low, standard scores between 80 to 89 are described as Low Average, standard scores between 90 to 110 are described as Average, 111 to 120 are described as High Average, 121 to 130 are

described as Superior, and 131 and above are described as Very Superior. Testing is sensitive to changes over the course of an academic year and therefore the test can compare a midyear student to other midyear students in the same age group (Woodcock & Mather, 2001). This allows for more accurate progress monitoring than simply a pre and post year assessment (Woodcock & Mather, 2001).

Four sources of validity evidence (a) test content, (b) developmental patterns of scores, (c) internal structure, and (d) relationships to other external variables are reported in the WJ III Technical Manual. The clusters, which are considered the most reliable model to evaluate test results, are compared with clusters of other major achievement tests. The reliability of the basic reading cluster (Word Identification, Reading Fluency and Passage Comprehension) was compared to similar clusters in other widely used achievement tests. The WJ III Total Achievement score had a correlation of .65 with the *Wechsler Individual Achievement Test* (WIAT; Wechsler, 1992) Total Achievement composite and .79 with the *Kaufman Test of Educational Achievement* (KTEA; Kaufman & Kaufman, 1985) battery composite.

**The Letter-Word Identification** subtest is designed to evaluate individual word decoding; to be successful on this subtest the child does not have to know what the word means. Letter-Word Identification requires a child to read words from a list. The words get progressively more challenging. The Word Identification subtest has a split half median reliability of .91 in the age 5 to 19 range (Woodcock et al., 2001, p. 11).

**Reading Fluency** is a measurement of reading rate and reading accuracy. Reading fluency is an attribute that is seen as best predicting long term reading comprehension (Landrel & Wimmer, 2008) and the likelihood that reading would provide a tool for lifelong learning (Ferrer et al., 2010; Landrel & Wimmer, 2008). It is a skill that is a persistent weakness for people with reading disabilities into adulthood (Ferrer et al., 2010; Landrel & Wimmer, 2008; Stanovich, 2000). The fluency subtest requires a child to quickly read and analyze sentences. The Reading Fluency subtest has a split half median reliability of .90 in ages 5 to 19 (Woodcock et al., 2001, p. 11; McGrew & Woodcock, 2001).

The **Spelling** subtest is a written test for individual word spelling. The subtest requires a child to spell individually dictated words. The examiner says the word, uses the word in a sentence and says the word again. The words do not favor consistent spelling patterns, nor do the two forms correlate in what patterns are being measured (Calhoun, Greenberg & Hunter, 2010). The subtest has a split half median reliability of .89 for ages in the 5 to 19 range (Woodcock et al., 2001; McGrew & Woodcock, 2001).

**Passage comprehension** is designed to be a test of reading comprehension. It requires both comprehension of the phrase as well as word retrieval skills. The Passage Comprehension subtest requires a child to read a phrase, sentence or brief paragraph in which a word is missing and then supply the missing word. The Passage Comprehension subtest becomes increasingly difficult in that the passages become longer, the vocabulary and syntax become more complex and there are fewer semantic cues. The Passage Comprehension split half median reliability for the 5 to 19 age range is .83 (Woodcock et al., 2001, p. 13; McGrew & Woodcock, 2001)).

**Word Attack** is designed to assess a child's ability to decode unfamiliar words by applying phonetic analysis. This subtest requires the child read from a list of pseudo words with common word patterns. The split half median reliability for the 5 to 19 age range is .87 (Woodcock et al., 2001, p. 14; McGrew & Woodcock, 2001).

### **Procedures**

The participants were assessed individually using five subtests of the WJ III ACH on three occasions. Testing was conducted before the beginning of the school year, this is the Baseline, in which they received Orton-Gillingham instruction. Testing was then conducted near the end of the academic year following the OG instruction (10 months later) referred to as Assessment 2. Those two sets of data represent students' performance in an existing top tier reading intervention. All of the components identified by the National Reading Panel (NRP, 2000) as best practice for teaching reading were present in the OG instruction and all of the teachers had appropriate training according to the Academy of Orton-Gillingham Practitioners and Educators (Academy, 2012). The third testing was conducted near the end of the academic

year after receiving SFRS (12 months later) or a second year of OG instruction referred to as Assessment 3. The results of the second and third testing sessions will provide the second data sets.

During the first year each student received Orton-Gillingham instruction within the course of their school day. The instruction was delivered individually or in a small group. The setting was specifically chosen for the child's needs. Students had direct instruction twice a week with individual oral reading during the instruction and then two days in which they had oral reading for twenty minutes with an adult. Orton-Gillingham is an approach to teaching reading and spelling that incorporates multisensory support while directly teaching the multiple spellings of English in a sequence that moves from the known to the unknown, simple to complex, concrete to abstract, common to less common. This approach relies on the use of repetition and the aim is teaching to mastery by always supporting previously taught materials in regular reviews (Gillingham & Stillman, 1997; Rome & Osman, 2002). The focus of this approach is simultaneously teaching spelling with reading as a tool to support reading. The rules are taught to allow a child to repeat them until the rule is mastered; both in a child's ability to repeat the rule and to apply it in their reading and spelling. The ideal reading material for Orton-Gillingham instruction is phonetically controlled texts that allow the child to practice the specific skills they have been taught.

During the first year, which is being used as a baseline, students received direct instruction of phonics, with multisensory support; known as Orton-Gillingham instruction. This approach to teaching reading and spelling simultaneously represents a current intervention that is recognized as a research based intervention for children with language learning disabilities (McIntyre & Pickering, 1995; Ritchey & Goeke, 2006). The approach includes the direct instruction of phonemic awareness that teaches children to manipulate phonemes in words. Lessons focus on one phoneme or grapheme at a time. The children are generally taught in small groups with some in individual instruction. The phonics instruction is explicit, synthetic and systematic. Comprehension is taught by oral questioning with immediate feedback. Teachers

are given 60 hours of training in the first year of teaching and 100 hours of supervised practicum. This is followed by regular in-services for ongoing support. Fluency is supported by using instructional level reading both in a lesson and independently on the same material; resulting in a block of twenty minutes of guided oral reading four days a week. All of these practices are supported by the National Reading Panel (NRP, 2000; Rome & Osman, 2004). Despite this research based support, the progress in reading acquisition for the students chosen to participate in SFRS was not adequate to attain age level reading skills. The baseline being from an existing method then has the potential to add a higher level tier of instruction. Further, it would limit the potential for a Hawthorne effect; in essence, the students are used to receiving an intervention.

During the second academic year, the control participants received a second year of OG instruction while the sample subjects received instruction in SFRS in the course of their day. The 18 SFRS sample students received individual or small group instruction two days a week and daily practice. The practice was a minimum of twenty minutes each day. Sounds First Reading System, the intervention, has a sequenced lesson progression that is based on what a child knows prior to beginning the intervention. Therefore, it is individualized in that a student is not taught information they have already mastered. The reading material used is fully coded and therefore, while specific sounds have been introduced, the child has a potential to learn them incidentally through reading. The intervention, regardless of where the student begins, is direct instruction of unknown phonemes with one spelling integrated into a number of drills to provide a reliable phonemic code to inform reading. For example, the student is taught ai as in maid for the spelling of the long a sound. The long a sound has seven “regular” spellings (as in baby, tape, maid, pay, eight, vein, prey. Ultimately the goal is for each student to know all forty-two phonemic spellings in the code and be able to decipher any coded text as a process of learning to read regular English text. The testing, both pre and post, is with regular English text. More advanced students would likely know more of the sounds before beginning (See Appendix for more detail of the alphabetic code).

**Research Question 1.** Using a matched control sample of 18 students from

previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Word Identification using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS. Two-way ANOVA with between subjects and within subjects will be run to determine if there are differences in the patterns of achievement in raw scores of the WJ III ACH test of Word Identification between students who had two years of OG instruction in contrast to students who had one year of OG instruction followed by one year of SFRS instruction.

**Research Question 2.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Word Attack using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS. Two-way ANOVA with between subjects and within subjects will be run to determine if there are differences in the patterns of achievement in raw scores of the WJ III ACH test of Word Attack between students who had two years of OG instruction in contrast to students who had one year of OG instruction followed by one year of SFRS instruction.

**Research Question 3.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Passage Comprehension using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS. Two-way ANOVA with between subjects and within subjects will be run to determine if there are

differences in the patterns of achievement in raw scores of the WJ III ACH test of Passage Comprehension between students who had two years of OG instruction in contrast to students who had one year of OG instruction followed by one year of SFRS instruction.

**Research Question 4.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Spelling using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS. Two-way ANOVA with between subjects and within subjects will be run to determine if there are differences in the patterns of achievement in raw scores of the WJ III ACH test of Spelling between students who had two years of OG instruction in contrast to students who had one year of OG instruction followed by one year of SFRS instruction.

**Research Question 5.** Using a matched control sample of 18 students from previous years in the same school, is there a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Reading Fluency using the mean of the baseline, the mean after a year of OG and the mean after a second year of OG compared to the original sample of 18 students at the baseline, after a year of OG and after a year of SFRS? Two-way ANOVA with between subjects and within subjects will be run to determine if there are differences in the patterns of achievement in raw scores of the WJ III ACH test of Reading Fluency between students who had two years of OG instruction in contrast to students who had one year of OG instruction followed by one year of SFRS instruction.

## **CHAPTER IV**

### **Results**

The sample of 18 students who were given instruction with SFRS included 13 boys and 5 girls. They ranged in age from 7.5 years to 13.3 years with the mean of 12.48 years and the standard deviation of 1.92 years. The matched control sample records from 18 students included 11 boys and 7 girls. They ranged in age from 7.8 years to 13.2 years with the mean of 10.59 years and the standard deviation of 1.69 years. A t-test was conducted for each of the variables (see Table 1) used to match the groups' scores at the baseline. There were no significant differences between the means of the two samples for the demographic variables.

Table 1

T-Tests Comparing Baseline Means Between the SFRS Sample and the Matched Control.

Variable	<i>Levene's test</i>		<i>Independent sample T-test</i>				
	<i>F</i>	<i>p</i>	<i>sample</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Age	.429	.52	control	126.94	20.34	.176	.86
			SFRS	125.67	23.05		
Gender	1.816	.19	control	3.39	.5	.692	.49
			SFRS	3.28	.46		
Word Identification	2.415	.129	control	36.61	8.81	.02	.99
			SFRS	36.56	10.09		
Word Attack	.036	.851	control	11.89	6.48	.28	.78
			SFRS	12.44	5.33		
Passage Comprehension	.016	.902	control	20.33	6.46	.38	.71
			SFRS	19.56	5.92		
Spelling	.657	.423	control	23.11	5.19	.06	.95
			SFRS	23.22	5.95		
Reading Fluency	.003	.955	control	19.22	12.95	.725	.47
			SFRS	16.11	12.79		

Note: Each t-test had *df*(34).

### Letter-Word Identification

A two-way ANOVA with between and within subjects factors was run to determine if there were differences in the patterns of achievement in raw scores of the WJ III ACH test of

Word Identification between students who had two years of Orton Gillingham (OG) instruction (the control) in contrast to students who had one year of OG instruction followed by one year of SFRS instruction. The between factor is the type of intervention of which there are two: the control, which has OG instruction only, and the SFRS, which has OG instruction and SFRS instruction. The within factor is time between the three assessments of the WJ III ACH Word Identification subtest which were taken, at Baseline and at Assessment 2, which was after the first academic year and at Assessment 3 which was after the second academic year.

The two-way ANOVA has five assumptions: independence, scale of measurement, normality, homogeneity of variances and sphericity. These will be addressed before reporting the results of the ANOVA. The assumption of independence, which assumes a random sample, is a limit on this study. The original 18 participants were selected for academic needs and therefore, rather than being a random sample are a sample of convenience. Because a random sample is an assumption, and one is not being used, the generalizability of the results is limited. A lack of a random sample is a threat to the external validity of the results. Therefore, these results provide information on this particular sample but a study with a random sample would be needed before results could be generalized.

The assumption of the scale of measurement is met in that the measure used was the WJ III ACH Test of Letter-Word Identification, a well-validated nationally standardized assessment designed to evaluate people between the ages of 2 and 90 years. This assessment is a common tool in reading research (Calhoun et al., 2010) which is in part why the school in this study chose it for their annual assessment.

The Kolmogorov-Smirnov test was used to test normality. The results (see Table 2) indicated that the WJ III ACH Letter-Word Identification subtest at all three intervals was normally distributed with the exception of the SFRS sample of the third assessment point.

Table 2

## Kolmogorov-Smirnov Test of Normality for Letter-Word Identification

Assessment	Intervention Group	Statistic	<i>df</i>	<i>p</i>
Baseline	control	0.179	18	.134
	SFRS	0.162	18	.200
Assessment 2	control	.155	18	.200
	SFRS	.172	18	.171
Assessment 3	control	.156	18	.200
	SFRS	.221	18	.02

Assessment 2 followed a year of Orton-Gillingham instruction for both intervention groups, Assessment 3 followed a 2<sup>nd</sup> year of Orton-Gillingham instruction for the control and a year of SFRS instruction for the SFRS group.

The homogeneity of variance according to Levene's test (see Table 3) was met at each of the assessment points.

Table 3

Levene's Test of Equality of Error Variances for Letter-Word Identification

Assessment	F	df1	df2	p
LWID at Baseline	2.415	1	34	.129
LWID at 2 <sup>nd</sup> Assessment	1.330	1	34	.257
LWID at 3 <sup>rd</sup> Assessment	2.513	1	34	.122

The fifth assumption, sphericity, was assessed using the Mauchly's test of sphericity which was significant,  $\chi^2(2) = .829$ ,  $p < .05$  and therefore the Greenhouse-Geisser correction F was used.

Table 4

*Analysis of Variance for WJ III ACH Letter-Word Identification*

Source	df	MS	F	p	$\eta^2$
Between Subjects					
Group	1	.03	.00	.98	.00
Error	34	65.34			
Within Subjects					
LWID	1.71	912.94	70.15	.00	.67
LWID X Group	1.71	9.4	.72	.46	.02
Error	58.078	13.01			

The results (see Table 4) indicate that there was not a significant interaction between the two groups,  $F(1, 34) = .00, p = .98$ . There was a significant difference between the means of the raw scores in each of the assessment points of the WJ III ACH Letter-Word Identification raw scores,  $F(1.708, 58.078) = 70.152, p < .001, partial \eta^2 = .67$ . There was not a difference in the pattern of achievement in the raw scores over time of WJ III ACH Letter-Word Identification using the mean of the Baseline, the mean at Assessment 2 and the mean at Assessment 3 compared to the original sample of 18 students at the Baseline, at Assessment 2, and at Assessment 3,  $F(1.708, 58.078) = .722, p = .469$ .

For the significant increase of the means over time as measured by the three assessments, the effect accounts for 67% of the variance in Letter-Word Identification that can be explained by the change over time.

**Table 5**  
Repeated Measures Pairwise Comparison for WJ III Ach test of Letter-Word Identification

LWID assessment	LWID assessment	Mean Difference	Standard Error	Sig*
1	2	4.472	.754	.000
2	3	4.833	.652	.000

\*Adjusted for multiple comparisons: Bonferroni

The Repeated Measures Pairwise Comparison was used to explore the significant mean changes in the raw score of the Letter-Word Identification subtests that were revealed through the ANOVA. The ANOVA identify changes but does not identify what the specific changes were. The Repeated Measures Pairwise Comparison with Bonferroni correction was conducted to address this. The changes in the mean raw scores in both instances were significant, and therefore indicated the raw scores of the Letter Word Identification subtest increased over time for both groups on Assessment 2 and on Assessment 3.

### Word Attack

A two-way ANOVA between subjects and within subjects was run to determine if there were differences in the patterns of achievement in raw scores of the *WJ III ACH* Test of Word Attack between students who had two years of OG instruction (the control) in contrast to students who had one year of OG instruction followed by one year of SFRS instruction. The between factor was the type of intervention of which there were two, the control, that had OG instruction, and the SFRS, that had OG instruction and SFRS instruction. The within factor was time between the three assessments of the Word Attack subtest which were taken at the baseline and at Assessment 2, after the first academic year and at Assessment 3, at the end of the second academic year.

The first things to consider with the two-way ANOVA are the five assumptions: independence, scale of measurement, normality, homogeneity of variances and sphericity. These are assumed as conditions for the test to be valid. The assumption of independence, which assumes a random sample, as mentioned above, is a limit on this study. The original 18 participants were selected for academic needs and therefore, are not a random sample, which limits the generalizability of the results. The *WJ III ACH* test of Word Attack a nationally standardized assessment designed to evaluate people between the ages of 2 and 90 years was used which supports the assumption of independence of scale.

The Kolmogrov-Smirnov test was used to test for the assumption of normality. The result indicated that the Word Attack subtest at all three intervals were normally distributed (see Table 6).

Table 6

Kolmogrov-Smirnov Test of Normality for Word Attack (WA)

Assessment	Intervention Group	Statistic	<i>df</i>	<i>p</i>
WA at Baseline	Control	.154	18	.200
	SFRS	.187	18	.097
WA at Assessment 2	Control	.113	18	.200
	SFRS	.122	18	.200
WA at Assessment 3	Control	.194	18	.071
	SFRS	.137	18	.200

The means at the three assessment points met the assumption of homogeneity according to Levene's test (see Table 7).

Table 7

Levene's Test of Equality of Error Variances for Word Attack (WA)

Assessment	F	<i>df</i> 1	<i>df</i> 2	<i>p</i>
WA at Baseline	.036	1	34	.851
WA at Assessment 2	.060	1	34	.808
WA at Assessment 3	.214	1	34	.647

The fifth assumption, sphericity was assessed using the Mauchly's test of sphericity and

was not significant,  $\chi^2(2) = .9, p = .176$ . Therefore sphericity was assumed.

Table 8 *Analysis of Variance for Word Attack*

Source	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between Subjects					
Group	1	2.6	.113	.74	.003
Error	34	23.07			
Within Subjects					
WA	2	495.34	57.36	.00	.63
WA X Group	2	14.73	1.71	.19	.05
Error	68	8.635			

The results (see table 8) indicated that there was not a significant difference in the performance of the students in the two samples,  $F(1, 34) = .113, p = .74$ . There was a significant difference between the means of the raw scores at each of the assessment points of the Word Attack scores,  $F(2, 68) = 57.364, p < .001, \eta^2 = .63$ . There was not a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Word Attack using the mean of the baseline, the mean after a year of OG instruction and the mean after a second year of OG instruction compared to the original sample of 18 students at the Baseline, at Assessment 2, after a year of OG instruction, and at Assessment 3, after a year of SFERS instruction,  $F(2, 68) = 1.706, p = .189$ .

For the increase of the means over time as measured by the three assessments, the effect accounted for 63% of the change.

Table 9

Repeated Measures Pairwise Comparison for WJ III ACH Word Attack (WA)

WA assessment	WA assessment	Mean Difference	Standard Error	Sig*
1	2	4.639	.728	.000
2	3	2.694	.575	.000

\*Adjusted for multiple comparisons: Bonferroni

The Repeated Measure Pairwise Comparison indicated there was significant change between each of the three subtests at each level (see Table 9).

### Passage Comprehension

A two-way ANOVA between subjects and within subjects was run to determine if there were differences in the patterns of achievement in raw scores of the WJ III ACH test of Passage Comprehension between students who had two years of Orton Gillingham (OG) instruction (the control) in contrast to students who had one year of OG instruction followed by one year of SFRS instruction. The between factor is the type of intervention of which there are two, the control which had OG instruction and the SFRS that had OG instruction and SFRS instruction. The within factor is time between the three assessments of the Passage Comprehension subtest which were taken at the Baseline, at Assessment 2 after the first academic year and at Assessment 3 after the second academic year.

As with the previous ANOVA's five assumptions were considered. Independence was violated because the sample was not random. The *WJ III ACH* test of Passage Comprehension is a nationally standardized assessment designed to evaluate people between the ages of 2 and 90 years was used which supports the assumption of independence of scale. The Kolmogrov-Smirnov test was used to test normality. The result indicated that the Passage Comprehension subtest was normally distributed at all three intervals with the exception of the control sample at the third assessment point (see Table 10).

Table 10

Kolmogrov-Smirnov test of Normality for Passage Comprehension

Assessment	Intervention Group	Statistic	<i>df</i>	<i>p</i>
Baseline	control	.102	18	.200
	SFRS	.164	18	.200
2 <sup>nd</sup> assessment	control	.091	18	.200
	SFRS	.127	18	.200
3 <sup>rd</sup> assessment	control	.223	18	.018
	SFRS	.104	18	.200

The three groups met the assumption of homogeneity according to Levene's test (see Table 11).

Table 11

Levene's test of equality of Error Variances for Passage Comprehension (PC)

Assessment	F	<i>df</i> 1	<i>df</i> 2	<i>p</i>
PC at Baseline	.016	1	34	.902
PC at 2 <sup>nd</sup> assessment	.012	1	34	.914
PC at 3 <sup>rd</sup> assessment	1.535	1	34	.224

The fifth assumption, sphericity was assessed using the Mauchly's test of sphericity and was not significant,  $\chi^2(2) = .894$ ,  $p = .158$  and therefore met the assumption.

Table 12

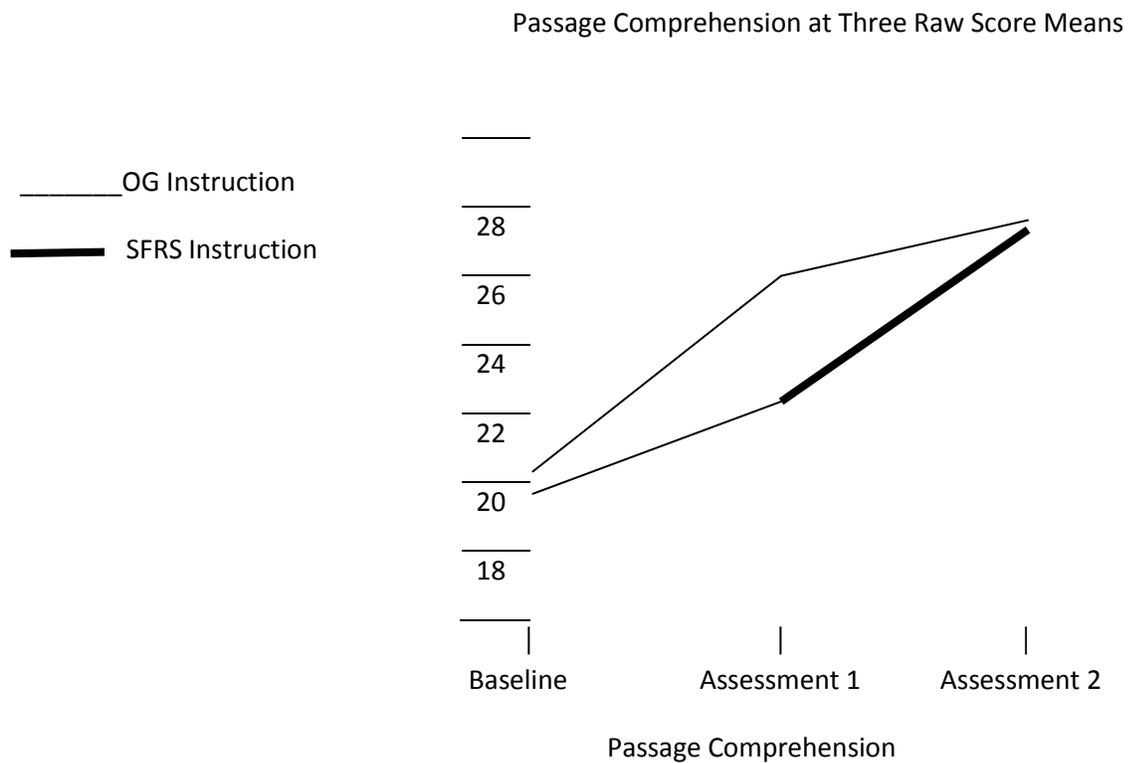
<i>Analysis of Variance for Passage Comprehension</i>					
Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between Subjects					
Group	1	21.78	.904	.348	.026
Error	34	24.1			
Within Subjects					
PC	2	501.78	62.85	.00	.65
PC X Group	2	30.78	3.85	.026	.102
Error	68	7.98			

The results (see table 12) indicated there was not a significant difference between the performances of the two groups,  $F(1, 34) = .904, p = .348$ . There was a significant interaction with Passage Comprehension (PC) and the two intervention groups (Groups),  $F(2,68) = 3.85, p < .05, \eta^2 = .10$ , indicating there was a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Passage Comprehension using the mean of the Baseline, at Assessment 2, and at Assessment 3, compared to the original sample of 18 students at the Baseline, at Assessment 2 and at Assessment 3. This indicates that the patterns of achievement differed.

The ANOVA provides evidence that the interaction was significant but it does not provide the details of the interaction. Therefore, it is necessary to use post hoc procedures to understand the interaction. The plots of the estimated means provide a good indication of what may have occurred. When reviewing the plots of the estimated marginal means (see Graph 1)

the pattern appears to indicate that during the first year, in which all of the children received OG instruction, the sample students performed poorly in comparison to the control. However, during the second year the children with the SFRS instruction gained enough to bring them to about the same level of the control. This was explored further by conducting weighted contrasts using a Bonferroni correction with 2 simultaneous comparisons at Assessment 2 and Assessment 3. At Assessment 2 there was not a significant difference,  $t(34) = 2.241$ , and there was not a significant difference at the third assessment,  $t(34) = 1.4602$ .

Graph 1



### Spelling

A two-way ANOVA between subjects and within subjects was run to determine if there were differences in the patterns of achievement in raw scores of the WJ III ACH test of Spelling between students who had two years of Orton-Gillingham (OG) instruction (the control) in contrast to students who had one year of OG instruction followed by one year of SFRS

instruction. The between factor is the type of intervention of which there are two, the control, that had OG instruction, and the SFRS, that had OG instruction and SFRS instruction. The within factor is time between the three assessments of the Spelling subtest which were taken at Baseline, at Assessment 2 and at Assessment 3.

The two-way ANOVA was conducted with the means of the three assessments in the two groups. The five assumptions: independence, scale of measurement, normality, homogeneity of variances and sphericity were considered. The assumption of independence, which assumes a random sample, is a limit on this study because it was a sample of convenience and was selected rather than randomly assigned. Because a random sample is an assumption, and one is not being used, the generalizability of the results is limited. The *WJ III ACH* test of Spelling a nationally standardized assessment designed to evaluate people between the ages of 2 and 90 years was used which supports the assumption of independence of scale.

The Kolmogrov-Smirnov test was used to test normality. The result indicated that the Spelling subtest was normally distributed at all three intervals (see Table 13).

Table 13

Kolmogrov-Smirnov Test of Normality for Spelling

Assessment	Intervention Group	Statistic	<i>df</i>	<i>p</i>
Baseline	control	.120	18	.200
	SFRS	.126	18	.200
Assessment 2	control	.112	18	.200
	SFRS	.187	18	.094
Assessment 3	control	.131	18	.200
	SFRS	.182	18	.119

The three groups met the assumption of homogeneity according to Levene's test (see Table 14).

Table 14

Levene's Test of Equality of Error Variances for Spelling (Sp)

Assessment	F	<i>df</i> 1	<i>df</i> 2	<i>p</i>
Sp at Baseline	.657	1	34	.423
Sp at Assessment 2	1.721	1	34	.198
Sp at Assessment 3	1.293	1	34	.263

The fifth assumption, sphericity was assessed using the Mauchly's test of sphericity The

Mauchly's test of sphericity was not significant,  $\chi^2(2) = .921$ ,  $p = .257$ , and therefore the sphericity assumption was met.

Table 15

<i>Analysis of Variance for Spelling</i>					
Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between Subjects					
Group	1	12.62	.459	.503	.013
Error	34	27.57			
Within Subjects					
Spelling	2	156.33	39.78	.00	.54
Sp X Group	2	16.04	4.080	.02	.11
Error	68	3.93			

The results (see Table 15) indicate that there was not a significant difference between the two groups,  $F(1, 34) = .459$ ,  $p = .503$ . There was a significant interaction with the Spelling and the two instruction Groups,  $F(2,68) = 4.080$ ,  $p < .05$ ,  $\eta^2 = .11$ , indicating there was a difference in the pattern of achievement in the raw scores over time of the WJ III ACH test of Spelling using the mean of the Baseline, the mean at Assessment 2 and the mean at Assessment 3 compared to the original sample of 18 students at the Baseline, at Assessment 2 and at Assessment 3. This indicates that the patterns of achievement differed. This interaction had a small effect size of 11%.

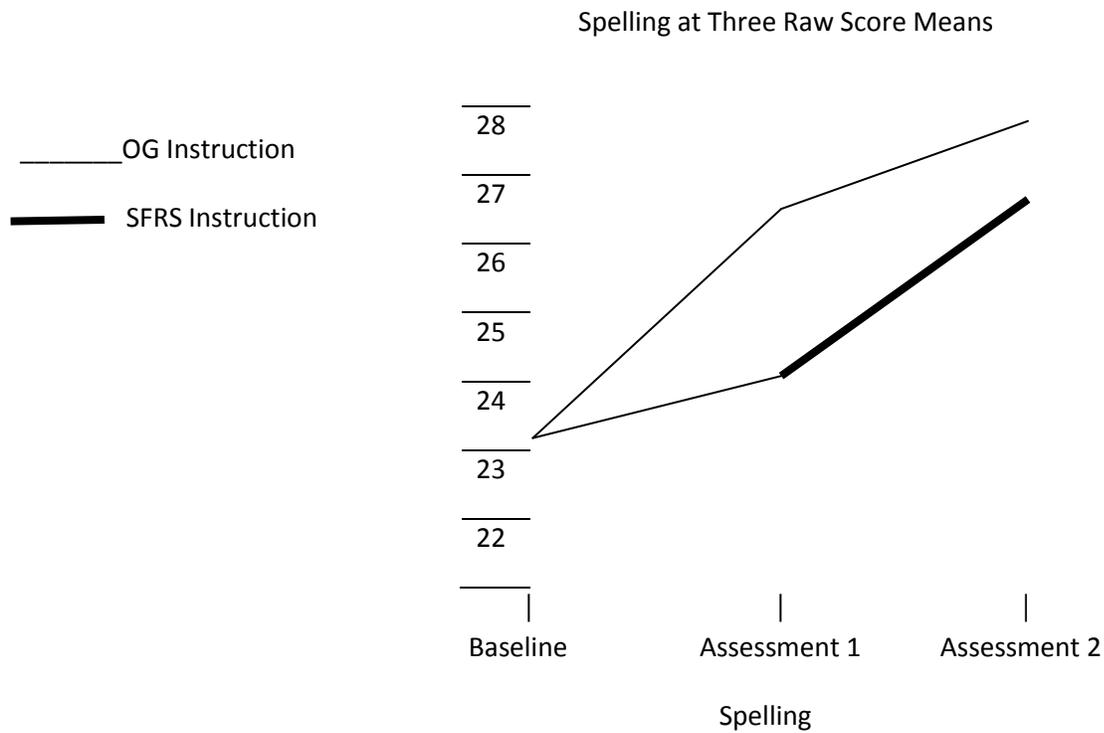
ANOVA will identify an interaction but it does not provide a description of the

interaction. To gain an understanding of what may have led to the significant interaction the plot of estimated marginal means provides insight. When reviewing the plots (see Graph 2) of the estimated marginal means the pattern appears to be widened at Assessment 2 and closer at Assessment 3. This was explored further by conducting weighted contrasts using a Bonferroni correction with 2 simultaneous comparisons at Assessment 2 and Assessment 3. There was not a significant difference at Assessment 2,  $t(34) = 1.46$ . There was also not a significant difference at the 3<sup>rd</sup> Assessment,  $t(34) = .6349$ .

Graph 2

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Spelling Raw Score Means



**Reading Fluency**

A two-way ANOVA between subjects and within subjects was run to determine if there were differences in the patterns of achievement in raw scores of the WJ III ACH test of Reading

Fluency between students who had two years of OG instruction (the control) in contrast to students who had one year of OG instruction followed by one year of SFRS instruction. The between factor is the type of intervention of which there are two the control, that has OG instruction, and the SFRS, that has OG instruction and SFRS instruction. The within factor is time between the three assessments of the Reading Fluency subtest which were taken at Baseline, at Assessment 2 and at Assessment 3.

As indicated previously, the two-way ANOVA has five assumptions; independence, scale of measurement, normality, homogeneity of variances and sphericity. The assumption of independence, which assumes a random sample, is a limit on this study because the participants were selected based on an educational profile. The *WJ III ACH* test of Reading Fluency is a nationally standardized assessment designed to evaluate people between the ages of 2 and 90 years was used which supports the assumption of independence of scale.

The Kolmogrov-Smirnov test was used to test normality. The result indicated that the Reading Fluency subtest at all three intervals was normally distributed (see Table 16).

Table 16

Kolmogrov-Smirnov Test of Normality for Reading Fluency

Assessment	Intervention Group	Statistic	<i>df</i>	<i>p</i>
Baseline	control	.170	18	.179
	SFRS	.159	18	.200
Assessment 2	control	.184	18	.107
	SFRS	.109	18	.200
Assessment 3	control	.123	18	.200
	SFRS	.117	18	.200

The three groups met the assumption of homogeneity according to Levene's test (see Table 17).

Table 17

Levene's Test of Equality of Error Variances for Reading Fluency (RF)

Assessment	F	<i>df1</i>	<i>df2</i>	<i>p</i>
RF at Baseline	.003	1	34	.955
RF at Assessment 2	.018	1	34	.895
RF at Assessment 3	.015	1	34	.904

The fifth assumption, sphericity, was assessed using the Mauchly's test of sphericity which was significant,  $\chi^2(2) = .568$ ,  $p < .001$ , and therefore the Greenhouse-Geisser correction F

was used.

Table 18

<i>Analysis of Variance for Reading Fluency</i>					
Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between Subjects					
Group	1	91.31	.685	.414	.02
Error	34	133.3			
Within Subjects					
RF	1.396	507.19	64.321	.00	.65
RF X Group	1.396	73.613	1.89	.17	.05
Error	47.48	38.98			

Table 19

Repeated Measures Pairwise Comparison for WJ III ACH Reading Fluency (RF)

RF Assessment	RF Assessment	Mean Difference	Standard Error	Sig*
1	2	7.750	1.197	.000
2	3	6.167	.833	.000

\* Adjusted for multiple comparisons: Bonferroni

The Repeated Measure Pairwise Comparison with Bonferroni adjustment is a planned procedure calculated to explore the significant changes in the ANOVA. The ANOVA identifies

when a change is significant but it does not identify the specific changes. The Repeated Measure Pairwise Comparison with Bonferroni correction indicated there was significant change at Assessment 2 and Assessment 3 and in a positive direction indicating the children made significant gains in raw scores on the Word Attack assessment (See Table 19).

## CHAPTER V

### Discussion

This study was the first to explore a new reading intervention developed by the author of this dissertation titled Sounds First Reading System (SFRS). The difference between SFRS and other reading instruction methods, such as the Orton-Gillingham (OG) approach, stems from an understanding that the challenges being faced in many schools in the United States arise in part from the lack of transparency in the English alphabet. This lack of transparency is a primary contributor to the challenges faced in learning to read (Crown, 2000; Huey, 1973; McGuinness, 2005; Pitman & John, 1969; Sandel, 1998; Share, 2008) and therefore a significant barrier to access to education. Reading is the primary tool within modern education and a lack of proficiency in reading is a lifelong handicap in education and arguably in the well-being of the society at large. The approach of SFRS is to provide a key above regular text that gives the reader a transparent reliable code through which to access print while learning the patterns of the English alphabet (see Appendix 2). The teaching of the regular spelling of words can occur incidentally or through the direct teaching of phonics, but using SFRS simultaneously allows a student to benefit from access to reading rather than being isolated from the educational opportunities that rely on text. The Orton-Gillingham approach is focused on directly teaching spelling in a sequence that allows a student to build on previously taught material.

Despite decades of research into reading acquisition and charged debates among educators there are children who fail to learn to read. This is epidemic in some schools, as demonstrated in nationwide testing (I Read 3, 2013; Kaniuks, 2009) and present in nearly all schools, including those specifically designed for students who require reading remediation

(Foorman et al, 2006; McMaster et al., 2005). There is evidence that the gap in education among socioeconomic classes is widening (Foorman et al 2006; Kaniuka, 2009) and communities are relying on legislation to enforce educational reform (House Enrolled Act, 2010) when the solutions are likely beyond the scope of individual schools. The needs of alternative interventions that are able to be learned rapidly and incorporated into the general education classroom are critical. SFRS was developed to provide an alternative intervention that ameliorates the phonetic inconsistencies of the language into a code that, while lending itself to direct instruction, ultimately provides a tool that is potentially self-teaching.

This study was designed to compare the efficacy of SFRS and a well-established measure, Orton Gillingham. Archival data of the reading progress of 36 children's reading progress over two years was evaluated. The students were assessed three times; at the baseline, after receiving a year of Orton-Gillingham instruction (Assessment 2), and at the end of a second year of O.G. instruction or after a year of SFRS instruction (Assessment 3). Following approval by the Ball State University Institutional Review Board, as well as the permission of the Head of School, the archival results were reviewed. The data consisted of routine assessments taken by the students in a small private school; they were not given specifically for the benefit of this or any other study. The entire school population from which these data were drawn has identified language learning disabilities but the data from the eighteen students who received SFRS are noteworthy as these students were the most challenged students in reading based on the results of the annual Woodcock-Johnson III Tests of Achievement (WJ III ACH) (Woodcock, McGrew, & Mather, 2001b) testing and curriculum based assessments. These children did not, however, have cognitive disabilities as all children in the school are admitted based on their learning profile that would include evidence of intelligence in the average or

above average range.

The control sample was selected to provide a comparison of what was typical progress over the same course of time when using an Orton-Gillingham approach. The Orton-Gillingham approach is a phonics-based program that uses multisensory methods (Gillingham & Stillman, 1997; Rome & Osman, 2004). Orton-Gillingham focuses on the spelling patterns to inform decoding. Decoding is the process of translating a word from the alphabetic symbols to spoken language. Decoding differs from reading in that one can decode without gaining meaning. Teaching spelling patterns provides explicit instruction on how to approach decoding an unknown word. The OG approach is highly specialized and requires specific training. The school in which the study was conducted is accredited by a nationally recognized accrediting agency as being an Orton-Gillingham school.

The data from the study was the means of five subtests from the WJ III ACH collected over the course of two years from the two groups of 18 students. This data was compared using two-way ANOVAs with between and within subjects factors with the specific intervention as the between subject factor and the time between assessments as the within factor.

### **Summary of Results**

Using the data of the 36 children's performance on 5 subtests of the WJ III ACH, two-way ANOVAs with between and within subject factors were conducted. The results of the ANOVAs indicated there were not significant differences between the two groups on the WJ III ACH Word Identification, Word Attack and Reading Fluency subtests. Both the control and SFRS sample made significant progress over time, but there were not significant differences in the pattern of that growth (see tables 4, 7, and 15). On the other two subtests, Passage Comprehension and Spelling, there was a significant interaction that indicated a difference in

pattern. In both of these subtests the interaction was small.

The growth of the two instruction groups, SFRS and OG, is important because, while the testing demonstrates significant growth in reading for both samples, the SFRS sample attained growth with less reliance on learning rules and patterns. The method requires that they learn words by decoding from the transparent code until they no longer require the code. The Passage Comprehension subtest comparison (see table 12) yielded a significant interaction which indicated there was a significant growth over time for both interventions but the patterns of growth were different.

One hypothesis that was explored was that the SFRS sample performed poorly in the year with OG instruction but then made up to the same level with the SFRS instruction while the OG sample performed better in the first year than in the second. This was explored by conducting weighted contrasts using Bonferroni correction at Assessment 2 and Assessment 3. There was not a significant difference between the two means (see Appendix 3)  $t(34) = 2.241$ . The effect size of the interaction between the Passage Comprehension mean raw scores and the two instructional groups was small, 10%, and therefore it may be that it was not large enough to be detected in the post hoc measures. There was a significant interaction with the groups in the Spelling subtest as well  $F(2, 68) = 4.08, p < .05$ . A difference in pattern can be detected by an ANOVA but it cannot identify where that difference is. This difference was also investigated to consider if the pattern of the scores (see graph 2) were a result of the students in the SFRS sample differing significantly in the first year and making greater gains in the second year. However, the statistical test chosen to demonstrate this, using weighted contrasts with Bonferroni corrections, did not support this. At Assessment 2,  $t(34) = 1.4602$ , and Assessment 3,  $t(34) = .6349$ , the differences were not significant. The hypothesis of the interaction being

related to the different interventions was rejected because there was not a significant difference between the two group means at any point of assessment.

The Passage Comprehension and the Spelling subtests that have different patterns of growth, demonstrated that the children who received SFRS and OG performed relatively commensurately by the end of the second year. This suggests, for this sample under these conditions, the net effect on achievement of the two approaches was largely equal.

### **Limitations and Delimitations of the Study**

This study was conducted using archival data which brings with it a number of salient limitations. The most obvious is the inability to have a random sample. Not having a random sample breaks an assumption of the statistical equations, in this case the ANOVAs, and therefore makes the results less generalizable. The lack of a random sample limits how the data can be used to make inferences to the general population and when combined with the small sample this study has very low generalizability.

The children in the SFRS sample were determined by educational need and that was a loosely defined criteria. This limits the study because having a sample that does not have a clear definition of criteria makes it more difficult to identify what the effect of the intervention was on the performance and what other variables may have been involved in causing changes in the means. So, for example, having children with multiple ages introduces the question of previous experience and education as well as the salient consideration that the children were at different stages of development. When children are at different points in their education they may have had different influences and these differences may be the cause of change rather than the intervention. In addition the author of the dissertation had a role in choosing the participants for SFRS and the matched control was chosen by her.

The children ranged in age to a degree that some would be within an age that is typical for reading acquisition while others were clearly delayed and at an age when reading is a primary tool for learning and it has largely been assumed that the basics of reading have been mastered. Because it is no longer a course of study in typical classrooms, older students would have had more focused interventions designed to address their lack of progress in reading. Some of these children would have been likely to receive more varied instruction before coming to the school. The differences in the ages of the children are a limitation to the study because it may be combining different populations. Having different populations can result in the overall change looking very different from the actual effects on the individuals in the study. So the combined effect of multiple populations, may be different from the unique effect on each of the age groups if they were studied in isolation. It is possible that this was a factor in the variability of the pattern of change in all of the subtest results.

Another limitation of the study was the relatively small sample size with only 18 participants in each group. This occurred because a convenience sample was used which was limited by the number of children selected to use SFRS and those who had been at the school for at least a year before. A small sample has weak power and can be overly affected by one outlier. Further, a small sample limits the potential to divide the population into smaller groups. With a larger sample size it would have been feasible to split each of the groups, the matched control and the SFRS sample, into more appropriate age groups. This, however, was not feasible because without the larger numbers there is too much potential to not detect differences in the means, even when they exist. The fact that the data were selected from a school for children with learning disabilities presented another limitation to the study. All of the children likely received different interventions previous to the study period. Parents who could afford to send

children to a tuition-based school may have done so as a last resort, after exhausting options such as tutoring after school or summer programs. Some of the students may have had previous years of OG instruction at the school, others may have had intensive interventions such as Lindamood-Bell instruction or school based special education. Such differences complicate how the student would respond to the current intervention. For example, there may be some “unteaching” required in that children may overcompensate with patterns they learned previously. At the same time, perhaps there could have been some connections the students made faster because of the previous knowledge they brought to the instruction. This is a limitation in that the subjects are not uniformly separate from the current intervention.

Another limitation is that the students received individualized programs that met them where they were in the progression of study and therefore, what they were directly taught likely varied. The difficulty of having children at different places in the instruction is complicated because these are all children who come to the school from a variety of educational backgrounds and therefore there is a need to teach them by building on current knowledge. That is a core component of the Orton-Gillingham approach.

Further, this study looked at the first students who were being taught by teachers who were not the developer of this intervention; however, all of the teachers were trained in OG instruction. The school, as an OG accredited school, has a requirement that all teachers receive ongoing training in OG instruction. Therefore, it provides an expertise in phonics among the faculty that would not be typical in a majority of schools. This is a limitation because there is a chance that teachers preferred using what they were more comfortable with, OG instruction, and therefore children who were supposed to be getting SFRS may have not been fully receiving the correct instruction and therefore compromising the results. In many surveys designed to

understand teaching practices, the results often indicate that teachers will take new material and use those parts that fit into their previous practices (Blackwitz et al., 2006; Chall, 1969; Shaywitz, 2003).

A concern that may have impacted the results is an issue raised by Calhoun et al. (2010) in that the two spelling subtests of the WJ III ACH Spelling subtests are made up of words with different orthographic patterns. The WJ III ACH comes in three forms: A, B, and C. The different forms are designed to provide opportunities for pre and post testing without a practice effect. The school owns Form A and Form B and rotates the use of the two tests. However, when analyzed for orthographic consistency, Form A and Form B do not correlate with each other on a number of orthographic patterns (Calhoun et al, 2010, p. 169) and this difference may be confounding the results in this study. This difference, the lack of consistency in orthographic patterns, is according to Calhoun et al., a difficulty with a number of commonly used spelling assessments including the WJ III ACH. It is possible that the difference described by Calhoun et al. may be exacerbated by the nature of instruction that teaches spelling patterns.

The primary delimitation of this study is that it is the first empirical attempt to compare SFRS to a widely used reading instructional technique, OG. Taking the limitations into consideration raises the possibility of future studies to explore SFRS.

### **Directions for Future Research**

Design of future studies should build on what has been learned in this study and move beyond it by addressing the limitations. The limitations of the current study were a lack of a random sample, a lack of clear criteria for the selection of participants, a small sample, lack of consistency on the teachers' training, and a possible difference in content between the two forms of the spelling assessment. Addressing these limitations would improve the generalizability of

these results and further study is indeed needed to see if the results from this study persist or are limited to this sample.

A primary area of focus for a future study would be to include a larger number of schools with a large population of children who are failing to make adequate gains in reading. A possibility would be to draw samples of children from a variety of schools and then randomly assign them to one of three groups at each school. One group would get the intervention currently in use at the school, one group would get SFRS and the third would get a recognized curriculum that includes the recommendations of the National Reading Panel. Ideally, all of the children would be in the 4<sup>th</sup> grade and would have more consistent backgrounds, i.e., not retained, not identified with a specific learning disability. The children would be in the fourth grade because it would be children who have failed the I Can Read assessment, which is given at the end of the third grade. These children must participate in extra instruction as part of a program to pass before the end of the year to avoid retention. Having the children at the same point in their education will reduce confounding variables in the data and will provide a clearer understanding of the study participants.

Another consideration would be to have the teachers who participate given a set number of hours for instruction in the specific approach they would be using. This is a common factor in educational studies and therefore should be planned before the study begins (Foorman et. al, 2006).

### **Conclusion**

To explore the efficacy of SFRS in contrast to OG this study evaluated the results of 5 subtests of the WJ III ACH for 36 children who had language learning disabilities attending a private school. The testing included three assessment points within a twenty-four month period,

at a baseline, after a year of OG instruction (Assessment 2) and after a year of either SFRS or another year of OG instruction (Assessment 3).

To analyze the data of the two groups a two-way ANOVA with between and within subject factors was conducted for the raw scores of Letter-Word Identification, Word Attack, Passage Comprehension, Reading Fluency and Spelling of the WJ III ACH. The results indicated that there was not a significant difference between the two interventions groups. However, two of the subtests, Passage Comprehension and Spelling, had significantly different patterns of gains within the two samples but it was unclear what caused the interactions and in both cases the effect was small, 10% and 11% respectively. Within the other three subtests, Letter-Word Identification, Word Attack and Reading Fluency, there were significant differences among the means over time indicating significant increases in raw scores over time in each subtest for the control sample and the SFRS sample. Therefore, the results do imply that with this group of children, who had identified learning disabilities with varying levels of previous interventions, significant comparable gains were made with SFRS and with an Orton-Gillingham approach for the direct instruction of phonics. This study is the first to gain insight into a new instruction method, SFRS, which is based on a linguistic model of reading instruction. With the level of reading failure and delay in schools continuing to effect large numbers of children's education there is a need to explore alternatives that have a potential to be effective with children who, despite the best intentions of law makers, continue to be left behind.

## References

- Aaron, P. G. (2005). Reading interventions and strategies: *Encyclopedia of School Psychology*. (pp. 432-444). Thousand Oaks, CA: Sage Publications Inc.
- Adams, M. J. (1990). *Beginning to read: thinking and learning about print*. Cambridge, MA: MIT Press.
- aimsweb.com - What is AIMSweb?. (n.d.). *aimsweb.com - What is AIMSweb?*. Retrieved November 8, 2012, from <http://aimsweb.com>
- Albert, E. (1994). How does it feel to learn to read? *Eric, ED 377 446*, 1-8.
- Alexander, J. E. (1983). *Teaching reading* (second ed.). Boston: Little, Brown and Company.
- Allred, R. A. (1977). *Spelling, the application of research findings*. Washington D.C.: National Association of Education.
- Anderson, P. L. (2001). Early case reports of dyslexia in the United States and Europe.. *Journal of Learning Disabilities, 34*(1), 9-13.
- Anderson, R. C., Reynolds, R. E., Scallert, D. L., & Goetz, E. T. (1977). Frameworks for comprehending discourse. *American Educational Research Journal, 14*(4), 367-381.
- Anthony, J. L., & Lonigan, C. J. (2004). The nature of phonological awareness: converging evidence from four studies of preschool and early grade school children. *Journal of Educational Psychology, 96*(1), 43-55.
- Arena, J. I. (1968). *Building spelling skills in dyslexic children*. San Rafael, California: Academic Therapy Publications.
- Badian, N. (2000). *Prediction and prevention of reading failure*. New York: New York press.
- Badian, N. A. (2005). Does a visual-orthographic deficit contribute to reading disability. *Annals of Dyslexia, 55*(1), 28-52.

- Baer, J., Kutner, M., and Sabatini, J. (2009). Basic reading skills and the literacy of America's least literate adults: Results from the 2003 national assessment of adult literacy (NAAL) supplemental studies (NCES 2009-481). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.
- Bannatyne, A. (1973). *Reading: An auditory vocal process*. San Rafael, California: Academic therapy publication.
- Barnhart, R. K. (1995). *The Barnhart concise dictionary of etymology*. New York: HarperCollins Publishers.
- Beck, I. L., Omanson, R. C., & McKeown, M. G. (1982). An instructional redesign of reading lessons: Effects on comprehension. *Reading Research Quarterly*, 17, 462-481.
- Bell, A. M. (1849). *A new elucidation of the principles of speech and elocution*. London: Hamilton, Adams and Company.
- Bell, A. M. (1867). *Visible speech: The science of universal alphabets; or self interpreting physiological letters for the writing of all languages in one alphabet..* London: Simpson, Marshall & Co.
- Berent, I., & Perfetti, C. A. (1995). A Rose Is a REEZ: The Two-Cycles Model of Phonology Assembly in Reading English. *Psychological Review*, 102(1), 146-184.
- Bicknell, Thomas W. (1878) *The primary teacher*, a monthly magazine October 1877-July 1878. Boston, T.W. Bicknell Publishers.
- Bishop, A. G., Brownell, M. T., Klinger, J. K., Leko, M. M., & Galman, S. A. (2010). Differences in beginning special education teachers: The influence of personal attributes, preparation and school environment n classroom reading practices.. *Learning Disabilities Quarterly*, 33(Spring), 75-92.

- Blachowicz, C. L., Fisher, P. J., Ogle, D., & Watts-Taffe, S. (2006). Theory and practice: vocabulary: questions from the classroom.. *Reading Research Quarterly*, *41*(4), 524-539.
- Blumenthal, A. L. (1970). *Language and psychology; historical aspects of psycholinguistics*. New York: John Wiley & Sons.
- Bruck, M., Treiman, R., Caravolas, M., Genesee, F., & Cassar, M. (1998). Spelling skills of children in whole language and phonics classrooms. *Applied Psycholinguistics*, *19*, 669-684.
- Byrne, B. (1996). The learnability of the alphabetic principle: Children's initial hypotheses about how print represents spoken language . *Applied Psycholinguistics*, *17*, 401-426.
- Calhoon, M. B., Greenberg, D., Hunter, C. V., (2010). A comparison of standardized spelling assessments: Do they measure similar orthographic qualities? *Learning Disability Quarterly*, *33*, 159-170.
- Cappella, E., & Weinstein, R. S. (2001). Turning around reading achievement: predictors of High School students' academic resilience. *Journal of Educational Psychology*, *93*(4), 758-771.
- Carlo, M. S., August, D., McLaughlin, B., Snow, C. E., Dressler, C., Lippman, D. N., et al. (2004). Closing the gap: addressing the vocabulary needs of English-language learners in bilingual and mainstream classrooms. *Reading Research Quarterly*, *39*(2), 188-215.
- Carroll, J. B. (1971). Learning to Read and Learning One's Language: Some relationships. *Teaching reading- not by decoding alone* (pp. 31-42). Danville, Illinois: The Interstate Printers & Publishers, Inc..
- Carroll, J. B., & Chall, J. S. (1975). Toward a literate society. *Committee on Reading, National*

*Academy of Education, 1, 1-57.*

Casteel, C. A. (1989). Motivating reluctant readers to become mature readers. *Reading Improvement, 26, 98-102.*

Chall, J. S. (1967). *Learning to read: The great debate.* San Francisco: McGraw Hill.

Chall, J. S., Jacobs, V. A., & Baldwin, L. E. (1990). *The reading crisis: Why poor children fall behind.* Cambridge, MA: Harvard University Press.

Chapman, T. K., & Antrop-Gonzalez, R. (2011). A Critical look at choice options as solutions to Milwaukee's Schooling . *Teachers College Record, 113(4), 787-810.*

Chen, Y., Fu, S., Iversen, S. D., Smith, S. M., & Matthews, P. M. (2002). Testing for dual brain processing routes in reading: a direct contrast of Chinese character and Pinyin reading using fMRI. *Journal of Cognitive Neuroscience, 14(7), 1088-1098.*

Claiborne, J. H. (1906). Types of congenital symbol amblyopia. *Journal of the American Medical Association, 47, 1813-1816.*

Cleland, D. L. (1971). Vocalism in silent reading. *Teaching reading- not by decoding alone* (pp. 131-144). Danville, Illinois: The interstate printers & publishers, inc.

Clymer, T. (1996). The utility of phonic generalizations in the primary grades. *The Reading Teacher, 50(3), 182-187.*

Coltheart, M., Curtis, B., Atkins, P., & Haller, M. (1993). Models of reading aloud: Dual-Route and parallel-distributed processing approaches. *Psychological Review, 100(4), 589-608.*

Coltheart, M., Rastle, K., Perry, C., Langdon, R., & Ziegler, J. (2001). DRC: A dual route cascaded model of visual word recognition and reading aloud. *Psychological Review, 104(1), 204-256.*

Comstock, A. (1855). *A treatise on phonology: comprising a perfect for the English Language;*

- Specimen exhibit of the Absurdities of our present system.* Philadelphia: E. H. Butler & Co.
- Cox, A. R. (1980). *Situation Spelling Formulas and Equations for Spelling the Sounds of Spoken English.* Toronto: Educators Publishing Service.
- Cronbach, L. J. (1970). *Essentials of Psychological Testing* (Third ed.). New York: Harper & Row.
- Crown, J. C. (2000). An alphabet for English-IV. *Eric, ED 438554*, 1-15.
- Cummings, K. D., Kennedy, P. C., Otterstedt, J., Baker, S. K., & Kame'enui, E. J. (2011). DIBELS Data System: 2010-2011 Percentile ranks for DIBELS next benchmark assessments. *Center on teaching and learning, (Technical Report 1101)*.(University of Oregon), 1-135.
- Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology, 33*(6), 934-945.
- Dale, N. 1898. *On the Teaching of English Reading.* London: J. M. Dent and Co.
- Detgen, A., Yamashita, M., Davis, B., & Wraight, S. (2010, June 1). Regional Education Laboratories: Home Page. *Institute of Education Sciences (IES) Home Page, a part of the U.S. Department of Education.* Retrieved May 12, 2011, from <http://ies.ed.gov/ncee/edlabs>
- Dewey, J. (1897). My pedagogic creed. *School Journal* , *LIV*(3), 77-80. Retrieved April 1, 2006, from <http://www.infed.org/archives/e-texts/e-dew-pc.htm>
- Dewey, J. (1931). *The Inglis Lecture, 1931; The way out of educational confusion.* Cambridge, MA: Harvard University Press.

- Dewey, J. (2006). The democratic conception in education. *Democracy in Education* (pp. 1-16). New York: Macmillan. (Original work published 1916)
- Dilorenzo, K. E., Rody, C. A., Bucholz, J. L., & Brady, M. P. (2011). Teaching letter-sound connections with picture mnemonics: Itchy's Alphabet and early decoding. *Preventing School Failure, 55*(1), 28-34.
- Doherty, W., & Hilberg, S. (2007). Standards for effective pedagogy, classroom organization, English proficiency, and student achievement. *Journal of Educational Research, 101*(1), 24-34.
- Donrowski, S. C., Kamphaus, R. W., & Reynolds, C. R. (2004). After the demise of the discrepancy: proposed Learning Disabilities diagnostic criteria. *Professional Psychology: Research and Practice, 35*(4), 364-372.
- Duane, D. D. (1999). *Reading and Attention Disorders, neurological correlates*. Baltimore, MD: New York Press.
- Ediger, M. (2002). Middle schoolers, experience charts and the big book. *Eric, Ed468411*, 1-9. Retrieved April 13, 2012, from [http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?\\_nfpb=true&\\_&ERICExtSearch\\_SearchValue\\_0=ED468411&ERICExtSearch\\_SearchType\\_0=no&accno=ED468411](http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED468411&ERICExtSearch_SearchType_0=no&accno=ED468411)
- Elley, W. B. (1997). In praise of incidental learning lessons from some empirical findings on language acquisition. *National Research Center on English Learning & Achievement, 4*, 1-23.
- Enrolled Act, House Bill 1001 . (2011, July 1). *Indiana General Assembly*. Retrieved September 10, 2011, from <http://www.in.gov/legislative/bills/2011/HE/HE1001.1.html>

- Fagan, T. K., & VandenBos, G. R. (1993). *Exploring Applied Psychology: Origins and Critical Analyses*. Washington D.C.: American Psychological Association.
- Ferrer, E., Shaywitz, B. A., Holahan, J. M., Marchione, K., & Shaywitz, S. E. (2010). Uncoupling of reading and IQ over time: Empirical Evidence for a definition of Dyslexia. *Psychological Science, 21*(1), 93-101.
- Foorman, B. R., Francis, D. J., Davidson, K. C., Harm, M., & Griffin, J. (2004). Variability in Text Features in Six Grade 1 Basal Reading Programs. *Scientific Studies of Reading, 8*(2), 167-197.
- Foorman, B. R., Schatschneider, C., Eakin, M. N., Fletcher, J. M., Moats, L. C., & Francis, D. J. (2006). The impact of instructional practices in Grades 1 and 2 on reading and spelling achievement in high poverty schools. *Contemporary Educational Psychology, 31*, 1-29.
- Fernald, G. M. (1988). *Remedial Techniques in Basic School Subjects*. Austin TX: Pro ed. (Original work published 1943)
- Fuchs, L., Fuchs, D., & Deno, S. (1981). Reliability and validity of curriculum-based informal reading inventories. *Institute for research on learning disabilities, 59*, 1-41.
- Gates, I. A. (1927) Studies of phonetic training in beginning reading. *The journal of Educational psychology., 18* (4), 217-226.
- Geva, E., & Zadeh, Z. Y. (2006). Reading efficiency in Native English-speaking and English-as-a-second-language children: the role of oral proficiency and underlying cognitive-linguistic processes. *Scientific Studies of Reading, 10*(1), 31-57.
- Gillingham, A., & Stillman, B. W. (1934). *Remedial work for reading, spelling and penmanship*. New York: Anna Gillingham and Bessie W. Stillman.
- Goldberg, R. J., Higgins, E. L., Raskind, M. H., & Herman, K. L. (2003). Predictors of Success

in Individuals with Learning Disabilities: A Qualitative Analysis of a 20-Year Longitudinal Study . *Learning Disabilities Research & Practice*, 18(4), 222-236.

Goo, M., Watt, S., Park, Y., & Hosp, J. (2010). Web based curriculum based measurements for the classroom. *Teaching exceptional children*, 45(2), 34-40. Retrieved November 8, 2012, from <http://sb6nw2tx4e.search.serialssolutions.com.proxy.bsu.edu/?sid=CentralSearch:null&genre=article&atitle=A+Guide+to+Choosing+Web-Based+Curriculum-Based+Measurements+for+the+Classroom.&volume=45&issue=2&title=Teaching+Exceptional+Children&issn=0040-0599&da>

Goodman, K. (2005). Making Sense of Written Language: A life long journey. *Journal of Literacy Research*, 37(1), 1-24. Retrieved August 12, 2012, from <http://jlr.sagepub.com/content/37/1/1>

Goodman, Y. M. (2011). Sixty Year of Language Arts Education: Looking back in order to look forward. *English Journal*, 101(1), 17-25.

Goodman, Y.M., Goodman, K., & Altweger, B. (2012). The best of times and the worst of times. *Language Arts*, 89, 349-353.

Gray, L. (1963). *Teaching children to read*. New York: The Ronald Press Company. (Original work published 1949)

Gray, W. S. (1951). Stones in the road to better reading. *The Elementary School Journal*, 51(8), 427-435.

Gray, W. S. (1958). New approaches to the study of interpretation in reading. *Journal of Educational Research*, 52(2), 65-67.

Gray, W. S. (1984). Reading: A research retrospective, 1881-1941. *Encyclopedia of Educational*

- Research* (pp. 1-103). Newark, Del.: Macmillan. (Original work published 1941)
- Hinshelwood, J. (1900) Letter, word- and mind- blindness. London. A. K. Lewis.
- House Enrolled Act No. 1367. (2010, July 1). *Indiana General Assembly*. Retrieved September 10, 2011, from [www.in.gov/legislative/bills/2010/HE/HE1367.1.html](http://www.in.gov/legislative/bills/2010/HE/HE1367.1.html)
- Henry, M. K. (2003). *Unlocking literacy: effective decoding and spelling instruction*. Baltimore: Paul H. Brooks Publishing Co.
- Hoffman, J. V. (1986). *Effective Teaching of Reading: Research and Practice*. Newark, DE: International Reading Association.
- Huey, E. B. (1973). *The psychology and pedagogy of reading with a review of the history of reading and writing and of methods, texts, and hygiene in reading*. Cambridge, MA: MIT Press. (Original work published 1908)
- I Read 3 Copy of Corporation and School Results (2012)  
<http://www.doe.in.gov/achievement/assessment/iread-3>
- Kaniuka, T. S. (2009). NCLB, School-based instructional policy and decision-making: A proposed research agenda. *College Student Journal*, 43(3), 787-799. Retrieved August 19, 2012, from the Academic Search Premier database.
- Kaufman, A. S., Kaufman, N. L. (1985) Kaufman Test of Educational Achievement. Circle Pines, MN: American Guidance Services.
- Kavale, K. A., Kauffman, J. M., Bachmeier, R. J., & LeFever, G. B. (2008). Response-to-intervention: separating the rhetoric of self-congratulation from the reality of specific learning disability identification. *Learning Disability Quarterly*, 31(Summer), 135-150.
- Keogh, B. K. (2005). Revisiting Classification and Identification. *Learning Disabilities Quarterly*, 28(Spring), 100-103.

- Landerl, K., & Wimmer, H. (2008). Development of word reading, fluency and spelling in a consistent orthography: An 8 year follow-up. *Journal of Educational Psychology*, 100 (1), 150-161.
- Lass, B., & Davis, B. (1985). *The remedial reading handbook*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc..
- Law 107-110. (2002). No child left behind act of 2002. *115 Stat., 20 USC 6301 note*, 1425-2094.
- Leigh, E. (1874). *The graded first reader edited in pronouncing orthography*. New York: Ivison, Blakeman, Taylor and Co..
- Libot, TH., (1899) *The evolution of general ideas*. Chicago: The Open Court Publishing Co.
- Lin, D., McBride-Chang, C., Shu, H., Zhang, Y., Li, H., Zhang, J., et al. (2010). Small wins big: analytic pinyin skills promote Chinese word reading. *Psychological Science*, 21(8), 1117-1122.
- Lindamood, P., Bell, N., & Lindamood, P. (1997). Sensory-cognitive factors in the controversy over reading instruction.. *The Journal of Developmental and Learning Disorders* (pp. 143-182). Madison, CT: International University Press, Inc..
- Lomax, R. G., & McGee, L. M. (1987). Young children's concepts about print and reading: Toward a model of word reading acquisition. *Reading Research Quarterly*, 22(2), 237-256.
- Lovett, M. W., & Steinbach, K. A. (1997). The effectiveness of remedial programs for reading disabled children of different ages: Does the benefit decrease for older children?. *Learning Disability Quarterly*, 20 (3), 189-210.
- Lyon, G. R., & Moats, L. C. (1988). Critical issues in the instruction of the Learning Disabled. *Journal of Consulting and Clinical Psychology*, 56(6), 830-835.

- Mann, H. (1839). Prospectus. *The Common School Journal for the year 1839*, 1(1), 1-15.
- Mann, H. (1867). *Thoughts: selected from the writings of Horace Mann*. Boston, MA: H. B. Fuller and Company.
- March, F. A. (1881). *Proceedings of the International Convention for the amendment of the English Orthography*. St. Louis, MO: Spelling Reform Association.
- Maslin, P. (2007). Comparison of readability and decodability levels across five basal programs. *Reading Improvement*, 44(2), 59-75.
- McGinnis, M. A. (1988). Aphasic children; Identification and education by the associative method. *Teaching aphasic children; the instructional methods of Barry and McGinnis* (pp. 63-229). Austin, Texas: Pro-Ed. (Original work published 1963)
- McGrew, K. S., & Woodcock, R. W. (2001). Technical Manual. Woodcock-Johnson III. Itasca, IL: Riverside.
- McGuffey, W. H. (1836). *The eclectic second reader; consisting of progressive lessons in reading and spelling for the younger classes in schools with engravings*. Cincinnati, OH: Truman and Smith.
- McGuinness, D. (2004). *Early reading instruction; what science really tells us about how to teach reading*. Cambridge, MA: The MIT Press.
- McGuinness, D. (2005). *Language development and learning to read*. Cambridge, MA: The MIT Press.
- McGuinness, D., McGuinness, C., & Donohue, J. (1995). Phonological Training and the Alphabet Principle: evidence for reciprocal causality. *Reading Research Quarterly*, 30(4), 830-852. Retrieved May 11, 2011, from <http://www.jstor.org/stable/748200>
- McIntyre, C., & Pickering, J. S. (1995). *Clinical studies of multisensory structured language*

*education for students with dyslexia and related disorders.*. Dallas, TX: International Multisensory Structured Language Education Council.

- McKenzie, R. G. (2009). Obscuring vital distinctions: The oversimplification of Learning Disabilities within RTI. *Learning Disabilities Quarterly*, 32(fall), 203-215.
- McMaster, K. L., Fuchs, D., Fuchs, L. S., & Compton, D. L. (2005). Responding to nonresponders: An experimental field trial of identification and intervention methods. *Exceptional Children*, 71(4), 445-463.
- Money, J. (1962). *Reading Disability progress and research needs in dyslexia*. Baltimore: The Johns Hopkins Press.
- Monroe, M. (1936). *Children who cannot read*. Chicago: The University of Chicago press.  
(Original work published 1932)
- Morgan, P. L., Farkas, G., & Hibell, J. (2008). The Matthew effect for whom?. *Learning Disability Quarterly*, 31(fall), 187-198.
- Myers, P. I., & Hammill, D. D. (1969). *Methods for learning disorders*. New York: John Wiley & Sons, Inc..
- National Reading Panel (NRP) - Publications and Materials. (2000, April 1). *National Reading Panel (NRP) - Home*. Retrieved January 19, 2011, from [http://www.nationalreadingpanel.org/Publications/citation\\_examples.htm](http://www.nationalreadingpanel.org/Publications/citation_examples.htm)
- National, R. C. (2005). *Measuring literacy: Performance levels for adults.*. Washington D.C.: The National Academies Press.
- O'Connor, R. E. (1999). Teachers learning Ladders to Literacy. *Learning Disabilities Research & Practice*, 14(4), 203-214.
- Obama, B. (2011, January 25). Page 2: TRANSCRIPT State of the Union 2011: Obama's Full

Address - ABC News. *ABCNews.com - Breaking News, Latest News & Top Video News*  
- *ABC News*. Retrieved May 11, 2012, from

[http://abcnews.go.com/Politics/State\\_of\\_the\\_Union/state-of-the-union-2011-full-transcript/story?id=12759395&page=2](http://abcnews.go.com/Politics/State_of_the_Union/state-of-the-union-2011-full-transcript/story?id=12759395&page=2)

Orton, S. T. (1966). *Wordblindness in school children and other papers on strephosymbolia..*

Pomfret, CT: The Orton Society.

Paulesu, E., McCrory, E., Pesenti, S., Gallaher, A., Perani, D., Price, C., et al. (2000). A culture effect on brain function. *Nature Neuroscience*, 3(1), 91-96. Retrieved June 10, 2012,

from <http://neuroscience.nature.com>

Pine, A., & Neill, G. (1970). *Reading Crisis: The problem and suggested solutions*. Washington

D.C.: National Schools Public Relations Association.

Pitman, J., & John, J. S. (1969). *Alphabets and reading. The initial teaching alphabet*. New

York: Pitman Publishing Company.

Polikoff, M. S. (2010). Instructional sensitivity as a psychometric property of assessments.

*Educational Measurement: Issues and Practice*, 29(4), 3-14.

Pollard, R. S. (1897). *A complete manual. Pollard's synthetic method of reading and spelling*.

*Designed to accompany synthetic readers and spellers*. Chicago: Western Publishing House.

Pollard, R. S. (1898). *First book for little folks*. New York: Western Publishing House.

Rayner, K., Foorman, B. R., Perfetti, C. A., Pesetsky, D., & Seidenberg, M. S. (2001). How

Psychological science informs the teaching of reading. *Psychological Science in the Public Interest*, 2(2), 31-74.

Reiff, H. B. (2001). The relation of LD and gender with emotional intelligence in college

- students. *Journal of Learning Disabilities*, 34(1), 1-22.
- Reiff, H. B., & Gerber, P. J. (1990). Cognitive correlates of social perception in students with learning disabilities. *Journal of Learning Disabilities*, 23(4), 260-262.
- Reynolds, C. R., & Shaywitz, S. E. (2009). Response to intervention: Ready or not? Or, from wait-to-fail to watch-them-fail. *School Psychology Quarterly*, 24(2), 130-145.
- Ritchey, K. D., & Goeke, J. L. (2006). Orton-Gillingham and Orton-Gillingham-based reading instruction: A review of the literature. *The Journal of Special Education*, 40, 171-183.
- Risko, V. J., Roller, C. M., Cummins, C., Bean, R. M., Block, C. C., Anders, P. L., et al. (2008). A critical analysis of research on reader teacher education. *Reading Research Quarterly*, 43(3), 252-288. Retrieved May 11, 2011, from <http://www.jstor.org/stable/20068344>
- Rivers, K. O., & Lombardino, L. J. (1998). Generalization of early metalinguistic skills in a phonological decoding study with first graders at risk for reading failure. *International Journal of Language & Communication Disorders*, 33(5), 369-391.
- Robinson, H. A. (1977). *Reading and writing instruction in the United States; historical trends*. Newark, DE: International Reading Association.
- Robinson, R. D. (2002). *Classics in literacy education historical perspectives for today's teachers*. Newark, Delaware: International Reading Association.
- Rome, P. D., & Osman, J. S. (2004). *Language tool kit*. Cambridge, MA: Educators Publishing Service, inc..
- Russell, D. H., & Fea, H. R. (1963). Research on teaching reading. *Handbook of research on teaching* (pp. 865-928). Chicago: Rand McNally.
- Sandel, L. (1998). The nature of traditional orthography and the Initial Teaching Alphabet. *Review of Historical Research*, ED 470 646, 1-27.

- Seo, S., Brownell, M. T., Bishop, A. G., & Dingle, M. (2008). Beginning Special Education teachers' classroom reading instruction: practices that engage elementary students with learning disabilities. *Exceptional Children*, 75(1), 97-122.
- Seymour, P. H. (1998). Neurolinguistic issues in the treatment of childhood literacy disorders. *Handbook of Neurolinguistics* (pp. 573-585). New York: Academic Press.
- Shapiro, B. K., Accardo, P. J., & Capute, A. J. (1998). *Specific Reading Disability A View of the Spectrum*. Timonium, Maryland: York Press.
- Share, D. L. (2008). On the anglocentricities of current reading research and practice: the perils of overreliance on an "outlier" orthography. *Psychological Bulletin*, 4, 584-615.
- Shaywitz, S. E. (2003). *Overcoming dyslexia; a new and complete science-based program for reading problems at any level*. New York: Alfred A. Knopf.
- Shaywitz, S. E., Mody, M., & Shaywitz, B. A. (2006). Neural Mechanisms in Dyslexia. *Current Directions in Psychological Science*, 15(6), 278-281.
- Shaywitz, S. E., Morris, R., & Shaywitz, B. A. (2008). The education of Dyslexic children from childhood to young adulthood. *The Annual Review of Psychology*, 59, 451-475.
- Retrieved August 26, 2012, from <http://sb6nw2tx4e.search.serialssolutions.com.proxy.bsu.edu/?sid=CentralSearch:null&genre=article&atitle=The+Education+of+Dyslexic+Children+from+Childhood+to+Young+Adulthood.&volume=59&issue=1&title=Annual+Review+of+Psychology&issn=0066-4308&date=2008-02->
- Shute, R. G. (1830). *Organic pronunciation or reading made easy*. London: William Darton, Holborn Hill.
- Simos, P. G., Fletcher, J. M., Sarkari, S., Billingsley, R. L., Castillo, E. M., & Pataraiia, E.

- (2005). Early development of Neurophysiological processing involved in normal reading and reading disabilities: A magnetic source imaging study. *Neuropsychology*, 19(6), 787-798.
- Smith, C. B. (1994). *Whole Language: the debate*. Washington D.C.: Office of educational research and improvement.
- Smith, F. (1992). Learning to read: the never-ending debate. *Phi Delta Kappa international*, 73(6), 432-441. Retrieved March 10, 2012, from <http://www.jstor.org/stable/20404665>
- Smith, F. (1999). Why systematic phonics and phonemic awareness instruction constitute an educational hazard.. *Language Arts*, 2, 150-155.
- Smith, R. F., & Feathers, K. M. (1983). Teacher and student perception of content area reading. *Journal of Reading*, 26(4), 348-354.
- Snyder, T. D. (1993, January 19). 120 Years of American education: A statistical portrait. *National Center for Education Statistics (NCES) Home Page, a part of the U.S. Department of Education*. Retrieved April 19, 2011, from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=93442>
- Soule, R., & Wheeler, W. A. (1866). *First lessons in reading: A new method of teaching the reading of English by which the ear is trained to discriminate the elementary sounds of the words, and the eye to recognize the signs used for these sounds in the establish orthography*. Boston, MA: Lee & Shepard.
- Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21(4), 360-406
- Stanovich, K. E. (2000). *Progress in understanding reading; scientific foundations and new frontiers*. New York: The Guilford Press.

- Stanovich, K. E. (2005). A future of a mistake: Will discrepancy measurement continue to make learning disabilities field a pseudoscience. *Learning Disability Quarterly*, 28, 103-106.
- Studer, D. E. (1884). *A treatise on spelling reform*. St. Louis, MO: Nixon-Jones Printing Company.
- Sure, N. (Director) (2003, October 15). National Symposium on Learning Disabilities in English Language learners. *National Symposium*. Lecture conducted from National Institute of Health, Washington, D.C..
- Swanson, H. L., Harris, K. R., & Graham, S. (2003). *Handbook of learning disabilities*. New York: The Guilford Press.
- Torgesen, J. K., & Mathes, P. G. (2000). *A basic guide to understanding, assessing and teaching phonological awareness*. Austin, Texas: Pro-Ed, Inc..
- Trelease, J. (1989). Jim Trelease speaks on reading aloud to children. *The Reading Teacher*, 23, 200-206.
- Trelease, J. (1995). *The read-aloud handbook*. New York: Penguin Group.
- University of Oregon Dibels data system. (n.d.). *Center on Training and Learning*. Retrieved November 8, 2012, from <https://dibels.uoregon.edu>
- Vail, H. H. (1911). *A history of the McGuffey readers*. Cleveland, OH: The Burrows Brothers Co..
- Vail, P. (1999). *Reading Comprehension Students' needs and teachers' tools*. Rosemont, NJ: Modern Learning Press.
- van den Bos, K. P. (1984). Letter processing in dyslexic subgroups. *Annals of Dyslexia*, 34, 179-193.
- Vanderstaay, S. L. (2006). Learning from longitudinal research in criminology and the health

- sciences. *Reading research quarterly*, 41(3), 328-350.
- Vanhoeven, L., Leevwe, J. v., & Vermeer, A. (2011). Vocabulary growth and reading across the elementary school years. *Scientific Studies of Reading*, 15(1), 8-25.
- Verhoeven, L., & Perfetti, C. A. (2011). Morphological processing in reading acquisition: A cross-linguistic perspective. *Applied Psycholinguistics*, 32, 457-466.
- Waczyk, J. J., Marsiglia, C. S., Bryan, K. S., & Naquin, P. J. (2001). Overcoming inefficient reading skills. *Journal of Educational Psychology*, 93(4), 750-57.
- Warren, D. (1989). *American teachers: histories of a profession at work*. New York: Macmillan.
- Wechsler, D. (1992). Wechsler Individual Achievement Test. San Antonio, TX; Psychological Corporation.
- Williams, L. M. (1916). *How to teach phonics*. Chicago: Hall & McCreary Company.
- Wolf, M. (1984). Naming, reading and the dyslexias: a longitudinal overview.. *Annals of Dyslexia*, 34, 87-115.
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III*. Itasca, IL: Riverside.
- Woodcock, R.W., McGrew, K.S., & Mather, N. (2007). *Woodcock-Johnson III*. Itasca, IL: Riverside.
- Zillmer, E. A., & Spiers, M. V. (2001). *Principles of Neuropsychology*. Belmont, CA: Wadsworth.

Appendix 1

Sounds First Reading System- code

sound/symbol	keyword	sound/symbol	keyword
a	<u>a</u> pple	ai	ma <u>i</u> d
b	<u>b</u> at	ee	be <u>e</u> t
d	<u>d</u> og	igh	hi <u>gh</u>
e	<u>e</u> gg	oa	bo <u>o</u> at
f	<u>f</u> oot	ue	fu <u>e</u> l
g	<u>g</u> oat	ch	chi <u>ch</u> imp
h	<u>h</u> ot	sh	she <u>ll</u>
i	<u>i</u> ch	th	the <u>if</u>
j	<u>j</u> et	ng	han <u>g</u>
k	<u>k</u> ite	au	au <u>t</u> o
l	<u>l</u> eg	oi	oi <u>l</u>
m	<u>m</u> op	oo	ho <u>o</u> p
n	<u>n</u> et	ou	ou <u>t</u>
o	<u>O</u> ctober	er	he <u>r</u>
p	<u>p</u> ig	ar	ca <u>r</u>
r	<u>r</u> ock	or	o <u>r</u>
s	<u>s</u> ock		
t	<u>t</u> op		
u	<u>u</u> p		
v	<u>v</u> est		
w	<u>w</u> ig	oo	bo <u>o</u> k
y	<u>y</u> ell	th	tha <u>t</u>
z	<u>z</u> ip	si	asi <u>a</u> n

Appendix 2- sample text

iktomee iz spighder fairee hee wairz broun  
 IKTOMI is a spider fairy. He wears brown  
 frinjez eether  
 deerskin leggings with long soft fringes on either  
 sighd tighnee beeded mokusinz hiz hiz  
 side, and tiny beaded moccasins on his feet. His  
 blak iz thu midl rapt  
 long black hair is parted in the middle and wrapped  
 eech oaver  
 with red, red bands. Each round braid hangs over  
 smaul broun eer faulz forward oaver hiz  
 a small brown ear and falls forward over his  
 shoalderz  
 shoulders.

hee eeven hiz funee fais  
 He even paints his funny face with red and  
 yeloa drauz blak ringz ound hiz ighz  
 yellow, and draws big black rings around his eyes.

hee wairz jaket kulerd  
 He wears a deerskin jacket, with bright colored

Appendix 3

Weighted Contrasts using a Bonferroni correction

A comparison of the means at the Assessment 2 of Passage Comprehension

$$\sqrt{\frac{(1)(26) + (-1)(22.3333)}{24.095 \left[ \frac{(1)^2}{18} + \frac{(-1)^2}{18} \right]}} = \sqrt{\frac{3.6667}{\frac{48.19}{18}}} = 2.241$$

A comparison of the means at the Assessment 3 of Passage Comprehension

$$\sqrt{\frac{(1)(27.5) + (-1)(27.2778)}{24.095 \left[ \frac{(1)^2}{18} + \frac{(-1)^2}{18} \right]}} = \sqrt{\frac{.2222}{\frac{48.19}{18}}} = .1358$$

A comparison of the means at the 2<sup>nd</sup> Assessment of Spelling

$$\sqrt{\frac{(1)(26.6111) + (-1)(24.0556)}{27.566 \left[ \frac{(1)^2}{18} + \frac{(-1)^2}{18} \right]}} = \sqrt{\frac{2.5555}{\frac{55.132}{18}}} = 1.4602$$

A comparison of the means at the 3<sup>rd</sup> Assessment of Spelling

$$\sqrt{\frac{(1)(27.8889) + (-1)(26.7778)}{27.566 \left[ \frac{(1)^2}{18} + \frac{(-1)^2}{18} \right]}} = \sqrt{\frac{1.1111}{\frac{55.132}{18}}} = .6349$$