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Validation of a Scale to Measure Phonological and Morphological Knowledge and Skill of Speech-Language Pathologists and Elementary Teachers

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VALIDATION OF A SCALE TO MEASURE PHONOLOGICAL AND MORPHOLOGICAL KNOWLEDGE AND SKILL OF SPEECH-LANGUAGE PATHOLOGISTS AND ELEMENTARY TEACHERS

by

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ABSTRACT

Phonological and morphological skills are crucial to the process of reading. Speech-language pathologists (SLPs) have received advanced trained in these basic foundations of language and could be an untapped resource in our school systems for teaching beginning reading skills. The purposes of this research were to examine SLPs' and general education elementary (K-6) teachers' attitudes toward SLPs taking part in reading instruction, to compare the differences in phonological and morphological knowledge and skill among SLPs and teachers, and to assess the performance of the *Revised Basic Language Constructs Survey* when administered to SLPs and teachers.

Results indicated that, although fewer than half of the participants said that SLPs taught beginning reading skills in their work settings, a majority of these indicated that SLPs were effective when teaching beginning reading skills. It was found that, on average, SLPs' and teachers' phonological and morphological knowledge was similar, with the group of SLPs correct 73.1% of the time and teachers 72.8% of the time on knowledge items. When phonological and morphological skill was measured, SLPs were correct 80.2% of the time and teachers were correct 69.6% of the time. It should be noted that, in both groups, a level of correct responses of 90% or more was achieved on fewer than half of the knowledge and skill items. These results indicated that additional training was needed in both knowledge and skill for SLPs and teachers.

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) revealed that the *Revised Basic Language Constructs Survey* provided a valid measure of phonological and morphological knowledge and skill for SLPs and teachers. Invariance

testing indicated the model had a moderate fit to the data. It was found that the scale performed differently for the two groups, SLPs and teachers, on only two skill items.

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DEDICATION

This work is dedicated to my husband, Ricky Perry, who has unfailingly supported this journey over the past several years. I also dedicate this project to my daughters and their husbands, Mary and David Godbold and Laura and Ethan Ewoldt, and to my grandsons, Connor Patrick Godbold and Elliot Samuel Michael Ewoldt. It is these two boys and others of their generation and future generations who may benefit from better ways to teach beginning reading skills. In addition, many thanks go to my mother, Mary Jean Saulters, for her encouragement throughout my life.

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LIST OF ABBREVIATIONS

ALTA	Academic Language Therapy Association
ASHA	American Speech-Language-Hearing Association
NEA	National Education Association

CHAPTER I – INTRODUCTION

Background

The ability to read fluently and for understanding is a skill that enables access to a vast amount of information. The skill of reading has been described as "a cornerstone skill in a literate society" (Ahlgrim-Delzell, et. al, 2015, p. 1). The goal of reading instruction has been defined as the ability to develop skills necessary for the comprehension of text that corresponds with the level of general language comprehension (Allington & Gabriel, 2012; Torgesen, 2000; Veenendaal, Groen, & Verhoeven, 2015). As a way to develop the ability to comprehend text, fluent reading is a primary aim of education for elementary-aged children (Kim, Wagner, & Foster, 2011; National Reading Panel, 2000; Veenendaal, et al., 2015). Students who have not developed fluent reading skills read slowly and laboriously. This lack of reading fluency has a direct negative impact on the comprehension of what is read (Rasinski, 2012; Schwanenflugel, et al., 2006; Veenendaal, et al., 2015), thus limiting the ability to learn about all subjects through information garnered from textbooks and other print resources.

For many children, reading is a skill that does not develop naturally (Treiman, 2000), with poor readers having particular difficulty with awareness of separate sounds within words (Ferrer, et al., 2015; Melby-Lervag, Lyster, & Hulme, 2012; Mody, 2003). In fact, reading develops effortlessly, with no formal instruction, for only a very small percentage of children. According to Lyon (1998), approximately 5% of children are able to understand the alphabetic principle prior to beginning school. In other words, this small percentage of students sees that there are relationships between spoken sounds and written letters, or groups of letters. These students are better able to correctly read words

they have not seen before and are able to more easily comprehend what they read. Another 20-30% of children learn to read once presented with formal instruction, no matter what instructional method or philosophy is used. However, for 60% of children beginning their formal education, learning to read is very difficult. It is estimated that approximately 20%-30% of this group of students will find learning to read one of the most difficult things they will face during their educational program. This means there could be 3-4 students in a typical classroom who experience great difficulty in learning to read.

Early Identification and Early Intervention

Early identification of reading problems and early intervention to remediate these problems are of vital importance (Ferrer, et al., 2015). If there is a delay in ensuring that foundational reading skills are present, effective reading instruction may be delayed. This delay can have a negative impact on vocabulary growth and on students' attitudes and motivation to learn to read. According to Hernandez (2011), failure to learn to read fluently in early grades often resulted in increased drop-out rates. This study found that 16% of students who did not read proficiently in third grade did not graduate from high school on time, compared to 4% of proficient readers. Because of a lack of reading practice opportunities due to poor foundational reading skills, the skill of fluent reading became difficult to acquire, with poor readers at the end of third grade unlikely to ever read fluently (Ferrer, et al., 2015; Torgesen, 2002; Torgesen, Rashotte, & Alexander, 2001). Dev, Doyle, and Valente (2002) stated that problems with the development of reading skills were reported as one of the main reasons children are referred for Special Education services. In the 1980s and 1990s, the practice of early identification of

academic difficulties was not as accepted as it is today. School districts often did not identify a child with a reading disability until the end of second or third grade, thus employing the "wait and fail" approach (Gersten & Dimino, 2006, p. 100). Many thought maturational issues were at play, even though research had already shown that students who were identified as poor readers by the end of first grade tended to remain poor readers at the end of fourth grade (Juel, 1988). Later research has shown that a gap between ability and reading achievement may be identified as early as first grade. If reading skills were not remediated, this gap persisted into adolescence (Ferrer, et al., 2015). A study by Kjeldsen, Karna, Niemi, Olofsson, and Witting (2014) showed that kindergarten students who received phonological awareness instruction scored higher in decoding and reading comprehension in grades three, six, and nine than did a comparison group that did not receive this same instruction.

However, children who are at risk for reading disabilities often can be identified before failing to learn to read. The National Early Literacy Panel (Lonigan & Shanahan, 2009) identified the skills of alphabet knowledge, phonological awareness, print awareness, and oral language as skills that predict later reading achievement. According to Gillon and McNeill (2009), phonological awareness skill predicted future performance in reading more accurately than intelligence, vocabulary knowledge, or socioeconomic status. The skill of phonological awareness may be assessed and identified prior to the beginning of formal reading instruction (Catts, 1997; Ferrer, et al., 2015; Lundberg, Larsman, & Strid, 2012). Phonological awareness is a skill that begins to develop in the preschool years, with one facet of phonological awareness, skill in rhyming, occurring

around three years of age (Justice & Schuele, 2004; Lonigan, Burgess, & Anthony, 2000; Schuele & Boudreau, 2008; Torgesen, 2000).

Historical Perspective

The study of reading disabilities is not new. For example, the term dyslexia was first used in 1887 by Dr. Rudolph Berlin, a German ophthalmologist (Wagner, 1973). Dr. Berlin proposed that the condition he saw in his patients was related to word blindness as first described in 1877 by Dr. Adolph Kussmaul, a neurologist (Hinshelwood, 1907; Rawson, 1987). Berlin said this condition should be categorized with the aphasias, or those conditions where language was lost due to stroke or other brain insult.

Dr. Samuel T. Orton, a neurologist considered to be the father of dyslexia research, also viewed this condition he termed strephosymbolia, or twisted symbols, to be a part of a larger group of disorders of language (Orton, 1937). When discussing strephosymbolia, Orton referred to this condition as a specific language disability.

By building on this early research into language and reading disabilities, both the International Dyslexia Association (IDA) and the National Institutes of Health (NIH) defined dyslexia as a neurobiological learning disability that affects reading skills. Specific areas of impairment are phonological processing, word recognition, decoding, spelling, and reading fluency. Dyslexia may be familial, and those who have this disability demonstrate reading skills that are below expectations based on intelligence (International Dyslexia Association, 2002; Lyon, Shaywitz, & Shawitz, 2003; National Institute of Neurological Disorders and Stroke, 2016).

National Reading Panel

In 1997, the National Reading Panel (NRP) was established at the direction of Congress in order to assess the effectiveness of different approaches to teaching reading to children. In 2000, the report of the National Reading Panel stated that a program of phonetic, multisensory structured language instruction is necessary to teach students with dyslexia, or specific reading disabilities (National Reading Panel, 2000). The *Report of the National Reading Panel* identified five essential skills necessary for developing good reading skills: phonemic awareness, phonics, fluency, vocabulary, and comprehension.

Proficiency in phonemic awareness has been shown to have direct correlation to the ability to acquire reading skills (Badian, 2001; Melby-Lervag, et al., 2012), and has been identified as one of the best predictors of future reading success (Moats, 1994). Through phonological and phonemic awareness instruction, children learned to identify sounds in various positions of words and to break syllables and words apart (segmentation) and put them back together (blending) (National Reading Panel, 2000). Instruction in phonological and phonemic awareness and phonics provided a way for children to learn the alphabetic principle by acquiring letter-sound correspondences and understanding the importance of these correspondences to reading and spelling (Warnick & Calderella, 2016).

For students who did not easily learn to read, explicit, direct instruction in sound-symbol relationships was necessary (Moats, 1994). Snow, Burns, and Griffin (1998) reported that a great deal of evidence existed that supported the value of systematic and direct instruction in phonics for beginning readers and those with a disability in reading. According to Moats and Foorman (2003), the trend in education and reading instruction

was toward teaching reading skills in a direct, explicit, and systematic fashion. This type of instruction dictated that teachers must be able to determine their students' levels of underlying skills, such as phonological awareness and understanding of the alphabetic principle. By stabilizing sound-symbol relationships to a level of automaticity, a child will not have to struggle to decode words in a passage. The automatic recall of symbols allows the reader to apply this knowledge to familiar and unfamiliar words. Automaticity is the basis for fluent reading, where the reader is able to focus on the content of a passage, rather than the decoding of individual words (Land, 2016; Moats & Davidson, 2009). Reading fluency is an integral part of comprehending what one has read (National Reading Panel, 2000; Veenendaal, et al., 2015).

Oral and Written Language

There is a substantial relationship between oral and written language skills (Aram & Nation, 1980; Catts, 1993; Newbury, Monaco, & Paracchini, 2014), with written language, or reading and writing, being built on a foundation of oral language skills (American Speech-Language-Hearing Association, 2001; Catts & Kamhi, 1999). According to Moats (2009c) and Podhajski, Mather, Nathan, and Sammons (2009), because of this oral language foundation, it is important for general education teachers to learn, as part of their preservice education, how oral language skills affect reading. In a study by Bos, Mather, Dickson, Podhajski, & Chard (2001), it was revealed that, although preservice and inservice general education teachers thought it was important for teachers of kindergarten, first grade, and second grade to know how to teach phonics, limited knowledge of this concept was demonstrated. According to Moats (1994, 2009c), more effective teacher education was required. Moats found that many elementary and

special education teachers did not possess adequate knowledge of the structure of the English language; therefore, based on current findings with regard to requirements for effective reading instruction, they were not prepared to teach reading.

Spear-Swerling and Brucker (2003) emphasized the importance of including instruction in the structure of English words in preservice teachers' curricula. By establishing the Texas Reading First Higher Education Collaborative (HEC) in 2000, the state of Texas took the lead in attempting to increase knowledge of language for teachers of reading. This organization provides professional development for teacher educators and faculty members teaching reading education at the university level (Joshi, et al., 2009). A study by Binks (2008) has shown that HEC-trained professionals performed better on a measure of linguistic knowledge than those who had not participated in HEC programs.

Since SLPs are trained in the foundations of language, including phonology and morphology, it may be that the SLP is the natural choice to aid general educators in teaching basic reading skills such as phonological and phonemic awareness, phonics, and morphology to students for whom reading does not come naturally (American Speech-Language-Hearing Association, 2001; American Speech-Language-Hearing Association, 2016b). A team of regular educators, special educators, and SLPs with knowledge of language structure and the oral language foundation necessary to build written language skills could provide a powerful base of expertise for students who struggle to learn to read.

Theoretical Framework

The theoretical foundation for this project is based on the work of Shulman (1986, 1987). Shulman discussed a "missing paradigm problem" (Shulman, 1986, p. 6) wherein educators were taught pedagogy, but there was a lack of specific instruction in content knowledge in teacher education programs. This fairly new phenomenon was a departure from early teacher education programs in which a large part of teacher examinations consisted of content knowledge. He proposed the "Knowledge Growth in Teaching" program, advocating for a balance between pedagogical and content knowledge. Shulman (1986, 1987) proposed a theoretical framework with three types of content knowledge: (a) subject matter content knowledge, (b) pedagogical content knowledge, and (c) curricular knowledge. He advocated for teacher examinations to address all three categories along with others such as student differences, classroom organization and maintenance, history and philosophy of education, school finance, and administration. Later work by Shulman and Shulman (2004) expanded earlier theories but a focus on subject content knowledge remained.

Problem Statement

The impact of utilizing SLPs to teach phonological awareness and reading skills is not known, although it is well-documented that phonological awareness skills are essential pre-requisites to learning to read, and SLPs have extensive training in phonological skills. In addition, despite the position of the American Speech-Language-Hearing Association (ASHA) regarding the role of SLPs in teaching reading, only 35.8% of SLPs taught phonological awareness and reading skills (American Speech-Language-Hearing Association, 2014).

Various studies have illustrated that using SLPs' specialized knowledge of phonology and morphology to teach early reading skills was not a new concept. Catts and Kamhi (1986) stated that, since reading is a linguistically-based skill rather than one based on visual perception, SLPs, who already treated linguistic issues in therapy, could be an important source to aid in remediation of language-based reading problems. Catts (1991) followed this research with a paper emphasizing that SLPs had training and expertise in phonological awareness that could positively impact children's knowledge in this area. More recently, a study by Girolametto, Weitzman, and Greenberg (2012) revealed that when SLPs trained a group of educators in ways to teach early literacy skills to young children, the educators used language that aided the children in learning about sound awareness and print concepts. Despite studies cited here, no research has been found in which a validated scale was used to measure knowledge of basic language concepts in both SLPs and general education teachers.

Purpose Statement

The purpose of this study was to examine the differences in phonological awareness knowledge and skill among SLPs and teachers. In addition, this study examined SLPs' and teachers' attitudes toward SLPs taking part in reading instruction and the impact this intervention has on their students.

Research Questions and Research Hypothesis

The following research questions were considered for this study:

1. What are the attitudes of speech-language pathologists and general education elementary (K-6) teachers regarding speech-language pathologists being included in reading instruction?

2. What are the levels of phonological and morphological knowledge and skill possessed by speech-language pathologists?
3. What are the levels of phonological and morphological knowledge and skill possessed by general education elementary (K-6) teachers?
4. What is the performance of the *Revised Basic Language Constructs Survey* when used with speech-language pathologists and general education elementary (K-6) teachers?

In addition, the following research hypothesis was posited:

Research hypothesis 1. There will be a difference in measurement of the constructs of phonological and morphological skill and knowledge between SLPs and teachers.

Definitions

alphabetic principle - the understanding that there is a connection between sounds that are spoken and letters or groups of letters that represent those sounds (Warnick & Caldarella, 2016)

automaticity – the instant recognition of letters and combinations of letters when reading (Land, 2016; Moats & Davidson, 2009)

dyslexia – neurobiological learning disability that affects reading skills (International Dyslexia Association, 2002; Lyon, et al., 2003; National Institute of Neurological Disorders and Stroke, 2016)

grapheme – the written form of phonemes (Moats, 2009a)

morpheme – the smallest unit of meaning in a language (Martin, 2012)

morphology – the study of how morphemes are used to form words (Martin, 2012)

onset – the part of a syllable that comes before the vowel (Moats, 2010)

onset-rime – a level of phonological awareness wherein one understands that a syllable may be comprised of two parts, the onset and the rime; this understanding of syllable structure is used to aid decoding (Moats, 2010; Moats & Hall, 2010; Shuele & Boudreau, 2008)

phoneme – the basic sound structure of a language; the smallest unit of sound in a language that can be recognized as distinct from other sounds; may be represented by one or more letters (Martin, 2012);

phonemic awareness – the ability to isolate and manipulate individual sounds, or phonemes, in words; a subset of phonological awareness (Ehri, Nunes, Willows, et al., 2001)

phonics – the study of the relationships between letters and the sounds they represent (Moats, 2009a)

phonological awareness – ability to discriminate the sound structure of a language; the ability to perceive, analyze, and manipulate sounds in words (Gillon & McNeill, 2009; Justice & Schuele, 2004; Martin, 2012; Schuele & Boudreau, 2008; Torgesen, 1998)

phonology – the study of speech sounds (Martin, 2012; Moats, 2009a)

reading comprehension – the process of gaining meaning through the act of reading (Moats & Hennessy, 2010)

reading fluency – the ability to apply sound-symbol knowledge with automaticity when reading, thus enabling the reader to focus on content rather than decoding (Land, 2016; Moats & Davidson, 2009)

rime – the vowel and everything that comes after it in a syllable (Moats, 2010)

Assumptions

This study assumed that respondents to the questionnaire were either SLPs or teachers. A further assumption was that respondents completed the questionnaire independently and to the best of their ability.

Delimitations

The study was delimited to SLPs and teachers in the United States. SLPs had at least a bachelor's degree. SLPs with a master's degree may have been certified through ASHA. Teachers had at least a bachelor's degree.

Justification

Reading is an important foundational skill that enables individuals to access information. The importance of prerequisite skills that play a vital role in this foundation cannot be overstated. For example, students who have deficits in phonological awareness will have a much more difficult time learning to read fluently and for comprehension. However, when students become fluent readers, benefits are wide-ranging. Better academic performance may result, which contributes to higher test scores and higher graduation rates. Beyond high school, graduates have more opportunities for employment at higher salaries than non-graduates.

By establishing basic reading skills early in a child's education, frustration, delays in learning higher-level reading skills, and student retention may be diminished. SLPs may play a vital role in this, teaching the necessary skills in phonology and morphology to students in primary grades who may otherwise not complete high school due to difficulties in reading as a way to learn.

Because of extensive training in oral language development, including phonology and morphology, SLPs are in a unique position to provide support for written language instruction, particularly for students who struggle to develop adequate skills in this area. By learning more about how SLPs currently function within schools and about their knowledge of phonological awareness as related to reading, additional support for reading instruction may be realized. This knowledge may allow educational systems to reconceptualize how this group of professionals who are already in place in many schools and who are already engaged in the process of improving oral language skills in children may contribute to the development of written language skills.

CHAPTER II – REVIEW OF RELATED LITERATURE

Phonological Awareness

Terms such as phonemic awareness and phonics often are used interchangeably with phonological awareness; these terms are related, but they do not mean the same thing. Phonological awareness has been called a skill that is key to future reading success (Henbest & Apel, 2017; Høien-Tengesdal & Tønnessen, 2011; Lerner & Lonegan, 2016; Nithart, et al., 2011; Porta, Carrada, & Ison, 2016). It is considered to be a metalinguistic skill, in that it requires thought about language distinct from word meaning. This skill is used when individuals perceive and analyze the sound structure of words (Gillon & McNeill, 2009; Justice & Schuele, 2004; Martin, 2012; Schuele & Boudreau, 2008). Phonological awareness has been defined as the ability to think about the sounds in words, and to identify and manipulate individual sounds, or phonemes (Henbest & Apel, 2017; Torgesen, 1998); "conscious awareness" of the phonological structure of words (Torgesen, 2002, p. 12); the ability to analyze words on a sound-by-sound basis (Schuele & Boudreau, 2008); and knowledge of the sound structure of language (Adlof, Catts, & Lee, 2010).

Phonological awareness, in its purest form, involves the sounds of words when spoken; it does not involve the use of letters. In fact, letter knowledge and how letters correspond with sounds in the language are not required to develop basic phonological awareness skills (Schuele & Boudreau, 2008). However, it has been stated that, for many children, continued growth in phonological awareness is enhanced once a child recognizes that letters are used to represent the sounds in words (Foorman, et al., 2003; Morris, 2015).

Phonological awareness is present when a child is able to recognize that there are different words that make up a sentence or that a single word may contain several parts known as syllables. Other phonological awareness skills include recognizing and producing rhyming words, identifying words that have the same beginning and ending sounds, deleting parts of a word or syllable, and blending parts of a word or syllable (Del Campo, Buchanan, Abbott & Berninger, 2015; Lerner & Lonigan, 2016; Schuele & Boudreau, 2008). Some of these skills, such as the recognition of rhymes, begin to develop during the preschool years (Lonigan, et al., 2000; Torgesen, 2000). In order to identify rhymes, a child must begin to develop awareness of the parts of words that sound the same. The meaning of words is not important at this point, only that the child has the ability to hear that two words do, in fact, contain the same sounds at the end of the word (b<u>at</u>, c<u>at</u>) (Torgesen, 2000).

In a meta-analysis, Ehri, Nunes, Willows, et al. (2001) found that instruction in phonological awareness was a vital component of comprehensive reading instruction, with phonological awareness characterized as a skill that is critical to the development of decoding skills (Driver, Pullen, Kennedy, Williams, & Ely, 2014; Melby-Lervag, et al., 2012; Wade-Woolley, 2016). In the meta-analysis, 52 published studies were considered, although the studies included varied components. For example, not all studies taught the same phonemic awareness skills, the ages of the participants ranged from preschool to sixth grade, some students had been diagnosed with reading problems and others were considered to be at risk for reading problems, instruction was provided by different types of professionals, and group size varied from individuals to classroom groups. Overall effect size was used in order to determine whether or not phonemic awareness instruction

had a statistically significant impact on reading skills, and whether or not these variations made a difference.

Three groups of readers were identified. One group included students who did not have any reading problems. The second group was identified as being at risk for reading problems. The third group was made up of students who already had been identified as those with a reading disability. Ehri, Nunes, Willows, et al. (2001) reported that findings from this meta-analysis revealed positive benefits when students were provided with phonemic awareness instruction, as compared to alternate forms of instruction or no instruction as a way to aid in gaining reading and spelling skills. In contrast to a typical pattern of decline in skills once instruction ends, the meta-analysis found that effect sizes were larger during a follow-up posttest (d=1.33) for at-risk readers than at the immediate posttest (d=0.86). The authors surmised that many of the at-risk students were preschoolers, kindergartners, or first graders when instruction began, and that it took time after instruction ended for the full benefits of phonemic awareness instruction to be realized.

Another finding was that more gains were found when students were taught only one or two phonemic awareness skills at a time than when they were taught three or more skills. Teaching three or more skills at one time could have confused the students and not given them time to stabilize one skill before progressing to another. Ehri, Nunes, Willows, et al., (2001) reported that, overall, the meta-analysis found phonological awareness instruction was a way to improve the acquisition of reading and spelling skills.

By establishing good decoding skills, a student is better able to read fluently and for comprehension (National Reading Panel, 2000; Veenendaal, et al., 2015). Dixon,

Stuart, and Masterson (2002) found that phoneme segmentation, one of the more advanced phonological awareness skills, was directly related to word learning and to developing the alphabetic principle.

Phonemic Awareness

The process of phonemic awareness comes into play when a deeper level of phonological awareness occurs (Justice & Schuele, 2004). Some use the term phonemic awareness as a subset of phonological awareness when children are able to isolate and manipulate the individual sounds, or phonemes, in words (Ehri, Nunes, Willows, et al., 2001). Other skills that fall into this category are the ability to segment initial and final phonemes in words, blend individual phonemes into words, segment words into each component phoneme, and delete and manipulate individual phonemes. These skills are found on a continuum from less complex to more complex and occur based on developmental status of the child (Schuele & Boudreau, 2008).

Basic to the understanding of phonemic awareness is the concept of the phoneme (Torgesen, 2000). Phonemes are the basic sound structure of language, and may be represented by one letter of the alphabet (/k/ as in **k**ey) or by more than one letter (/sh/ as in fi**sh**) (Ehri, Nunes, Stahl, & Willows, 2001; Farrell, 2012; Gough & Juel, 1991; Martin, 2012; Moats & Tolman, 2009). Graphemes, or the written form of phonemes, may use different letters for the same phoneme (/k/ may be spelled with **k**, **c**, or **ck**) (Martin, 2012; Yale, 1914). Some experts say there are "about" 41 phonemes in the English language (Ehri, Nunes, Willows, et al., 2001, p. 253), some say there are 42 phonemes (Martin, 2012; Yale 1914), and others cite 44 phonemes (Moats & Tolman, 2009; Morris, 2015; Torgesen, 2000). Spoken words are made up of various

combinations of phonemes (/k/ /-a-/ /t/ for *cat;* /k/ /-a-/ /p/ for *cap*) and may be manipulated through substitution (substitute the /k/ in *cat* with /b/ to make the word *bat*) or deletion (remove the /k/ in *cat* to make the word *at*). Phonemes are structured and restructured to make all the words we say (Torgesen, 2000). Figure 1 illustrates the sequence of phonological awareness development.

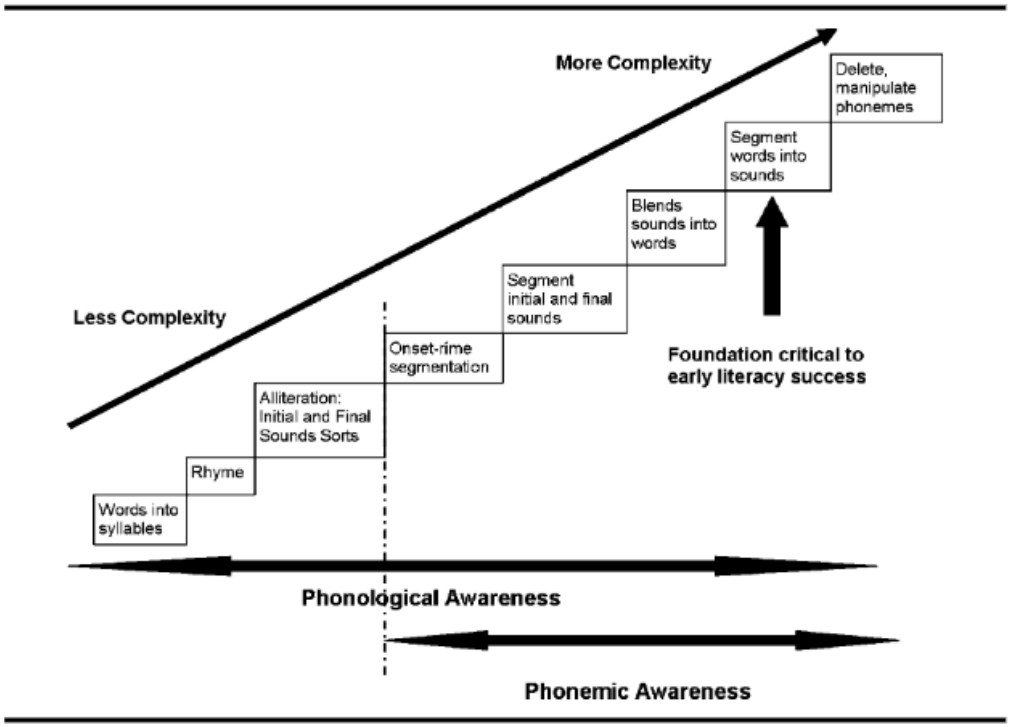

Figure 1. Sequence of phonological awareness instruction and intervention. Reprinted from "Phonological Awareness Intervention: Beyond the Basics," by M. Schuele and D. Boudreau, 2008, *Language, Speech, and Hearing Services in Schools*, *39*(1), p. 6. Reprinted with permission (Appendix A).

Phonics

Phonological awareness, which encompasses phonemic awareness, is concerned only with analysis of sounds in words on an oral basis (Schuele & Boudreau, 2008).

Phonics involves pairing the sounds in words with letters or groups of letters, called graphemes, and teaching children the alphabetic principle. This principle states that individuals must grasp the concept that spoken words can be broken down into individual speech sounds and that these speech sounds are represented by the orthography of the language, whether through the use of one letter (/t/ in ***t****ie)*, or more than one letter (/ch/ in ***ch****urch)* (Ehri, Nunes, Stahl, et al., 2001; Farrall, 2012; Gough & Juel, 1991). The understanding of this principle bridges the gap between oral language and written language and is an essential element that must be developed in order to become a good reader (Warnick & Caldarella, 2016).

Phonics instruction not only teaches that speech sounds may be associated with letters or groups of letters, it also is concerned with teaching the ability to read words in the context of a sentence or passage, and those with no context clues available. Phonics may be taught in several ways: synthetic phonics, analytic phonics, embedded phonics, analogy phonics, onset-rime phonics, and phonics through spelling (Ehri, Nunes, Stahl, et al, 2001). In synthetic phonics, a part-to-whole approach is used. Students are taught to read individual graphemes, then to blend these graphemes into a word (phonemes /c/ /-a-/ /t/ are blended to become the word, *cat*). Analytic phonics does the opposite. A word is provided, and students must produce the component phonemes (Clark, 2016).

Embedded phonics also may be called "phonics in context." In this approach, known sound-symbol correspondences are used along with contextual clues to read unfamiliar words. Analogy phonics uses knowledge students already have. For example, if students can read the word *cat*, they are taught to use this word to decode unfamiliar words that share the same rime, such as *bat*, *sat*, and *hat* (Ehri, Nunes, Stahl, et al., 2001).

In onset-rime phonics, syllable structure is used to aid in decoding. Awareness of onsets and rimes allows individuals to recognize that one syllable actually can be two units, with the onset being any phonemes that occur prior to the vowel, and the rime being the vowel and any phonemes that follow (Zuriyatiaslina, et al., 2018). Although some syllables, such as *egg* and *itch*, do not have an onset; these syllables consist of rimes only (Moats & Hall, 2010). Phonics through spelling programs utilize the motor activity of writing the phonemes in words (Ehri, Nunes, Stahl, et al., 2001). No matter which approach is used, phonics instruction teaches a child how to decode words. The ultimate goal of phonics instruction is that students would read with automaticity, thus contributing to the fluent reading of text (Morris, 2015).

Morphology

Since the spelling of words in the English language reflects both sound structure and word structure, English is known as a morphophonemic language (Apel & Henbest, 2016; Apel & Werfel, 2014). Morphology is the study of word structure and the meaning of these structures (Claravall, 2016; Del Campo, et al., 2015). Morphemes are the smallest parts of words that carry meaning and may be free or bound (Crosson & McKeown, 2016). Free morphemes are also known as base words, or those that can stand alone and do not have to be combined with other words or word parts in order to have meaning (e.g., *cat*, *pumpkin*, or *run*). Bound morphemes must be connected with other morphemes in order to have meaning and may be roots, prefixes, suffixes, or combining forms (Apel & Henbest, 2016; Apel & Werfel, 2014; Moats, 2009b).

Many roots used in the English language are Latin in origin (Wall, 2016) and do not stand alone, e.g., *fid* (faith, trust), *plen* (full), or *strenu* (vigorous). However, as

language has evolved over the years, some roots have become free morphemes, with meaning of their own, e.g., *camp* (field), *vent* (wind), or *barb* (beard) (Kennedy, 1996; Moats, 2009b).

A prefix is a word part that comes before a root or base word. Examples of common prefixes are *dis-* (take away, not, deprive of), *in-/im-/il-/ir-* (not), *re-* (back, again), and *un-* (not). Suffixes may be inflectional or derivational. Inflectional suffixes do not change the part of speech of the word to which they are added. Examples of inflectional suffixes are tense markers for verbs (*-ed, -s, -ing*), plural markers for nouns (*-s, -es*), and comparative markers for adjectives (*-er, -est*). Derivational suffixes are used to let the reader to indicate parts of speech and may be noun suffixes (e.g., *ment*/tempera*ment*), adjective suffixes (e.g., *ive*/predict*ive*), verb suffixes (e.g., *ize*/strateg*ize*), or adverb suffixes (e.g., *ly*/ mournful*ly*) (Crosson & McKeown, 2016; Moats, 2009b).

Moats (2009b) noted that "combining forms" are Greek-based bound morphemes that are used with other bound morphemes to form whole words. Many of the scientific and mathematical terms in English are Greek in origin. These word parts are not necessarily divided into the categories of roots, prefixes, or suffixes. Examples of combining forms are *psych* (mind), which may be combined to make words such as *psych*ology or neuro*psych*ology, or *anthro* (human), which may be combined to make words such as phil*anthro*py or *anthro*pology.

Once students have been instructed in morphology, they begin to use these skills to break down words into component parts in order to read the words. In addition, knowledge of the meaning of common roots, prefixes, suffixes, and combining forms

aids students in comprehending the meaning of words (Apel & Henbest, 2016) and increasing vocabulary through relating meaning to words (Crosson & McKeown, 2016; Moats, 2009b).

Morphological awareness consists of the ability to have a conscious awareness of the parts that make up words and can have a positive influence on the development of spelling skills (Bangs & Binder, 2016). Research has shown that morphological awareness skills predict performance in reading real and nonsense words accurately and fluently, along with fluency when reading connected text and the comprehension of material read (Apel & Werfel, 2014; Kirby, et. al, 2012; Mokhtari, Neel, Matatall, & Richards, 2016).

The Role of the Speech-Language Pathologist

Humans begin to acquire the understanding of oral language through listening to the speech and language of others without an awareness of phonology or morphology. However, it is essential that an awareness of phonemes and how they are combined and reorganized to make different words is developed in order to learn to read efficiently (Ugolini, et al., 2016). This awareness can begin even before we understand that, in written language, phonemes are represented by letters or groups of letters called graphemes (Soifer, 2011; Torgesen, 2000).

The American Speech-Language-Hearing Association published a technical report entitled *The Roles and Responsibilities of Speech-Language Pathologists with Respect to Reading and Writing in Children and Adolescents* (American Speech-Language-Hearing Association, 2001). In this report, it was discussed that SLPs' knowledge of oral language development and the alphabetic principle puts this group of

professionals in a unique position to teach oral language skills along with written language skills. Studies have shown that students who have problems with receptive or expressive oral language are four to five times more likely to have difficulties with learning to read (Bishop & Adams, 1990; Catts, 1993, Scarborough & Dobrich, 1990).

There is a well-established relationship between oral language and reading (Aram & Nation, 1980; Catts, 1993; Newbury, et al., 2014). Not only have problems understanding the speech of others and expressing oneself orally been shown to be a cause of reading disabilities, they may also be a consequence of them, with reading problems effectively limiting vocabulary development (Language and Reading Research Consortium, 2015; Snow, et al., 1998). Catts and Kamhi (1999) stated that, because oral language problems are part of the cause of reading problems and also a result of them, oral language should be a major focus of the remediation of reading difficulties. Agreeing with Catts and Kamhi, the American Speech-Language-Hearing Association (2001) stated that because there is such a strong relationship between oral and written language, which includes both reading and writing, SLPs should play a role in remediating written language difficulties, just as they play this role in the remediation of oral language problems. SLPs' training includes all levels of oral language, including phonology and morphology. They are trained to analyze the phonemic structure of words and to present ways to remediate difficulties in this area.

Theoretical Foundation

The 1875 elementary teacher examination for the California State Board included the following categories of information: written arithmetic, mental arithmetic, written grammar, oral grammar, geography, history of the United States, theory and practice of

teaching, algebra, physiology, natural philosophy (physics), constitution of the United States and California, school law of California, penmanship, natural history (biology), composition, reading, orthography, defining (word analysis and vocabulary), vocal music, and industrial drawing (Shulman, 1986). The maximum points that could be earned on this examination was 1000, with only 50 points possible for the category of theory and practice of teaching. This meant that 950 points, or 95% of the examination, had to do with content knowledge of the subjects to be taught. In other words, it was understood that teachers should have knowledge of the subjects they would teach in order to be able to teach them effectively.

At the time of Shulman's seminal work, teacher examinations often focused on the capacity to teach, not the content that would be taught (Shulman, 1986). Shulman reported advising a state on its teacher evaluation instrument that included a proposal for the following categories: organization in preparing and presenting instructional plans, evaluation, recognition of individual differences, cultural awareness, understanding youth, management, and educational policies and procedures. Shulman referred to this lack of attention to subject matter knowledge as the "missing paradigm problem" (p. 6). He questioned, if teachers were not well versed in subject content knowledge, how would students come to find solutions when they lacked understanding of what was being taught? Shulman's program, *Knowledge Growth in Teaching*, attempted to return focus to the importance of teachers' mastery of content knowledge. Shulman acknowledged the importance of pedagogical skill, but advocated for a better balance between pedagogy and content knowledge. He asked the question: "How does learning for teaching occur?" (p. 8).

With this question, Shulman (1986) proposed a theoretical framework, and defined three categories of content knowledge: (a) subject matter content knowledge, (b) pedagogical content knowledge, and (c) curricular knowledge. Subject matter content knowledge (CK) was defined as how much a teacher knew about the subject content and how this knowledge was organized in the teacher's brain. Shulman acknowledged that ways to represent content knowledge already existed. There were Bloom's cognitive taxonomy, Gagne's varieties of learning, Schwab's distinction between substantive and syntactic structures of knowledge, and Peters' notions that paralleled Schwab's. Shulman stated that, in order to possess CK, teachers must understand the reasoning behind concepts and what makes concepts essential for the learner.

As stated by Shulman (1986), pedagogical content knowledge (PCK) was said to go beyond knowledge of the subject matter to knowledge that is required to teach the subject matter. PCK was touted as the element that would separate the content specialist from one who is qualified to teach the content (Shulman, 1987). PCK was needed in order for someone to grasp how things are learned and what variables may make concepts easy or difficult. Teachers must have strategies to overcome students' preconceptions and misconceptions.

Curricular knowledge was defined as the principle that teachers should understand alternatives in curriculum that would treat a lack of knowledge in students just as a physician understands a range of treatment options for a given condition (Shulman, 1986). For example, a teacher of biology would be expected to understand not only subject content, but also materials that would be used in instruction, and knowledge of alternative texts, software, visual aids, and other tools that could be used to increase

student learning. Additionally, a teacher should know what other things a student is studying at that time and be able to relate content to other things happening in a student's world.

In 1987, Shulman expanded the categories of teachers' knowledge base to seven. Along with CK, PCK, and curricular knowledge, he added general pedagogical knowledge; knowledge of learners and their characteristics; knowledge of educational contexts; and knowledge of educational ends, purposes, and values, and philosophical and historical grounds (Depaepe, Verschaffel, & Kelchtermans, 2013; Shulman, 1987).

According to Depaepe, et al. (2013), 51 of 60 studies included in their meta-analysis referred to Shulman (1986, 1987) when introducing the concept of PCK. Definitions examined in the meta-analysis found four common characteristics aligned with Shulman's ideas:

1. PCK connects at least two forms of knowledge (CK and pedagogical knowledge)
2. PCK deals with the knowledge teachers must have in order to "achieve the aims of teaching"
3. PCK is "specific to a particular subject content; it is teachers' pedagogical translation of particular subject matter"
4. CK is a prerequisite to PCK

To bring Shulman's theories into the current day, Morris (2015) found that, in order to teach a child how to decode, knowledge and skill on the part of the teacher were required. A teacher must understand the natural progression of the acquisition of phonics skill. Additionally, a teacher must be able to determine at what level of development a

child's skills lie in order to target the appropriate skills to teach. Finally, a teacher must know how to teach sounds and symbols. Morris' words echo those of Joshi, et. al (2009), Moats (2009b, 2009c, 2014), Washburn, Joshi, and Binks-Cantrell (2011), and others who have long advocated for teachers to increase their knowledge of basic language structures in order to be able to teach language and reading skills.

Assessing Teacher Knowledge of Basic Language Constructs

The question of how to go about improving children's literacy skills is one that has gained more attention in recent years. Research has shown that skills needed by teachers in order to effectively teach reading to young students include knowledge about typical reading development, how to detect reading difficulties, how to teach reading to students with a wide range of instructional needs (Moats, 2014; Spear-Swerling & Brucker, 2003), and knowledge of the structure of the English language (Joshi, et. al, 2009; Moats, 1994; Moats, 2009c; Moats, 2014; Washburn, et al., 2011). In addition, teachers should have knowledge of more basic language structures, such as phonology, morphology, syllable types, and phoneme-grapheme correspondences (Moats, 2009c; Moats, 2014). Research has shown that teacher knowledge in these areas is low (Bos, et al., 2001; Cunningham, Perry, Stanovich & Stanovich, 2004; Moats, 1994; Moats & Foorman, 2003; Spencer, Schuele, Guillot & Lee, 2008).

Moats' 1994 work is considered to be a landmark study in this area. She acknowledged that research over the previous 20 years had established that reading difficulties stem from specific deficits in language processing, including deficits in phonological awareness. At that time, it was recognized that phonological awareness skill was one of the best predictors of reading success. In this study, Moats examined the

knowledge of experienced teachers with regard to language structures. Moats posited that, in order to teach students, especially those who struggled with learning to read, teachers must have enough knowledge of the structure of language to be able to assess their students' reading skills on an ongoing basis and to provide appropriate instruction to remediate deficiencies. Without adequate knowledge, teachers who may otherwise be able to help their students, may make more referrals to special education. It was found that teachers in this study demonstrated limited knowledge about terminology related to language structures and knowledge of phonics, and awareness of phonology and morphology. Moats stated that it was crucial for teachers to have enough knowledge of the structure of the English language so they could assess their students' reading skills on an ongoing basis and provide the appropriate instruction to fill gaps their students have. In this study, Moats found that teachers had limited knowledge of not only terminology related to language structure, phonics, phoneme awareness, and morpheme awareness, they also had deficits in knowledge such as correctly identifying the number of phonemes in words and correctly relating rules for spelling.

Researchers have continued to measure teacher knowledge of phonological and orthographic awareness, along with beliefs of teachers about their own knowledge (Alghazo & Al-Hilawani, 2010; Bos, et al., 2001; Cunningham, et al., 2004; Moats & Foorman, 2003; Spencer, et. al, 2008). In these subsequent studies, researchers continued and expanded on Moats' 1994 study. Bos, et al. (2001) found that special education teachers had greater knowledge of language structures than general educators, but all those surveyed answered correctly fewer than two thirds of the questions in this area. Additionally, teachers who believed themselves to have knowledge of language

structures also believed they were prepared to teach both good readers and struggling readers. Moats and Foorman (2003) conducted a four-year, longitudinal study of reading instruction in low-performing, high-poverty schools. Teachers were surveyed regarding their knowledge of concepts related to reading. The authors found that approximately one third of their sample had a basic understanding of word structure knowledge and approximately 45% of the sample demonstrated skills necessary for informal, ongoing assessment of student data and performance. Cunningham, et al. (2004) found that the teachers in their study were more in tune with the letters in words rather than the sounds in words, resulting in inaccurate performance when identifying the number of sounds in words.

Spencer, et. al (2008) found that, for a task where teachers were asked to determine the number of speech sounds in the word *stop*, only 55% of teachers were correct in counting the phonemes, although this word was identified as one of the easiest words presented to the teachers in the study. Alghazo and Al-Hilawani (2010) conducted a study to assess teacher knowledge of phonological awareness, skill, and classroom practices. The authors found significant differences between knowledge and practice, knowledge and skills, and skills and practice, regardless of teachers' years of experience and classroom size.

A 2004 study by Applegate and Applegate illustrated the Peter Effect with regard to preservice teacher attitudes toward the teaching of reading. The Peter Effect is based on a story in the Bible, in which the Apostle Peter was asked for money by a beggar. Peter replied that he could not give what he did not have (Acts 3:5). In a pilot study, Applegate and Applegate (2004) found that only 25.2% of 195 college sophomores

enrolled in teacher education programs reported great enjoyment of reading. Another 54.3% of the preservice teachers stated that they were unenthusiastic about reading. A follow-up study with 184 college sophomores who intended to become teachers revealed that 48.4% of the participants were classified as unenthusiastic readers. Binks-Cantrell, Washburn, Joshi, and Hougen (2012) extended the findings of this study to include the idea that if those who educate teachers at the university level do not know the basic constructs of the English language, they would not be able to teach these constructs to future teachers who, in turn, would not be able to effectively teach these constructs to their students who struggle to learn to read. In 2016, Purvis, McNeill, and Everatt completed a study in which preservice teachers received seven hours of training in basic language structures, including phonology and morphology. Significant improvement over pre-instruction levels was noted in all areas measured. This study illustrates the need for explicit training of teachers in the basic constructs of language so they may be equipped to teach these structures to their elementary students.

A scale to assess teacher knowledge of basic language constructs, the *Basic Language Constructs Survey*, was developed and statistically validated by Binks-Cantrell, Joshi, and Washburn (2012). Included in this scale were skill-based items similar to those others had used in studies (McCutchen, et al., 2002; Moats, 1994) along with items to evaluate teachers' beliefs of their skill based on work by Bos, et al. (2001); Cunningham, et al. (2004); and Spear-Swerling and Brucker (2003). For the scale developed by Binks-Cantrell, Joshi, et al., (2012), participants were teacher educators (n=114) and preservice teachers (n=172). The scale consisted of 46 items chosen from 52 items used in a pilot study. There were 11 background items, eight items that asked

participants to rate their self-perception, knowledge, and skills in basic language constructs, and 38 knowledge/ability items. Twelve of the items assessed knowledge of a term or concept and 26 items measured skill, or the ability to perform a certain task. Knowledge and skill were assessed for four basic constructs: phonemic, phonological, phonics, and morphological. A multiple-choice format was used for answer choices, with most items having five or six answer choices. Items were scored as 1 for correct and 0 for incorrect. Online administration of the questionnaire lasted for two weeks, with multiple completions eliminated by tracking IP addresses.

Item difficulty was assessed following a method outlined by Wood (1960) in which the proportion of participants who provided correct answers to each item was determined and expressed as a *p* value. Lower *p* values represented more difficult items and higher *p* values represented easier items. No items had *p* values of 0.0 or 1.0, which would have reflected items that did not contribute to measuring individual differences (Thorndike, Cunningham, Thorndike, & Hagen, 1991). The authors of the scale found that on average, the difficulty level for all scale items was 0.63 (SD=0.23) (Binks-Cantrell, Joshi, et al., 2012).

Binks-Cantrell, Joshi, et al. (2012) used a separate discrimination index (*D*) to measure how well individual items discriminated between participants who had a high level of knowledge and those who had a low level of knowledge of the skills measured. In order to determine *D*, the number of participants who had high scores (top 27%) and answered an item correctly was compared with the number of participants in the bottom 27% who were correct on the same item (Wiersma & Jurs, 1990). According to Wood (1960), a higher discrimination index indicated that an item does a better job of

discriminating between participants who performed well and those who performed poorly. Binks-Cantrell, Joshi, et al. (2012, p. 159) cited the research of Ebel and Frisbie (1986) in determining levels of a discrimination index. They stated that items with *D* of 0.40 and greater were considered to be "very good," items with *D* of 0.30-0.39 to be "reasonably good but possibly open to improvement," items with *D* of 0.20-0.29 to be "marginal and need some revision," and items with *D* below 0.19 to be "poor and need major revisions or should be eliminated." For the scale they developed, Binks-Cantrell, Joshi, et al. (2012) found that the mean *D* was 0.46 (SD=0.19), with a range of 0.12 to 0.78. The authors indicated that items measuring the number of syllables in a word needed revision or should be eliminated from the scale due to low discrimination indices, but that 30 of the 38 knowledge/skill items had discrimination indices from 0.30 to 1.00.

Binks-Cantrell, Joshi, et al. (2012) conducted confirmatory factor analysis (CFA) to test a model of phonology, phonemics, phonics, morphology, and the knowledge and skill of participants, finding fair fits for the models tested. Exploratory factor analysis (EFA) was then conducted. Through varimax orthogonal rotation, six factors were identified. These factors were morphology, counting the number of syllables in words, phonemes, phonics terminology, phonemic awareness, and phonics rules. Five items on the questionnaire did not fit any of these factors. Two of these five items were designed to assess phonics skill. The authors recommended that additional items assessing phonics skill be added to the scale. Other items that did not fit within any of the factors listed above required participants to identify the definition of phonological awareness, recognize the definition of phoneme and phoneme awareness, or identify examples of instructional phonemic awareness tasks. Again, the authors recommended that additional

items be developed to assess knowledge in these areas. Internal consistency reliability for the scores on the scale was reflected by a Cronbach's alpha of 0.90. Because there were no items that, if deleted, caused an increase in Cronbach's alpha, none were removed.

Purpose of the Current Study

The purpose of this study was to compare knowledge and skill of basic language constructs of literacy such as phonology and morphology in SLPs and teachers and to assess attitudes toward SLPs having a role in teaching reading to beginning readers. Instruments that measure some of these skills in children (Robertson & Salter, 2018; Torgesen & Bryant, 2004) and children and adults (Kaufman, 2014; Schrank, Mather, & McGrew, 2014; Torgesen, Wagner, & Rashotte, 2012; Wagner, Torgesen, Rashotte, & Pearson, 2010; Wagner, Torgesen, Rashotte, & Pearson, 2013; Wechsler, 2009) exist in the form of individually-administered standardized tests. A validated scale to measure these skills in general education teachers was created by Binks-Cantrell, Joshi, et al. (2012). However, no self-completed, validated scales existed that measured knowledge of phonology, phonics, and morphology in SLPs.

Often, researchers are interested in quantifying knowledge, only to find that no validated scale exists to measure the construct of interest. It would be possible to ask questions of experts and those with experience in the area of interest but, without validation studies, results may not be representative of the desired sample and may not be generalizable. According to DeVellis (2012), the simple "assembly" (p. 13) of a measurement instrument, rather than careful development that takes into consideration

theory and sound statistical procedures, could result in erroneous conclusions leading to decisions not based in fact.

CHAPTER III – METHODOLOGY

This study explored the attitudes of SLPs and teachers with regard to the inclusion of SLPs as part of reading instruction for elementary students. The study also examined phonological and morphological knowledge among SLPs and teachers.

A scale was developed based on the *Survey of Basic Language Constructs* (Binks-Cantrell, Joshi, et al., 2012). Demographic information was collected, along with attitudinal information regarding SLPs being included in reading instruction in elementary schools. Additionally, this instrument consisted of two major scales: knowledge and skill. Within each of these constructs, the following subscales were developed: phonological awareness, phonemic awareness, phonics, and morphological awareness.

The following research questions were considered:

1. What are the attitudes of speech-language pathologists and general education elementary (K-6) teachers regarding speech-language pathologists being included in reading instruction?
2. What is the level of phonological and morphological knowledge and skill possessed by speech-language pathologists?
3. What is the level of phonological and morphological knowledge and skill possessed by general education elementary (K-6) teachers?
4. What is the performance of the *Revised Basic Language Constructs Survey* when used with speech-language pathologists and general education elementary (K-6) teachers?

In addition, the following research hypothesis was posited:

Research hypothesis 1. There will be a difference in measurement of the constructs of phonological and morphological skill and knowledge between SLPs and teachers.

Instrument

Permission to use the Binks-Cantrell, Joshi, et al. (2012) scale was requested by the researcher. The authors granted permission for their scale to be used for the current project and suggested potential additions (Appendix B). For the purpose of this project, the syllable-counting items were removed, as recommended by the authors. Also, additional items were developed by the researcher in the areas that did not fit into any factors during EFA conducted by Binks-Cantrell, Joshi, et al. (2012).

Reliability, or the overall consistency of the scale, was considered. Since there was one administration of the scale as part of this study, reliability was determined based on internal consistency. Reliability indices of .90 were required as this level indicates homogeneity of scale items (Hopkins, 1998).

Pilot Study

Following approval of this project by the Institutional Review Board (IRB) (Appendix C) at The University of Southern Mississippi, a pilot study was conducted by sending the questionnaire (Appendix D) to a group of approximately 30 individuals who represented the population of SLPs and teachers who would participate in the study. SLPs and teachers held undergraduate or graduate degrees. SLPs with graduate degrees may have been certified by the American Speech-Language-Hearing Association (ASHA). SLPs and teachers also may have held certification as Certified Academic

Language Therapists (CALT) through the Academic Language Therapy Association (ALTA).

Participants

Participants for this project were sought from three groups: The American Speech-Language-Hearing Association (ASHA), the National Education Association (NEA), and the SPELLTalk listserve. At the end of 2015, ASHA represented 185,847 members (American Speech-Language-Hearing Association, 2016a). This number included audiologists; SLPs; speech, language, and hearing scientists; support personnel; and undergraduate, graduate, and doctoral students in communication sciences and disorders. ASHA reported 156,254 certified SLPs at the end of 2015. Although all ASHA members are not members of their state associations, the researcher requested that questionnaires be sent to members of state speech-language-hearing associations.

The NEA is a group of professional teachers with over three million members (National Education Association, n.d.). Each state in the United States has an affiliate group. The researcher contacted state teacher associations and asked that the questionnaire be sent to members.

Additionally, the SPELLTalk listserv was utilized to recruit participants. SPELLTalk is a "listserv discussion group for educators dedicated to improving their students' spelling, reading, and writing skills" (Learning by Design, n.d.). The number of listserv members is not known. Because an insufficient number of participants were found from these sources, convenience sampling and snowball sampling also were used.

Procedures

After responses to the pilot study were received and updates to the questionnaire were made, an e-mail was sent to state speech-language-hearing associations (Appendix E); state affiliates of the NEA (Appendix F); and the SPELLTalk listserv (Appendix G) with a request to distribute this e-mail to members. The e-mail either contained an attachment letter (Appendix H) with a link to a questionnaire hosted by Qualtrics (Appendix I), or a link to the questionnaire existed within the e-mail. For EFA and CFA, a sample size of at least 600 participants was needed. Because this level of participation was not attained through questionnaires sent as described above, the researcher employed convenience sampling by sending the questionnaire to colleagues. Additionally, snowball sampling was employed by asking colleagues to forward the e-mail link to the questionnaire to other certified SLPs and teachers.

Data Analysis

Results of the questionnaire for research questions 1, 2, and 3 about attitudes of SLPs and teachers regarding SLPs' involvement in reading instruction were reported descriptively. Additionally, descriptive analysis was used to report the level of phonological awareness, phonics, and morphological knowledge held by SLPs and teachers. To answer research question 4, which asked about the performance of the *Revised Basic Language Constructs Survey* when used with SLPs and teachers, exploratory factory analysis (EFA) and confirmatory factor analysis (CFA) were completed. Principal axis factoring (PAF) with oblique rotation were used in EFA. EFA was used to examine the structure of the relationship among scale items followed by CFA to confirm the findings of EFA.

To answer the research hypothesis, multi-group invariance testing was completed. This allowed the researcher to determine whether or not there were any differences in the behavior of the scale between the two groups: SLPs and teachers.

Responses to open-ended questions were analyzed in order to identify themes that may emerge. The purpose of these questions was to further examine attitudes of two groups, SLPs and general elementary teachers (K-6), toward SLPs being involved in reading instruction.

CHAPTER IV – RESULTS

The purposes of this study were to examine the attitudes of SLPs and teachers regarding SLPs' participation in beginning reading instruction and to analyze the levels of phonological and morphological knowledge and skill held by these two groups. Following a pilot study, the questionnaire to be used in this study was revised before distribution to SLPs and teachers. Four research questions and one hypothesis were considered. Outcomes of research questions 1, 2, and 3 reported descriptively. These questions considered attitudes, along with comparisons of phonological and morphological knowledge and skill for SLPs and teachers. The fourth research question employed EFA and CFA to analyze the performance of the questionnaire used to collect data for this study. The research hypothesis was investigated through invariance testing to determine if there was a difference in measurement of the constructs of phonological and morphological skill and knowledge between SLPs and teachers.

The research questions were as follows:

1. What are the attitudes of speech-language pathologists and teachers regarding speech-language pathologists being included in reading instruction?
2. What is the level of phonological and morphological knowledge and skill possessed by speech-language pathologists?
3. What is the level of phonological and morphological knowledge and skill possessed by teachers?
4. What is the performance of the *Revised Basic Language Constructs Survey* when used with speech-language pathologists and teachers?

Pilot Study

After receiving approval for this project from the University of Southern Mississippi IRB, a pilot study was conducted. The pilot study consisted of 11 demographic items, four items about attitudes of SLPs teaching beginning reading skills, 27 knowledge items, and 29 skill items. Responses were received from 44 individuals. Of these 44 responses, 17 were complete. One other respondent omitted seven items and one respondent omitted eight items. Therefore, 19 responses were used to determine the reliability of the pilot questionnaire using Cronbach's alphas. Cronbach's alphas were determined for knowledge items, skill items, and knowledge and skill items combined. These values were found to be 0.77 for knowledge items, 0.85 for skill items, and 0.88 for knowledge and skill items combined. Since all Cronbach's alpha levels were > 0.7, a high level of reliability was indicated.

Several items on the pilot study had correct response rates that ranged from 80-100%. These items included phonological and phonics knowledge and skill questions. Knowledge items with high correct response rates included an item about syllable counting and an item that required the respondent to identify a word that contained a soft "c." Skill items with high correct response rates consisted of syllable counting items and items that required respondents to identify a word with the same vowel sound as the stimulus word.

Revisions Based on the Pilot Study

After responses to the pilot study were received, the following revisions to the instrument were made. An additional demographic item was added to determine the types of professional certifications held by the respondents. Two phonemic awareness

knowledge items were added. The number of items for phonemic awareness skill and morphemic awareness skill was increased. The researcher attempted to increase the difficulty level of phonics items that received high correct response rates. The authors of the scale on which this study was based (Binks-Cantrell, Joshi, et al., 2012) suggested omitting syllable-counting items; therefore, these seven items were not included on the final questionnaire. The final questionnaire contained eleven demographic items, four items that addressed the attitudes of SLPs and teachers regarding SLPs teaching beginning reading skills, 28 knowledge items, and 27 skill items.

Questionnaire Results

A link to the revised questionnaire, hosted by Qualtrics, was distributed to state speech-language-hearing associations and state affiliates of the National Education Association (NEA); these organizations were asked to forward the researcher's cover letter with a link to the questionnaire to their members. In addition, the cover letter and questionnaire link were sent to the SpellTalk ListServe and distributed via social media. These distributions resulted in 1,237 responses to the questionnaire. Of these, 562 responses were complete. For the purposes of this study, responses that came from those outside the United States were excluded from the analyses. In addition, responses that omitted more than five knowledge and skill items were not considered.

Participants

Although 600 participants was the original target sample size, responses resulted in 447 completed questionnaires that could be considered for analysis in this study. There were complete questionnaire responses from 267 SLPs, or 59.7% of the total. In addition, complete responses were received from 159 elementary teachers, or 35.6% of

the total. There was an additional group of 21 participants (4.7%) submitting complete questionnaire responses. This group did not classify themselves as either SLPs or elementary teachers, but reported holding other certifications such as CALP, CALT, Dyslexia Therapist, Elementary Reading Certification, Literacy Coach, Reading Interventionist, and Orton-Gillingham Certification. For the purposes of this study, the group of 21 participants, categorized as "other educators," was considered in descriptive analyses when answering the first three research questions but was not combined with either the group of SLPs or the group of teachers when answering the fourth research question and when considering the research hypothesis.

Demographics

Highest level of education.

The majority of participants in each group held master's degrees. Two SLPs held bachelor's degrees as did 29 teachers and 9 other educators. A small number of each group had doctorate degrees. This information is presented in Table 1.

Table 1

Highest Level of Education

Profession	Bachelor's Degree		Master's Degree		Doctorate Degree	
	Freq.	%	Freq.	%	Freq.	%
SLPs	2	0.7	249	93.3	16	6.0
Teachers	29	18.2	124	78.0	6	3.8
Other Educators	9	42.9	11	52.4	1	4.8

Years of experience.

Years of experience as SLPs, teachers, or other educators ranged from first-year professionals to those with 50 years of experience. The average years of experience across all professions was 16.39 years. See Table 2.

Table 2

Years of Experience

Profession	0-9 Years		10-19 Years		20 Years or More	
	Freq.	%	Freq.	%	Freq.	%
SLPs	77	30.6	73	29.0	102	40.5
Teachers	47	31.5	50	33.6	52	34.9
Other Educators	8	38.1	3	14.3	10	47.6

Certification types.

Participants were asked to report any professional certifications held. Nine participants omitted this item. Five of those who omitted this item identified as Elementary Teachers, two as SLPs, one as a Dyslexia Therapist, and one as a Reading Interventionist. Two hundred sixty-five participants reported having one area of certification, with the remainder (173, or 38.7%), reporting more than one certification area. A graph showing the number of individuals who held each certification is shown in Figure 1. Responses in the "Other" category included Special Education, Hearing Impaired, Gifted Education, Early Childhood Education, and certification in multisensory, phonetic methods such as the DuBard Association Method®, Orton-Gillingham, and Wilson Reading System.

Figure 2. Certification Types

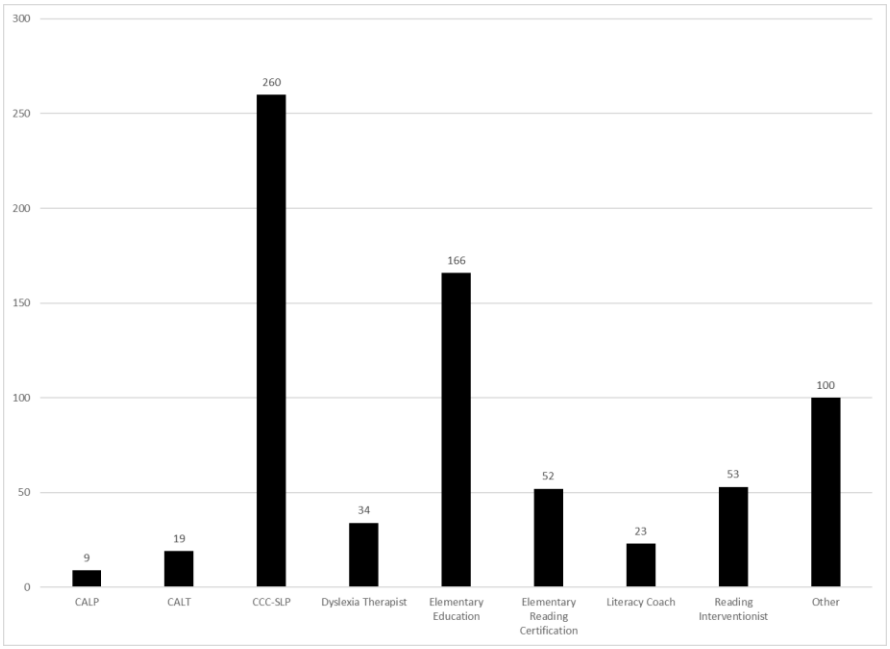

Figure 2. Types of certifications held by participants.

Work setting.

SLPs, teachers, and other educators reported their work settings as public school, private school, parochial school, private practice, clinic or hospital, or "other." For SLPs, the "other" responses included university settings, virtual homeschools, a school for the deaf, a nonprofit dyslexia resource center, or a combination of these. Teachers reported their work settings as public school, private school, parochial school, private practice, clinic or hospital, or "other." The "other" responses for teachers included university settings, a state agency, and a combination of public and private schools. One teacher did not report a work setting. The "other" responses for other educators included a non-profit dyslexia resource center, collaboration with public and private schools, and a charter school. See Table 3.

Table 3

Work Settings

Profession	Public School		Private or Parochial School		Private Practice		Clinic or Hospital		Other	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SLPs	160	59.9	11	4.1	41	15.4	18	6.7	37	13.9
Teachers	130	81.8	19	12.0	6	3.8	0	0.0	4	2.5
Other Educators	7	35.0	5	20.5	4	20.0	1	5.0	3	15.0

Geographic regions.

Geographic locations of respondents were classified based on the regions defined by the United States Census Bureau. These regions are Northeast, Midwest, South, and West (United States Census Bureau, 2018). Table 4 presents the geographic distribution of SLPs, teachers, and other educators.

Table 4

Geographic Distribution of Participants

Profession	Northeast U. S.		Midwest U. S.		South U. S.		West U. S.	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SLPs	66	24.7	73	27.3	82	30.7	46	17.2
Teachers	47	29.6	31	19.5	57	35.8	24	15.1
Other Educators	9	42.9	5	23.8	5	23.8	2	9.5

Do SLPs participate in beginning reading instruction?

One hundred twenty-seven SLPs, 45 teachers, and nine other educators indicated that SLPs participated in reading instruction in their work setting. This represented 181

participants, or 40.5% of the total. Most participants answered "not sure" or "no" for this item. See Table 5.

Table 5

In Your Work Setting, Do SLPs Participate in Reading Instruction?

Profession	Yes		Not Sure		No	
	Freq.	%	Freq.	%	Freq.	%
SLPs	127	47.6	14	5.2	126	47.2
Teachers	45	28.3	28	17.6	86	54.1
Other Educators	9	42.9	2	9.5	10	47.6

Time SLPs spend teaching reading skills in your work setting.

Within the 181 responses (40.5% of the total participants) indicating SLPs participated in reading instruction in their work settings, a wide range of time spent by SLPs to teach reading during the week was reported. Responses ranged from less than one hour per week to more than five hours per week. See Table 6.

Table 6

Time SLPs Spend Teaching Reading in Your Work Setting

Profession	Less than 1 Hour per Week		1-3 Hours per Week		3-5 Hours per Week		More than 5 Hours per Week	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SLPs	9	7.2	33	26.4	29	23.2	54	43.2
Teachers	11	24.4	17	37.8	7	15.5	10	22.2
Other Educators	2	22.2	3	33.3	2	22.2	2	22.2

Location where speech-language pathologists deliver reading instruction.

As shown in Table 7, the majority of respondents indicated SLPs delivered reading instruction in the SLP therapy room. A small number reported that SLPs taught reading in the general education classroom or special education classroom. For those who chose the "other" category, settings reported included a combination of therapy room and classroom, university setting, or private practice. Some reported that SLPs delivered reading instruction wherever space could be found such as a quiet classroom, hallway, teachers' lounge, or the school library.

Table 7

Locations Where SLPs Delivered Reading Instruction

Profession	General Ed. Classroom		Special Ed. Classroom		SLP Therapy Room		Other	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SLPs	6	4.7	18	14.2	63	49.6	40	31.5
Teachers	7	15.6	2	4.4	33	73.3	3	6.7
Other Educators	1	11.1	0	0.0	2	22.2	6	66.7

Research Question 1

Attitudes Toward SLPs Delivering Beginning Reading Instruction

I am well-prepared to teach reading skills to beginning readers.

An item was posed to all participants regarding their level of confidence when teaching reading skills to beginning readers. Approximately half of the SLPs chose "agree" or "strongly agree" when asked if they were well prepared to teach reading skills to beginning readers. Although the number of other educators was small, a majority of

this group, along with a majority of teachers, chose “agree” or “strongly agree” in response to this item. See Table 8.

Table 8

I am well-prepared to teach reading skills to beginning readers.

Profession	Strongly Disagree		Disagree		Neither Agree nor Disagree		Agree		Strongly Agree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SLPs	22	8.3	52	19.5	50	18.8	72	27.1	70	26.3
Teachers	10	6.3	9	5.7	8	5.0	58	36.5	74	46.5
Other Educators	4	19.0	0	0.0	0	0.0	5	23.8	12	57.1

Were SLPs effective when teaching beginning readers?

Participants were asked if SLPs were effective when teaching beginning readers. The majority of SLPs, elementary teachers, and other educators agreed that SLPs delivered effective beginning reading instruction. The breakdown of attitudes professed by SLPs, teachers, and other educators about the effectiveness of SLPs teaching reading is presented in Table 9.

Table 9

SLPs were Effective when Teaching Beginning Readers

Profession	Strongly Disagree		Disagree		Neither Agree nor Disagree		Agree		Strongly Agree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SLPs	6	4.7	1	0.8	14	11.0	44	34.6	62	48.8
Teachers	4	8.9	0	0.0	6	13.3	19	42.2	16	35.6
Other Educators	2	22.2	0	0.0	3	33.3	1	11.1	3	33.3

Do you like that SLPs participate in reading instruction in your work setting?

When asked if participants liked that SLPs participate in reading instruction, 117 SLPs (92.1%) chose "agree" or "strongly agree." Similarly, a majority of teachers (41 teachers or 91.1%) chose these options, along with eight other educators (38.1%). Small percentages of each category of respondents chose "neither agree nor disagree," "disagree," or "strongly disagree." See Table 10.

Table 10

I Like that SLPs Participate in Reading Instruction

Profession	Strongly Disagree		Disagree		Neither Agree nor Disagree		Agree		Strongly Agree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SLPs	7	5.5	1	0.8	2	1.6	32	25.2	85	66.9
Teachers	2	4.4	0	0.0	2	4.4	12	26.7	29	64.4
Other Educators	1	11.1	0	0.0	0	0.0	3	33.3	5	55.6

Would it be good if SLPs taught reading in your work setting?

When asked if SLPs participated in reading instruction in their work setting, 266 respondents (59.5%) answered "no" or "not sure". When these 266 respondents were asked if it would be good if SLPs could teach beginning reading skills, the majority answered either "agree" or "strongly agree." This is shown in Table 11.

Table 11

It Would be Good if SLPs Participated in Reading Instruction

Profession	Strongly Disagree		Disagree		Neither Agree nor Disagree		Agree		Strongly Agree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
SLPs	4	2.9	10	7.1	36	25.7	51	36.4	39	27.9

Table 11 Continued

Teachers	3	2.6	3	2.6	14	12.3	43	37.7	51	44.7
Other Educators	2	16.7	0	0.0	0	0.0	6	50.0	4	33.3

Research Questions 2 and 3

Knowledge and Skill Levels: SLPs, Teachers, and Other Educators

The second and third research questions considered the levels of knowledge and skill possessed by SLPs, elementary teachers, and other educators in the areas of phonological awareness, phonemic awareness, phonics, and morphological awareness. Responses from those who identified as SLPs, those who identified as elementary teachers, and other educators were analyzed separately. SLPs (267 individuals) made up 59.7% of the sample for this study. There were 159 individuals identifying as elementary teachers in the study, or 35.6% of the total. Twenty-one participants (4.7%) who did not choose SLP or elementary teacher as a profession were categorized as other educators. The other educators held certifications such as CALP, CALT, Dyslexia Therapist, Elementary Reading Certification, Literacy Coach, Reading Interventionist, and Orton-Gillingham Certification.

The *Revised Basic Language Constructs Survey* questionnaire contained 28 knowledge items and 27 skill items. Crosstabs revealed the percentages correct for SLPs, teachers, and other educators on each questionnaire item. Also, correct responses were considered for knowledge items as a whole, and skill items as a whole.

Knowledge items.

When considering knowledge items, on average, SLPs had correct responses to the knowledge questions 73.1% of the time. Correct responses for individual items

ranged from 26.6% to 97.4%. Similarly, teachers were correct, on average, 72.8% of the time, with correct responses for individual items ranging from 33.3% to 96.2%. Other educators had an overall correct average of 86.7%, with correct responses for individual items ranging from 38.1% to 100.0%. Table 12 shows percentages correct for SLPs, teachers, and other educators on individual knowledge items.

Table 12

Percentages Correct of Knowledge Items for SLPs, Teachers, and Other Educators

Knowledge Items				
Item Number		**Percent Correct**		
		SLPs N=267	**Teachers N=159**	**Other Educators N=21**
k1_1	Blending syllables	91.0	78.0	100.0
k1_2	Phonological awareness is..	83.1	73.0	90.5
k1_3	Recognize rhyming	79.0	61.0	81.0
k1_4	Detect alliteration	43.8	40.9	38.1
k1_5	Segment syllables/no visual stim	49.4	42.8	66.7
k1_6	Blend syllables/no visual stim	73.0	54.7	71.4
k2_1	A phoneme refers to..	97.4	96.2	100.0
k2_2	Deletion task	88.0	89.9	100.0
k2_3	Phonemic awareness is..	69.7	74.8	100.0
k2_4	Segmenting task	91.0	87.4	100.0
k2_5	Substitution task 1	93.6	95.6	100.0
k2_6	Isolation task	57.3	62.3	66.7
k2_7	Substitution task 2	91.4	85.5	90.5
k2_8	Teaching phoneme awareness	91.8	87.4	100.0
k2_9	Phoneme awareness activity	55.1	59.1	81.0
k3_1	Alphabetic principle	30.7	33.3	61.9
k3_2	Consonant blend	89.5	86.2	100.0
k3_3	Soft 'c'	93.3	91.2	100.0
k3_4	Final stable syllable	26.6	57.2	85.7
k3_5	Closed syllable	94.0	92.5	100.0
k3_6	Open syllable	62.5	81.1	100.0
k3_7	'c' for 'k' rule	68.9	81.1	90.5
k3_8	Alphabetic principle	46.1	58.5	66.7
k4_1	Morpheme is..	97.0	81.8	100.0
k4_2	Prefix/suffix	97.0	84.9	100.0
k4_3	Latin/Greek roots	73.8	79.2	90.5

Table 12 Continued

k4_4	Roots/combining forms	74.2	67.9	71.4
k4_5	Meaning impacts spelling	37.5	53.5	76.2
Averages		**73.1**	**72.8**	**86.7**

Skill items.

As a group, SLPs were correct on the skill items 80.2% of the time. The range of correct responses for individual items was from 36.3% to 95.5%. The group of teachers was correct on the skill items an average of 69.6% of the time, with a range of 37.7% to 93.7%. For other educators, the average percentage correct was 80.8%, with a range of 28.6% to 100.0%. Percentages correct for individual skill items are presented in Table 13.

Table 13

Percentages Correct of Skill Items for SLPs, Teachers, and OtherEducators

Skill Items				
Item Number		**Percent Correct**		
		SLPs N=267	**Teachers N=159**	**Other Educators N=21**
s2_1	# sounds box	75.7	44.0	76.2
s2_2	# sounds grass	93.3	84.4	95.2
s2_3	# sounds nation	77.9	43.4	76.2
s2_4	# sounds beagle	82.0	73.0	71.4
s2_5	# sounds brush	94.0	80.5	100.0
s2_6	# sounds through	93.3	79.2	95.2
s2_7	# sounds fix	77.2	44.7	85.7
s2_8	# sounds spoil	85.4	77.4	95.2
s2_9	# sounds picked	95.5	93.1	100.0
s2_10	# sounds blind	89.1	77.4	100.0
s2_11	Reverse sounds - ice/sigh	93.3	84.9	100.0
s2_12	Reverse sounds - enough/funny	93.6	76.1	76.2
s3_1	Sound of 'y' in sybe	88.4	89.3	85.7
s3_2	Sound of 'i' in hibble	93.6	93.7	100.0
s3_3	Sound of 'e' in sebar	74.5	79.2	95.2
s3_4	Sound of 'a' in wolgabe	88.8	88.7	100.0

Table 13 Continued

s3_5	Sound of 'o' in soparg	83.5	81.1	90.5
s4_1	# morphemes disassemble	62.2	47.8	38.1
s4_2	# morphemes heaven	87.6	60.4	71.4
s4_3	# morphemes monarchy	26.2	43.4	47.6
s4_4	# morphemes spinster	62.9	71.1	57.1
s4_5	# morphemes pedestal	36.3	37.7	47.6
s4_6	# morphemes frogs	91.8	61.0	95.2
s4_7	# morphemes teacher	88.8	82.4	95.2
s4_8	# morphemes dislocation	73.4	62.3	81.0
s4_9	# morphemes observer	68.5	50.3	28.6
s4_10	# morphemes undeniable	87.3	71.7	76.2
Averages		**80.2**	**69.6**	**80.8**

Research Question 4

Performance of the Revised Basic Language Constructs Survey

Prior to conducting Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), the data set was randomly divided into two groups using the "Select Cases" function of the SPSS data analysis program. Participants included those who identified as either SLPs or teachers (n=426). The EFA dataset (n=203) consisted of 141 SLPs (69.5%) and 62 teachers (30.5%). The CFA dataset (n=223) was composed of 126 SLPs (56.5%) and 97 teachers (43.5%).

Exploratory Factor Analysis (EFA)

To begin considering the fourth research question, EFA was conducted using Principal Axis Factoring (PAF) and Direct Oblimin rotation. Cases were excluded pairwise and coefficients with an absolute value of less than 0.3 were suppressed. A value of 0.35 was used as a cut-off value. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were completed in order to determine the adequacy of correlations for factor analysis (Meyers, Gamst, & Guarino, 2012).

Following the completion of EFA as described above, the KMO value was found to be .755, and Bartlett's test was significant ($p < .001$), indicating that factor correlation was adequate for analysis (Meyers, et al., 2012). Examination of the initial EFA analysis revealed significant inconsistencies among the Total Variances Explained table, the scree plot, and the parallel analysis. The Total Variance Explained table identified 18 factors that explained 48.68% of the variance in the model. The scree plot indicated 15 factors. Parallel analysis showed that nine factors were present in this analysis. Because of these inconsistencies, it was decided to force the EFA analysis to examine whether or not a two-factor solution could be found. The possible two-factor solution was chosen because of the composition of items on the *Revised Basic Language Survey* questionnaire; the questionnaire consisted of knowledge and skill items.

In order to determine if a two-factor extraction would result in a simple solution, EFA was completed with a fixed number of two factors chosen. After eight iterations, the items loaded on Factor 1 had to do with morphological skill. Items that loaded on Factor 2 included those with both phonological skill and a combination of phonological and morphological knowledge. Six items remained that loaded with values of <0.35. Because of the composition of Factor 2, with items that fell in two categories loading on one factor, it was determined that a three-factor solution would be explored.

Using the procedure described above and fixing the number of factors to three, simple structure was achieved. The three factors identified explained 34.10% of the variance in the model. These factors were phonological skill, morphological skill, and phonological and morphological knowledge. Reliability analysis revealed a Cronbach's α of 0.746, indicating acceptable internal consistency. Reliability for individual factors is

presented in Table 14. Table 15 shows items that loaded on each factor in the three-factor solution and their values.

Table 14

Cronbach's Alphas for Individual Factors Identified in EFA

Factors	Cronbach's Alphas
Phonological Skill	0.769
Morphological Skill	0.711
Phonological and Morphological Knowledge	0.617

Table 15

Pattern Matrix Showing Factor Loadings for Three Latent Constructs Identified by EFA

	Factor		
	1	2	3
# sounds box	.459		
# sounds grass	.670		
# sounds nation	.444		
# sounds brush	.763		
# sounds through	.474		
# sounds spoil	.569		
# sounds blind	.716		
# morphemes disassemble		.545	
# morphemes heaven		.695	
# morphemes observer		.610	
# morphemes undeniable		.594	
Phonological awareness is...			.450
Segment syllables/no visual stim.			.412
Substitution task			.470
Consonant blend			.619
Closed syllable			.420
Prefix/suffix			.449

Confirmatory Factor Analysis (CFA)

CFA was used to further explore the fourth research question concerning the performance of the *Revised Basic Language Constructs Survey*. The measurement model

was constructed using the AMOS data analysis program. Three latent factors identified by the EFA were phonological skill (skill_phon), morphological skill (skill_morph), and phonological and morphological knowledge (knowledge). Corresponding observed factors, as identified by EFA, were associated with each latent factor (Figure 2).

Figure 3. Measurement model constructed using AMOS

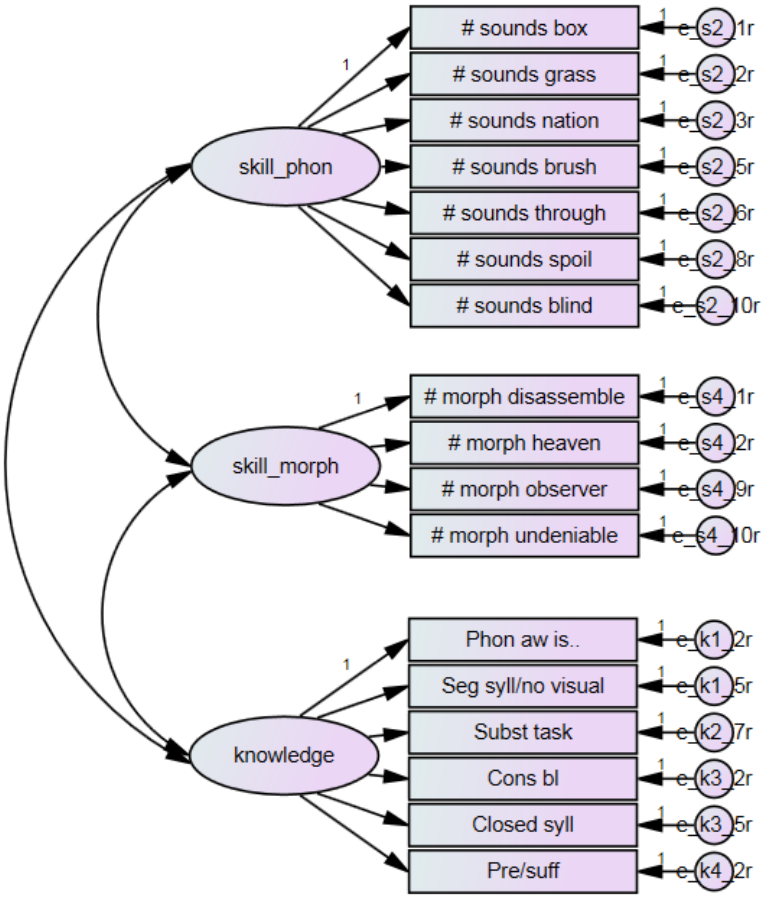

Figure 3. Individual questionnaire items associated with three latent factors identified through EFA.

Model fit was analyzed using three indices: the comparative fit index (CFI), the Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA).

CFI and TLI values of "close to" 0.95 (Hu & Bentler, p. 27) indicated good model fit and an RMSEA value of "close to" 0.06 (Hu & Bentler, p. 27) indicated good fit. The following values were found: $X^2_{(116)}$=199.863, p<0.001; CFI = 0.916; TLI = 0.901; and RMSEA = 0.057 (90 CI .043-.070). Therefore, the hypothesized measurement model constructed during CFA fit the actual data at acceptable levels, indicating that the *Revised Basic Language Constructs Survey* identified through EFA provided a valid measure of phonological skill, morphological skill, and phonological and morphological knowledge for SLPs and teachers (Appendix J).

Research Hypothesis

Invariance Testing

In addition to research questions, a research hypothesis was presented. The research hypothesis stated: There will be a difference in measurement of the constructs of phonological and morphological skill and knowledge between SLPs and teachers. In order to evaluate this hypothesis, invariance testing was completed. Invariance testing allowed the researcher to assess the equivalency of latent constructs determined through EFA and CFA, thus determining if model fit is equivalent for data obtained from SLPs and elementary teachers. Without invariance testing, the researcher would not know if conclusions drawn on the two different groups in this study are valid (Chen, 2007; Putnick & Bornstein, 2016).

The initial model fit indicated a moderate fit to the data ($X^2_{(232)}$=342.184, p<0.001; CFI = 0.884; TLI = 0.864; and RMSEA = 0.046 (90 CI .036-.057). A comparison was made of CFI values for the unconstrained model and the fully constrained model. The CFI statistic was used because it is not sensitive to sample size

differences, which were present in this analysis (SLP n=126; elementary teachers n=97). When differences in CFI between the unconstrained model and the latent constructs of ≥-0.01 are found, a difference in how the latent constructs are measured in the two groups is indicated (Chen, 2007; Cheung & Rensvold, 2002). A difference of >-0.01 was found between the CFI value for the unconstrained model and the CFI value for the fully constrained model; therefore, differences in measurement of the two groups existed.

Next, the CFI values for the latent factors of phonological skill, morphological skill, and phonological and morphological knowledge were compared to the CFI value for the unconstrained model. A difference in CFI values of -.017 was found for the first latent factor, phonological skill. Differences in CFI values for morphological skill and phonological and morphological knowledge were <-.01; therefore, the differences between measurement of these two latent constructs were not significant for the two groups. Table 16 presents CFI values for the unconstrained model, fully constrained model, and the three latent constructs.

Table 16

CFI Values for the Unconstrained Model, the Fully Constrained Model, and the Three Latent Constructs

	CFI
Unconstrained Model	.884
Constrained Model	.866
skill_phon	.867
skill_morph	.883
knowledge	.880

Since differences were found between groups for the latent construct of phonological skill, the researcher then evaluated the individual items within this construct

to determine the items where differences were found. Two of the seven items in the phonological skill construct, the number of phonemes in the word "brush" and the number of phonemes in the word "blind," had differences in CFI values of ≥-0.01 when compared to the unconstrained model. These values are presented in Table 17.

Table 17

CFI Values for the Unconstrained Model and Individual Items Within the skill_phon Construct

	CFI
Unconstrained Model	.884
# phonemes in "box"	.883
# phonemes in "grass"	.879
# phonemes in "nation"	.884
# phonemes in "brush"	.867
# phonemes in "through"	.882
# phonemes in "spoil"	.884
# phonemes in "blind"	.871

Standardized values for each of these two items (the number of phonemes in "brush" and the number of phonemes in "blind") were examined to determine for which group, SLPs or elementary teachers, the highest value was found. It was determined that, for the number of phonemes in the word "brush," SLPs had a higher standardized value (.848) as compared to that of elementary teachers (.763). However, for the number of phonemes in the word "blind," elementary teachers had a higher standardized value (.868) as compared to SLPs (.775). Because of a difference of ≥-0.01 was found between the unconstrained model and two items in the skill_phon latent construct, the research hypothesis was supported.

Informal analysis of the two items where significant differences occurred revealed that both words were similar in construction. Both contain an initial consonant blend and one vowel. "Brush" contains four phonemes and ends with a consonant digraph. "Blind" contains five phonemes and ends with two consonants. The reason for the differences in standardized values for these two items was uncertain.

CHAPTER V – DISCUSSION

The purposes of this study were three-fold. One purpose was to examine SLPs' and teachers' attitudes toward SLPs taking part in reading instruction. A second purpose was to analyze the differences in phonological and morphological knowledge and skill among SLPs and teachers. A third purpose was to assess the performance of the *Revised Basic Language Constructs Survey* when administered to SLPs and teachers. A research hypothesis was put forth stating there would be differences in the measurement of latent constructs identified through EFA and validated through CFA between two groups of professionals, SLPs and teachers.

Demographics

Analysis of demographic items revealed that respondents to the questionnaire were distributed throughout the four U. S. Census Bureau geographical regions (United States Census Bureau, 2018) and from several foreign countries. Although a target of 600 participants was desired, responses resulted in 447 complete responses that could be used for the analysis of the first three research questions. This total included 267 SLPS (59.7%), 159 elementary teachers (35.6%), and 21 other educators (4.7%). Other educators did not choose either the category of SLP or elementary teacher but reported holding certifications such as CALP, CALT, Dyslexia Therapist, Elementary Reading Certification, Literacy Coach, Reading Interventionist, and Orton-Gillingham Certification.

The majority of participants in each group held master's degrees, with a small number of each group holding bachelor's degrees or doctoral degrees. The average experience of all participants across groups was 16.39 years. Certification areas among

participants included CALP, CALT, CCC-SLP, Dyslexia Therapist, Elementary Education, Elementary Reading Certification, Literacy Coach, Reading Interventionist, Special Education, Hearing Impaired, Gifted Education, Early Childhood Education, and certification in multisensory, phonetic teaching methods such as the DuBard Association Method®, Orton-Gillingham, and Wilson Reading System. A little more than one third of participants (38.7%) held certification in more than one area.

Most participants were employed in public schools; other work settings included private schools, parochial schools, private practice, clinics or hospitals, university settings, virtual homeschools, a school for the deaf, a nonprofit dyslexia resource center, a state agency, collaboration with public and private schools, and a charter school. Fewer than half of the participants in this study reported that SLPs taught beginning reading skills in their work settings. When SLPs did teach reading in participants' work settings, most taught these skills for more than five hours per week, and most of this instruction took place in the SLP therapy room.

Research Question 1

The first research question dealt with attitudes toward SLPs delivering reading instruction. Previous studies have shown that reading is a skill that does not develop naturally for many children (Treiman, 2000), with poor readers having particular difficulty with awareness of separate sounds within words (Ferrer, et al., 2015; Melby-Lervag, Lyster, & Hulme, 2012; Mody, 2003). There is a strong relationship between oral and written language skills (Aram & Nation, 1980; Catts, 1993; Newbury, Monaco, & Paracchini, 2014), with written language, or reading and writing, being built on a

foundation of oral language skills (American Speech-Language-Hearing Association, 2001; Catts & Kamhi, 1999).

The position of the American Speech-Language-Hearing Association regarding the role of SLPs in the development of literacy includes that SLPs may provide intervention for written language difficulties and may assist general education teachers in these endeavors (American Speech-Language-Hearing Association, 2001). Despite this position, a decrease in the percentage of SLPs who provided intervention for reading and writing (literacy) has been noted over the past several years. According to ASHA Schools Surveys conducted biennially, in 2014, 35.8% of SLPs taught reading and writing skills (American Speech-Language-Hearing Association, 2014). This percentage decreased to 33.0% in 2016 and 30.5% in 2018 (American Speech-Language-Hearing Association 2016c; American Speech-Language-Hearing Association, 2018).

In the current study, fewer than half of the participants (181, or 40.5%) indicated that SLPs currently delivered reading instruction in their work settings. Two hundred sixty-six participants (59.5%) answered "not sure" or "no" to this item. This may indicate that there is an untapped resource of SLPs already existing in our schools whose skills may be utilized to teach beginning reading skills. SLPs (SLPs) are trained in the foundations of language, including phonology and morphology. A majority of participants in the current study who reported SLPs taught beginning reading skills in their work setting agreed that SLPs were effective when teaching beginning reading skills. Also, a majority of those who indicated SLPs did not teach reading in their work settings indicated that it would be good for SLPs to teach beginning reading skills. These data show that, with SLPs already in place in many school settings, the SLP may be a

natural choice to aid general educators in teaching basic reading skills such as phonological and phonemic awareness, phonics, and morphology to students for whom reading does not come naturally (American Speech-Language-Hearing Association, 2001; American Speech-Language-Hearing Association, 2016b).

As there appears to be support for the idea of allocating a portion of the SLP's time to teaching beginning reading skills, the potential value of this is clear. It is crucial to identify reading problems early in a child's educational program. With identification, it also is crucial to provide early intervention to remediate these problems (Ferrer, et al., 2015). As reported by the National Early Literacy Panel (Lonigan & Shanahan, 2009), skills that can predict reading achievement such as alphabet knowledge, phonological awareness, print awareness, and oral language can be identified before a child begins to learn to read. Children with deficits in these areas, particularly in the area of oral language, often appear on the caseloads of SLPs. If SLPs are aware of the impact these skills can have on future reading success, and if these professionals understand the connection between oral language and written language, they are positioned to remediate these deficit areas, thus possibly preventing later problems in reading.

Research Questions 2 and 3

The second and third research questions were examined through descriptive analyses of responses to phonological and morphological knowledge and skill items on the *Revised Basic Language Constructs Survey* questionnaire. Studies have revealed that teacher knowledge in areas such as phonology, morphology, syllable types, and phoneme-grapheme correspondences is low (Bos, et al., 2001; Cunningham, Perry, Stanovich & Stanovich, 2004; Moats, 1994; Moats & Foorman, 2003; Spencer, Schuele,

Guillot & Lee, 2008; Washburn & Mulcahy, 2018). However, it has been shown that explicit instruction of children in these areas can have a positive impact on future reading skills (Henbest & Apel, 2017).

Responses from participants revealed that knowledge and skill levels varied widely within each group of participants: SLPs, teachers, and other educators. On the knowledge items of the *Revised Basic Language Constructs Survey*, SLPs were correct an average of 73.1% of the time, teachers were correct an average of 72.8% of the time, and other educators were correct an average of 86.7% of the time. Although the groups were correct, on average, approximately three-fourths of the time or more, a wide range of knowledge levels was found. Group averages for SLPs ranged from 26.6% for "final stable syllable" to 97.4% for "a phoneme refers to...." For teachers, the group averages ranged from 33.3% for "alphabetic principle" to 96.2% for "a phoneme refers to...," and group averages for other educators ranged from 38.1% for "detect alliteration" to 100.0% for several items.

On the skill items, on average, SLPs were correct 80.2% of the time. On average, teachers were correct 69.6% of the time, and other educators were correct 80.8% of the time. Further analysis of skill items revealed a wide range of correct responses. Group averages for SLPs' ranged from 26.2% for "# morphemes in monarch" to 95.5% for "# sounds in picked." Average correct responses for teachers ranged from 37.7% for "# morphemes in pedestal" to 93.7% for "sound of 'i' in hibble." Average correct responses for other educators ranged from 28.6% for "# morphemes in observer" to 100.0% for several items.

Although ASHA's technical report entitled *The Roles and Responsibilities of Speech-Language Pathologists with Respect to Reading and Writing in Children and Adolescents* (American Speech-Language-Hearing Association, 2001) stated that SLPs' knowledge of oral language development and the alphabetic principle puts this group of professionals in a unique position to teach oral language skills along with written language skills, the current study found that SLPs' overall knowledge levels for phonology and morphology were similar to those of elementary teachers. Although the sample was small, the group of other educators was correct, on average, at a higher level than SLPs and teachers for knowledge items. For skill items, the group of other educators was correct, on average, at a level similar to that of SLPs. The group of other educators included those who had specific training that allowed them to acquire other certifications such as CALP, CALT, Dyslexia Therapist, Elementary Reading Certification, Literacy Coach, Reading Interventionist, and Orton-Gillingham Certification. Even though SLPs have received training in phonology and morphology, these results show that additional training may be needed for many SLPs and teachers in order for some individuals to acquire an adequate knowledge base required for teaching reading to beginning readers.

Although groups of SLPs, teachers, and other educators demonstrated phonological and morphological knowledge that, on average, showed they were correct on approximately three-fourths of the scale items, many within each group demonstrated low levels of knowledge. When those who were correct on fewer than half the knowledge items attempt to teach beginning readers, those children will not have the benefit of having teachers with subject matter content knowledge (Shulman, 1986).

By the same token, SLPs, teachers, and other educators demonstrated levels of phonological and morphological skill that were lower, on average, than their levels of knowledge. Again, many within these groups had skill levels that did not reveal subject matter content knowledge (Shulman, 1986) for the skills measured. If we are to teach struggling readers to read, whether SLPs, teachers, or other educators, these professionals who have not acquired a high level of subject content knowledge for phonological and morphological knowledge and skill must access training in these areas to ensure that their abilities are sufficient for the crucial task of teaching beginning reading skills.

Research Question 4

Exploratory and Confirmatory Factor Analysis (EFA and CFA)

A scale to assess teacher knowledge of basic language constructs, the Basic Language Constructs Survey, was developed and statistically validated by Binks-Cantrell, Joshi, et al. (2012). Included in this scale were skill-based items similar to those others had used in studies (McCutchen, et al., 2002; Moats, 1994) along with items to evaluate teachers' beliefs of their skill based on work by Bos, et al. (2001); Cunningham, et al. (2004); and Spear-Swerling and Brucker (2003).

Binks-Cantrell, Joshi, et al. (2012) conducted confirmatory factor analysis (CFA) to test a model of phonology, phonemics, phonics, morphology, and the knowledge and skill of participants, finding fair fits for the models tested. Exploratory factor analysis (EFA) was then conducted. Through varimax orthogonal rotation, six factors were identified. These factors were morphology, counting the number of syllables in words, phonemes, phonics terminology, phonemic awareness, and phonics rules.

To examine the fourth research question, responses from SLPs and teachers (n=426) were analyzed; those categorized as other educators (n=21) were not included in the analysis for this question. This question was examined through EFA and CFA; the sample of SLPs and teachers was randomly divided prior to conducting these analyses. In contrast with Binks-Cantrell, Joshi, et al. (2012), EFA (n=203), using Principal Axis Factoring and Direct Oblimin rotation, found a simple solution consisting of three factors: phonological skill, morphological skill, and phonological and morphological knowledge. CFA (n=223) revealed adequate fit of the measurement model to the actual data, thus indicating that the *Revised Basic Language Constructs Survey* provided a valid measure of phonological skill, morphological skill, and phonological and morphological knowledge for SLPs and elementary teachers.

Based on results of research questions two and three in this study that showed that many professionals within the groups of SLPs, teachers, and other educators lacked sufficient subject content knowledge (Shulman, 1986), much more training is needed for SLPs and teachers in order for these groups of professionals to gain additional skills necessary to teach beginning readers. The validation of the *Revised Basic Language Constructs Survey* provides a basis for evaluation of SLPs and teachers in these areas so any weaknesses may be pinpointed and additional training and practice may be accomplished. This scale may be administered to SLPs and teachers in training and to those who have already become professionals in these areas. Responses can provide target areas for additional coursework or professional development so, as related professions, we can do our best and most effective work in the important area of teaching reading.

Research Hypothesis

Invariance testing was completed to consider the research hypothesis, which stated that there would be differences in the measurement of latent constructs identified through EFA and validated through CFA between two groups of professionals, SLPs and elementary teachers. A significant difference in CFI values was found for two items in the latent construct of phonological skill. These two items were the number of phonemes in "brush" and the number of phonemes in "blind." Standardized values were analyzed to determine if one group had higher standardized values than the other group. It was found that the standardized value for SLPs was higher for the word "brush" and the standardized value for elementary teachers was higher for the word "blind." Since a difference in the measurement of these two items was found for the two groups of participants, the research hypothesis was supported.

Implications of the Study

Since SLPs, as a group, had percentages of correct answers similar to, or higher than, those of teachers (Table 12 and Table 13), this study provided support for the inclusion of SLPs on a team of educators who could teach reading skills to beginning readers. However, it was found that the group of SLPs achieved a 90% or higher score on only 35.7% of the knowledge items and 29.63% of the skill items. The group of teachers achieved a score of 90% or higher on only 14.29% of the knowledge items and 7.4% of the skill items. The fact that average performance of these groups indicated non-mastery of many basic phonological and morphological concepts pointed to the need for both SLPs and teachers to increase their knowledge and skill in the areas of phonology and morphology in order to be able to teach reading to children, especially those who

struggle to learn. These results are similar to evidence in the literature that there is a need for increased knowledge in these areas (Alghazo & Al-Hilawani, 2010; Binks-Cantrell, Joshi, et al., 2012; Bos, et al., 2001; Cunningham, et al., 2004; Moats & Foorman, 2003; Spencer, et. al, 2008). Just as Shulman (1986) was an advocate for teachers in training to gain increased knowledge of the content they would teach, along with a firm pedagogical base, research has shown that additional skills are needed by teachers in order to effectively teach reading to young students (Joshi, et. al, 2009; Moats, 1994; Moats, 2004; Moats, 2009c; Moats, 2014; Spear-Swerling & Brucker, 2003; and Washburn, et al., 2011). The current study points to the need for SLPs also to acquire additional knowledge and skill in the areas of phonology and morphology. With increased content knowledge and increased practice of this knowledge through analyzing and teaching these skills, SLPs and teachers will be better prepared to teach beginning reading skills.

Limitations and Suggestions for Future Research

Although this study provided a valid measure of phonological and morphological knowledge and skill among SLPs and teachers, there were limitations that reduce the ability for the findings to be generalized to the larger population of SLPs and teachers. Replication of this study with an increase in sample size for both SLPs and teachers would increase the generalizability of the results.

There may have been differences attributable to different educational levels; however, the majority of all groups held master's degrees (SLPs – 249, or 93.3%; teachers – 124, or 78.0%; other educators – 11, or 52.4%). A small percentage of each group had doctoral degrees (SLPs – 16, or 6.0%; teachers – 6, or 3.8%; other educators – 1, or 4.8%). For analysis of possible differences between those with master's degrees

and bachelor's degrees, the number of those who held bachelor's degrees was small (SLPs – 2, or 0.7%; teachers – 29, or 18.2%; other educators – 9, or 42.9%) and represented less than 10% of the total sample. Future research should include the option of choosing the specialist degree.

The sample of "other educators" in this study was small (n=21). This small sample size, along with a lack of precise definition of the characteristics of this sample, limits the validity of the findings associated with this group. Future research may include parsing from the current sample those with training in multisensory, structured language methods such as that in the sample of other educators.

Responses to two demographic items, prior training in teaching reading and the location where training was received, were found to be imprecise in many cases. Participants often gave course numbers that had no meaning to the researcher or others who did not attend the same training program. These demographic items may be restructured to include forced choice responses, with an option to provide additional information if necessary. This format may make interpretation of these responses more meaningful.

Future researchers may wish to increase item difficulty to increase variability in responses. Also, scoring of the knowledge and skill items on this scale was completed dichotomously even though there were at least four answer choices for the forced-choice items, with one correct answer choice and several incorrect answer choices. Subsequent research may consider error analysis to determine patterns in incorrect choices.

Invariance testing revealed that measurement of two items was different for the two groups included in this analysis. Although these were only two items out of 27 skill

items, this study may be replicated with those two items omitted to determine whether or not the model fit remains strong.

Although responses were received from participants from countries such as Canada, the United Kingdom, Ireland, the Cayman Islands, India, Qatar, Singapore, Hong Kong, Australia, and New Zealand, only responses from those in the United States were used in the analysis for this project. Future research may include the examination of any differences in responses from those in the U. S. and those from other countries.

APPENDIX A – Permission to Use Figure 1

Susan Perry

From: Schuele, Clare M (University) <melanie.schuele@vanderbilt.edu>
Sent: Monday, December 10, 2018 9:56 AM
To: Susan Perry
Subject: Re: Requesting permission to reprint article figure

Yes, that is fine. Thank you for requesting.

C. Melanie Schuele, PhD
Associate Professor, Department of Hearing and Speech Sciences, Vanderbilt Bill Wilkerson Center, VUMC
Director, Child Language and Literacy Lab www.mc.vanderbilt.edu/languagelab
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On Dec 7, 2018, at 10:26 AM, Susan Perry <Susan.Perry@usm.edu> wrote:

Hello, Dr. Shuele,

I am writing to request permission to use in my dissertation Figure 1. Sequence of phonological awareness instruction and intervention from an article written by you and Dr. Donna Boudreau. (Schuele, C. M. & Boudreau, D. (2008). Phonological awareness intervention: Beyond the basics. *Language, Speech, and Hearing Services in Schools, 39*(1), 3–20.)

My dissertation is entitled "Validation of a scale to measure phonological and morphological knowledge and skill of speech-language pathologists and elementary teachers." A questionnaire developed by Binks-Cantrell, Joshi, and Washburn was used as the basis for this study. (Binks-Cantrell, E., Joshi, R. M., & Washburn, E. K. (2012). Validation of an instrument for assessing teacher knowledge of basic language constructs of literacy. *Annals of Dyslexia, 62*(3), 153–171.)

I was in attendance at the Mississippi Speech-Language-Hearing Association conference several years ago when you were a speaker there. I enjoyed your presentation that day.

Thank you for your consideration of this request. Please let me know if you have questions or would like any further information.

Susan Perry

Susan Perry, M.S., CCC-SLP, CALT
Research/Data Coordinator
DuBard School for Language Disorders
The University of Southern Mississippi

1

APPENDIX B – Permission to Use Questionnaire

Gmail Susan Perry <susanperry210@gmail.com>

Requesting permission to use Survey of Basic Language Constructs

Susan Perry <susanperry210@gmail.com> Wed, Nov 4, 2015 at 4:48 PM
To: aggieemily@tamu.edu, mjoshi@tamu.edu, washburn@binghamton.edu

Hello, Dr. Binks-Cantrell, Dr. Joshi, and Dr. Washburn,

I am a doctoral student in education with an emphasis in Research, Evaluation, Statistics, and Assessment (RESA) at The University of Southern Mississippi. I am writing to explore the possibility of using, as the basis of my dissertation, the scale you developed and reported in the *Annals of Dyslexia* in 2012 (Validation of an Instrument for Assessing Teacher Knowledge of Basic Language Constructs of Literacy).

I am asking for permission to administer your scale to speech-language pathologists. As an SLP and certified academic language therapist (CALT), I am very interested in learning more about how SLPs can play a part in teaching students to read. A first step could be to measure the knowledge this group of professionals has regarding basic language constructs.

If permission is granted for the use of this scale, what are your thoughts about making some changes as you suggested, such as modification of the syllable-counting items and the addition of more items that assess knowledge of phonemic awareness?

Thank you for your consideration of this request. Of course, appropriate credit would be given to you for the development of the original, validated scale. Please let me know if you have any questions or if you would like any further information. Any advice or insight you can offer is appreciated.

--
Susan Perry

2/6/2019 Gmail - Requesting permission to use Survey of Basic Language Constructs

Gmail Susan Perry <susanperry210@gmail.com>

Requesting permission to use Survey of Basic Language Constructs

Emily Cantrell <aggieemily@tamu.edu> Mon, Nov 9, 2015 at 10:27 PM
To: Susan Perry <susanperry210@gmail.com>
Cc: Malt Joshi <mjoshi@tamu.edu>, washburn <washburn@binghamton.edu>

Hi, Susan,

We would be most happy for you to use the survey and look forward to hearing about the results. I believe it will be a very interesting study.

Gmail Susan Perry <susanperry210@gmail.com>

Requesting permission to use Survey of Basic Language Constructs

Susan Perry <susanperry210@gmail.com> Mon, Apr 24, 2017 at 2:50 PM
To: Emily Binks-Cantrell <aggieemily@tamu.edu>

Hi, Emily,

On 11-9-15 I received permission from you, Dr. Malt Joshi, and Dr. Erin Washburn to use your questionnaire, the *Basic Language Constructs Survey*, as the basis for my dissertation research. At that time, I planned to administer a revised version of the questionnaire to speech-language pathologists.

The project has evolved over the past months and I find that I would like to also administer the questionnaire to general education elementary teachers. I am writing at this time to request permission to do so.

Thank you for your consideration of this request.

Susan Perry

Gmail Susan Perry <susanperry210@gmail.com>

Requesting permission to use Survey of Basic Language Constructs

Emily Cantrell <aggieemily@tamu.edu> Tue, Apr 25, 2017 at 1:26 AM
To: Susan Perry <susanperry210@gmail.com>

Yes, you are most welcome to do so.

APPENDIX C – IRB Approval Letter

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 18011101
PROJECT TITLE: Validation of a Scale to Measure Phonological and Morphological Knowledge and Skill of Speech-Language Pathologists and Elementary Teachers
PROJECT TYPE: New Project
RESEARCHER(S): Susan Perry
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Educational Research and Administration
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 01/11/2018 to 01/10/2019
Lawrence A. Hosman, Ph.D.
Institutional Review Board

APPENDIX D – *Revised Basic Language Constructs Survey* – Pilot

Pilot study based on the work of Binks-Cantrell, Joshi, and Washburn (2012).

Used by permission (Appendix B).

Demographic and attitude items

d1. Highest level of education
_____ Bachelor's degree
_____ Master's degree
_____ Doctoral degree

d2. Current profession:
_____ Elementary Education (K-6) Teacher
_____ Speech-Language Pathologist
_____ Other, please provide:
_____

d3. Years of experience in your current profession:
_____

d4. Work setting:
_____ Public school
_____ Private school
_____ Clinic or hospital
_____ Other, please provide:
_____

d5. Geographic region where you work:
_____ Northeast United States
_____ Midwest United States
_____ South United States
_____ West United States
_____ Other:
_____

d6. Course(s) you took that instructed you in reading education, including courses in phonetic, multisensory structured language methods:
_____

d7. College or university where you were trained to teach reading:
_____

a1. I am well-prepared to teach reading skills to beginning readers:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

d9. In your work setting, do speech-language pathologists participate in reading instruction?
_____ Yes
_____ No
_____ Not sure

If participants answered "Yes" to question d9, they were asked questions a2, d10, d11, and a3.

a2. I like that speech-language pathologists participate in reading instruction:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

d10. Speech-language pathologists participate in reading instruction in your work setting:
_____ Less than 1 hour per week
_____ 1-3 hours per week
_____ 4-5 hours per week
_____ More than 5 hours per week

d11. Location where speech-language pathologists deliver reading instruction:
_____ General education classroom
_____ Special education classroom
_____ SLP therapy room
_____ Other, please describe:
_____

a3. Speech-language pathologists are effective when teaching beginning readers:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

If participants answered "No" or "Not sure" to question d9, they were asked question a4.

a4. It would be good if speech-language pathologists were able to teach beginning reading instruction in your work setting, your level of agreement:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

Knowledge items (randomized in electronic questionnaire)

1. A phoneme refers to
_____ a single letter.
__x__ a single speech sound.
_____ a single unit of meaning.
_____ a grapheme.
_____ no idea

2. What type of task would the following be? Say the word "cat." Now say the word without the /k/ sound.
_____ blending
_____ rhyming
_____ segmentation
__x__ deletion
_____ substitution
_____ isolation

3. Phonemic awareness is:
_____ the same as phonological awareness.
_____ the understanding of how letters and sounds are put together to form words.
__x__ the ability to isolate and manipulate the individual sounds in spoken language.
_____ the ability to use sound-symbol correspondences to read new words.
_____ no idea

4. What type of task would the following be? Tell the number of syllables in the word, "stadium."
_____ substitution
_____ rhyming
__x__ segmenting
_____ deletion
_____ blending
_____ isolation

5. What type of task would the following be? Change the /t/ sound in hat to /k/ and say the new word.
_____ rhyming
_____ isolation
_____ blending
_____ segmenting
__x__ substitution
_____ deletion

6. What type of task would the following be? Name the third sound in the word "people."
_____ substitution
__x__ isolation
_____ rhyming
_____ blending
_____ deletion
_____ segmenting

7. What type of task would the following be? Say the word that is made when you put these two syllables together: /foot/ /ball/.
__x__ blending
_____ rhyming
_____ isolation
_____ deletion
_____ segmenting
_____ substitution

8. The awareness that letters or groups of letters represent sounds, and that these relationships between letter and sounds are predictable, is called:
_____ phonological awareness
__x__ alphabetic principle
_____ alphabetic understanding
_____ orthographic memory
_____ phonics

9. Phonological awareness is:
_____ the ability to use letter-sound correspondences to decode.
__x__ the understanding of how spoken language is broken down and manipulated.
_____ a teaching method for decoding skills.
_____ the same as phonics.
_____ no idea

10. When a child recognizes and produces rhyming words, this is a part of:
__x__ phonological awareness.
_____ phonics.
_____ morphology.
_____ sound-symbol matching.
_____ phonemic awareness.

11. When a child is able to detect alliteration, this is a part of:
_____ phonemic awareness.
_____ sound-symbol matching.
__x__ phonological awareness.
_____ isolation.
_____ repetition.

12. When a child is able to say the syllables of a word separately, without having the written word to look at, this is an example of:
_____ syllabication.
__x__ phonological awareness.
_____ phonics.
_____ alphabetics.
_____ phonemic awareness.

13. When a child is able to put orally-presented syllables together to form a word, this is an example of:
_____ phonemic awareness.
_____ morphology.
_____ alphabetic principle.
_____ phonics.
__x__ phonological awareness.

14. When a child is able to change one sound to another to make a new word, with no written stimuli, this is an example of:
_____ alphabetic principle
__x__ phonological awareness
_____ phonics
_____ blending
_____ morphological awareness

15. A combination of two or three consonants pronounced so that each letter keeps its own identity is called:
_____ silent consonant
_____ consonant digraph
_____ diphthong
__x__ consonant blend
_____ no idea

16. A “soft c” is in the word:
_____ Chicago
_____ chair
_____ welcome
__x__ electricity
_____ none of the above
_____ no idea

17. Which of the following words has an example of a final stable syllable?
_____ wave
_____ bacon
__x__ paddle
_____ napkin
_____ none of the above
_____ no idea

18. Which of the following words has two closed syllables?
_____ pilot
__x__ napkin
_____ hide
_____ bobble
_____ none of the above
_____ no idea

19. Which of the following words contains an open syllable?
_____ planet
_____ home
_____ jungle
__x__ radar
_____ none of the above
_____ no idea

20. What is the rule that governs the use of ‘c’ in the initial position for /k/?
_____ ‘c’ is used for /k/ in the initial position before e, i, or y.
_____ the use of ‘c’ for /k/ in the initial position is random and must be memorized
__x__ ‘c’ is used for /k/ in the initial position before a, o, u, or any consonant
_____ none of the above
_____ no idea

21. What is the rule that governs the use of ‘j’ in the initial position for /g/?
__x__ ‘j’ is used for /g/ in the initial position before e, i, or y.
_____ the use of ‘j’ for /g/ in the initial position is random and must be memorized
_____ ‘j’ is used for /g/ in the initial position before a, o, u
_____ none of the above
_____ no idea

22. When a child can point to the correct letter or group of letters after hearing the sound made by the letters, this is an example of:
__x__ alphabetic principle
_____ morphology
_____ alphabet knowledge
_____ vocabulary development
_____ blending

23. A morpheme refers to:
_____ a single letter
_____ a single speech sound
__x__ a single unit of meaning
_____ a grapheme
_____ no idea

24. The use of prefixes and suffixes to aid in determining the meaning of words is part of:
__x__ morphological awareness
_____ syllabication
_____ phonological awareness
_____ phonics
_____ blending

25. Knowledge of Latin and Greek roots often aids in vocabulary development. This is a part of:
_____ vocabulary education
_____ phonological awareness
__x__ morphological awareness
_____ alphabetic principle
_____ pseudoword development

26. _____ Roots and combining forms have evolved over the years and are sometimes now used as stand-alone words in the English language. The evolution of these forms is considered to be part of:
_____ syntax
_____ pragmatics
_____ phonology
__x__ morphology
_____ semantics

27. The knowledge that the understanding of how words are connected by meaning can have an impact on spelling skills is part of:
_____ phonology
__x__ morphology
_____ semantics
_____ pragmatics
_____ syntax

Skill items

28. How many speech sounds are in the following words? For example, the word "cat" has 3 speech sounds, /k/ /a/ /t/. Speech sounds do not necessarily equal the number of letters.

s2_1 box __4__
s2_2 grass __4__
s2_3 ship __3__
s2_4 moon __3__
s2_5 brush __4__
s2_6 knee __2__
s2_7 through __3__

29. Identify the pair of words that begins with the same sound
_____ joke-goat (1)
__x__ chef-shoe (2)
_____ quiet-giant (3)
_____ chip-chemist (4)
_____ no idea (5)

The next two items involve saying a word and then reversing the order of the sounds. For example, if we reverse the word "back," the new word would be "cab."

30. If you say the word, and then reverse the order of the sounds, "ice" would be:
_____ easy
_____ sea
_____ size
__x__ sigh
_____ no idea

31. If you say the word, and then reverse the order of the sounds, "enough" would be:
_____ fun
_____ phone
__x__ funny
_____ phony
_____ no idea

32. For each of the words on the left, determine the number of syllables and the number of morphemes. (Please be sure to give both the number of syllables and the number of morphemes, even though it may be the same number.)

	# of syllables	# of morphemes
disassemble	4	2
heaven	2	1
observer	3	2
spinster	2	2
pedestal	3	2
frogs	1	2
teacher	2	2

33. If tife is a word, the letter "y" would probably sound like the "i" in:
_____ if
_____ beautiful
__x__ find
_____ sing
_____ no idea

34. If hibble is a word, the letter “i” would probably sound like the “i” in :
_____ divert
_____ find
_____ hairy
_____ fertile
__x__ fixture
_____ no idea

35. If sebar is a word, the letter “e” would probably sound like the “e” in :
_____ interject
_____ credit
__x__ tree
_____ fertile
_____ pretty
_____ no idea

36. If wolgabe is a word, the letter “a” would probably sound like the “a” in :
_____ class
_____ ligament
__x__ stimulate
_____ fault
_____ acid
_____ no idea

37. If yonap is a word, the letter “o” would probably sound like the “o” in :
_____ docile
_____ spectator
_____ resolve
_____ nation
__x__ echo
_____ no idea

APPENDIX E – E-Mail to State Speech-Language-Hearing Associations

Susan Perry

From:	Susan Perry
Sent:	Thursday, March 08, 2018 3:59 PM
To:	Susan Perry
Subject:	Phonology and Morphology - SLPs and Teachers
Attachments:	Phonology and Morphology - SLPs and Teachers.docx

Dear State Speech-Language-Hearing Association,

I am conducting dissertation research to examine possible differences **in phonological and morphological knowledge among speech-language pathologists and general education elementary (K-6) teachers**. This study also will examine attitudes toward SLPs taking part in reading instruction for beginning readers.

I am asking that you please forward the attached letter to speech-language pathologists in your state association. There is a link in the letter to a secure online questionnaire hosted by Qualtrics. The link does not request or track identifying information of respondents, so responses remain completely anonymous.

This project has been approved by the Institutional Review Board (IRB) at The University of Southern Mississippi. Any questions or concerns about participant rights should be directed to the chair of the IRB, The University of Southern Mississippi, 118 College Drive #5131, Hattiesburg, MS 39406, 601-266-5997.

Thank you very much for your assistance with this project. If you have questions about this project, please contact me at susan.perry@usm.edu.

Sincerely,

Susan Perry

Susan Perry, M.S., CCC-SLP, CALT
Research/Data Coordinator
DuBard School for Language Disorders
The University of Southern Mississippi
118 College Drive #5215
Hattiesburg, MS 39406-0001
(601) 266-5223
(601) 266-6763 (fax)
www.usm.edu/dubard

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APPENDIX F – E-Mail to State Affiliate of the NEA

Susan Perry

From: Susan Perry
Sent: Saturday, April 21, 2018 10:41 AM
To: Susan Perry
Subject: Dissertation Research - Phonology and Morphology in SLPs and Teachers
Attachments: Phonology and Morphology - SLPs and Teachers.docx

Dear NEA State Affiliate Director,

I am conducting dissertation research to examine levels of **phonological and morphological knowledge among speech-language pathologists and general education elementary (K-6) teachers**. This study also will examine attitudes toward SLPs taking part in reading instruction for beginning readers.

I am asking that you please forward the attached letter to elementary teachers in your state association. There is a link in the letter to a secure online questionnaire hosted by Qualtrics. The link does not request or track identifying information of respondents, so responses remain completely anonymous.

This project has been approved by the Institutional Review Board (IRB) at The University of Southern Mississippi. Any questions or concerns about participant rights should be directed to the chair of the IRB, The University of Southern Mississippi, 118 College Drive #5131, Hattiesburg, MS 39406, 601-266-5997.

Thank you very much for your assistance with this project. If you have questions about this project, please contact me at susan.perry@usm.edu.

Sincerely,

Susan Perry

Susan Perry, M.S., CCC-SLP, CALT
Research/Data Coordinator
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www.usm.edu/dubard

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APPENDIX G – E-Mail to SpellTalk ListServe

Susan Perry

From: SPELLTalk <spelltalk-bounces+susan.perry=usm.edu@listserve.com> on behalf of Susan Perry via SPELLTalk <spelltalk@listserve.com>
Sent: Monday, March 19, 2018 4:26 PM
To: spelltalk@learningbydesign.com
Subject: [SPELLTalk] Phonology and Morphology - SLPs and Teachers
Attachments: ATT00001.txt

Dear Colleagues,

As a Speech-Language Pathologist of 25 years, my dissertation research is focused on **differences in phonological and morphological awareness knowledge among speech-language pathologists and general education elementary (K-6) teachers**. This study also will examine attitudes toward SLPs taking part in beginning reading instruction.

Your participation is this project is requested. By completing a questionnaire (link provided below), you will contribute to this potentially important research. Final submission of the questionnaire indicates your consent to participate in this study.

Though you may not directly benefit from participating, the findings from this study may help contribute to student success in reading. There are no known risks associated with participation. The link provided does not request or track identifying information of respondents, so responses remain completely anonymous.

The questionnaire should take less than 15 minutes to complete. Should you have any questions, please email me at susan.perry@usm.edu. ***Thank you very much for your input.***

This project has been approved by the Institutional Review Board (IRB) at The University of Southern Mississippi. Any questions or concerns about participant rights should be directed to the chair of the IRB, The University of Southern Mississippi, 118 College Drive #5131, Hattiesburg, MS 39406, 601-266-5997.

Sincerely,

Susan Perry, M.S., CCC-SLP, CALT

Secure link to Qualtrics-hosted questionnaire:

Phonological and Morphological Knowledge in SLPs and Elementary Teachers

APPENDIX H – Letter Attached to State Speech-Language-Hearing Associations' and State NEA Affiliates' E-Mails

March 8, 2018

Dear Colleague,

As a Speech Language Pathologist of 25 years, my dissertation research is focused on **differences in phonological and morphological awareness knowledge among speech-language pathologists and general education elementary (K-6) teachers**. This study also will examine attitudes toward SLPs taking part in beginning reading instruction.

Your participation is this project is requested. By completing a questionnaire (link provided below), you will contribute to this potentially important research. Final submission of the questionnaire indicates your consent to participate in this study.

Though you may not directly benefit from participating, the findings from this study may help contribute to student success in reading. There are no known risks associated with participation. The link provided does not request or track identifying information of respondents, so responses remain completely anonymous.

The questionnaire should take less than 15 minutes to complete. Should you have any questions, please email me at susan.perry@usm.edu. ***Thank you very much for your input.***

This project has been approved by the Institutional Review Board (IRB) at The University of Southern Mississippi. Any questions or concerns about participant rights should be directed to the chair of the IRB, The University of Southern Mississippi, 118 College Drive #5131, Hattiesburg, MS 39406, 601-266-5997.

Sincerely,

Susan Perry

Secure link to Qualtrics-hosted questionnaire:

Phonological and Morphological Knowledge in SLPs and Elementary Teachers

APPENDIX I – *Revised Basic Language Constructs Survey*

Demographic items and attitude items

d1. Highest level of education
_____ Bachelor's degree
_____ Master's degree
_____ Doctoral degree

d2. Current profession:
_____ Elementary Education (K-6) Teacher
_____ Speech-Language Pathologist
_____ Other, please provide: _____

d3. Years of experience in your current profession: _____

d4. Certifications or Licensure (Please check all that apply):
_____ CALP
_____ CALT
_____ CCC-SLP
_____ Dyslexia Therapist
_____ Elementary Education
_____ Elementary Reading Certification
_____ Literacy Coach
_____ Reading Interventionist
_____ Other, please provide: _____

d5. Work setting:
_____ Public school
_____ Private school
_____ Parochial school
_____ Private practice
_____ Clinic or hospital
_____ Other, please provide: _____

d6. Geographic region where you work:
_____ Northeast United States
_____ Midwest United States
_____ South United States
_____ West United States
_____ Other: _____

d7. Course(s) you took that instructed you in reading education, including courses in phonetic, multisensory structured language methods:
_____

d8. College or university where you were trained to teach reading:
_____

a1. I am well-prepared to teach reading skills to beginning readers:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

d9. In your work setting, do speech-language pathologists participate in reading instruction?
_____ Yes
_____ No
_____ Not sure

If participants answered "Yes" to question d9, they were asked questions d10, d11, a2, and a3.

d10. Speech-language pathologists participate in reading instruction in your work setting:
_____ Less than 1 hour per week
_____ 1-2 hours per week
_____ 2-3 hours per week
_____ 3-4 hours per week
_____ 4-5 hours per week
_____ More than 5 hours per week

d11. Location where speech-language pathologists deliver reading instruction:
_____ General education classroom
_____ Special education classroom
_____ SLP therapy room
_____ Other, please describe: _____

a2. Speech-language pathologists are effective when teaching beginning readers:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

a3. I like that speech-language pathologists participate in reading instruction:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

If participants answered "No" or "Not sure" to question d9, they were asked question a4.

a4. It would be good if speech-language pathologists could teach beginning reading skills:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

Knowledge items (randomized in electronic questionnaire)

k1_1. What type of task would the following be? Say the word that is made when you put these two syllables together: /foot/ /ball/.
__x__ blending
_____ rhyming
_____ isolation
_____ deletion
_____ segmenting
_____ substitution

k1_2. Phonological awareness is:
_____ the ability to use letter-sound correspondences to decode.
__x__ the understanding of how spoken language is broken down and manipulated.
_____ a teaching method for decoding skills.
_____ the same as phonics.
_____ no idea

k1_3. When a child recognizes and produces rhyming words, this is a part of:
__x__ phonological awareness.
_____ phonics.
_____ morphology.
_____ sound-symbol matching.
_____ phonemic awareness.

k1_4. When a child is able to detect alliteration, this is a part of:
_____ phonemic awareness.
_____ sound-symbol matching.
__x__ phonological awareness.
_____ isolation.
_____ repetition.

k1_5. When a child is able to say the syllables of a word separately, without having the written word to look at, this is an example of:
_____ syllabication.
__x__ phonological awareness.
_____ phonics.
_____ alphabetics.
_____ phonemic awareness.

k1_6. When a child is able to put orally-presented syllables together to form a word, this is an example of:
_____ phonemic awareness.
_____ morphology.
_____ alphabetic principle.
_____ phonics.
__x__ phonological awareness.

k2_1. A phoneme refers to
_____ a single letter.
__x__ a single speech sound.
_____ a single unit of meaning.
_____ a grapheme.
_____ no idea

k2_2. What type of task would the following be? Say the word “cat.” Now say the word without the /k/ sound.
_____ blending
_____ rhyming
_____ segmentation
__x__ deletion
_____ substitution
_____ isolation

k2_3. Phonemic awareness is:
_____ the same as phonological awareness.
_____ the understanding of how letters and sounds are put together to form words.
__x__ the ability to isolate and manipulate the individual sounds in spoken language.
_____ the ability to use sound-symbol correspondences to read new words.
_____ no idea

k2_4. What type of task would the following be? Tell the number of sounds in the word, "broom."
_____ substitution
_____ rhyming
__x__ segmenting
_____ deletion
_____ blending
_____ isolation

k2_5. What type of task would the following be? Change the /b/ sound in bat to /k/ and say the new word.
_____ rhyming
_____ isolation
_____ blending
_____ segmenting
__x__ substitution
_____ deletion

k2_6. What type of task would the following be? Name the third sound in the word, "people."
_____ substitution
__x__ isolation
_____ rhyming
_____ blending
_____ deletion
_____ segmenting

k2_7. When a child is able to change one sound to another to make a new word, with no written stimuli, this is an example of:
_____ alphabetic principle
__x__ phonological awareness
_____ phonics
_____ blending
_____ morphological awareness

k2_8. Teaching phoneme awareness explicitly is important because:
_____ The basis for learning phonics is phoneme-grapheme correspondence (sound-symbol association).
_____ Early instruction in phoneme awareness reduces the incidence of reading problems later in development.
_____ Children with reading and spelling problems often need help acquiring phoneme awareness.
__x__ All of the above.

k2_9. Which of the following activities might be used to teach phoneme awareness?
__x__ moving a chip into a box as each sound in a word in pronounced
_____ supplying a rhyming word in a familiar nursery rhyme
_____ sorting written words by the way they spell the vowel /a/
_____ All of the above.

k3_1. The awareness that letters or groups of letters represent sounds, and that these relationships between letter and sounds are predictable, is called:
_____ phonological awareness
__x__ alphabetic principle
_____ alphabetic understanding
_____ orthographic memory
_____ phonics

k3_2. A combination of two or three consonants pronounced so that each letter keeps its own identity is called:
_____ silent consonant
_____ consonant digraph
_____ diphthong
__x__ consonant blend
_____ no idea

k3_3. A “soft c” is in the word:
_____ Chicago
_____ chair
_____ welcome
__x__ electricity
_____ none of the above
_____ no idea

k3_4. Which of the following words has an example of a final stable syllable?
_____ wave
_____ bacon
__x__ paddle
_____ napkin
_____ none of the above
_____ no idea

k3_5. Which of the following words has two closed syllables?
_____ pilot
__x__ napkin
_____ hide
_____ bobble
_____ none of the above
_____ no idea

k3_6. Which of the following words contains an open syllable?
_____ planet
_____ home
_____ jungle
__x__ radar
_____ none of the above
_____ no idea

k3_7. What is the rule that governs the use of ‘c’ in the initial position for /k/?
_____ ‘c’ is used for /k/ in the initial position before e, i, or y.
_____ the use of ‘c’ for /k/ in the initial position is random and must be memorized
__x__ ‘c’ is used for /k/ in the initial position before a, o, u, or any consonant
_____ none of the above
_____ no idea

k3_8. When a child can point to the correct letter or group of letters after hearing the sound made by the letters, this is an example of:
__x__ alphabetic principle
_____ morphology
_____ alphabet knowledge
_____ vocabulary development
_____ blending

k4_1. A morpheme refers to:
_____ a single letter
_____ a single speech sound
__x__ a single unit of meaning
_____ a grapheme
_____ no idea

k4_2. The use of prefixes and suffixes to aid in determining the meaning of words is part of:
__x__ morphological awareness
_____ syllabication
_____ phonological awareness
_____ phonics
_____ blending

k4_3. Knowledge of Latin and Greek roots often aids in vocabulary development. This is a part of:
_____ vocabulary education
_____ phonological awareness
__x__ morphological awareness
_____ alphabetic principle
_____ pseudoword development

k4_4. _____ Roots and combining forms have evolved over the years and are sometimes now used as stand-alone words in the English language. The evolution of these forms is considered to be part of:
_____ syntax
_____ pragmatics
_____ phonology
__x__ morphology
_____ semantics

k4_5. The knowledge that the understanding of how words are connected by meaning can have an impact on spelling skills is part of:
_____ phonology
__x__ morphology
_____ semantics
_____ pragmatics
_____ syntax

<u>Skill items</u>

How many speech sounds are in the following words? For example, the word "cat" has 3 speech sounds, /k/ /a/ /t/. Speech sounds do not necessarily equal the number of letters.

s2_1. box __4__
s2_2. grass __4__
s2_3. nation __5__
s2_4. beagle __4__
s2_5. brush __4__
s2_6. through __3__
s2_7. fix __4__

s2_8. spoil __4__
s2_9. picked __4__
s2_10. blind __5__

The next two items involve saying a word and then reversing the order of the sounds. For example, if we reverse the word "back," the new word would be "cab."

s2_11. If you say the word, and then reverse the order of the sounds, "ice" would be:
_____ easy
_____ sea
_____ size
__x__ sigh
_____ no idea

s2_12. If you say the word, and then reverse the order of the sounds, "enough" would be:
_____ fun
_____ phone
__x__ funny
_____ phony
_____ no idea

s3_1. If sybe is a word, the letter "y" would probably sound like the "i" in:
_____ if
_____ beautiful
__x__ find
_____ sing
_____ cylinder
_____ no idea

s3_2. If hibble is a word, the letter "i" would probably sound like the "i" in :
_____ divert
_____ find
_____ hairy
_____ fertile
__x__ fixture
_____ no idea

s3_3. If sebar is a word, the letter "e" would probably sound like the "e" in :
_____ interject
_____ credit
__x__ tree
_____ fertile
_____ pretty
_____ no idea

s3_4. If wolgabe is a word, the letter “a” would probably sound like the “a” in :
_____ class
_____ ligament
__x__ stimulate
_____ fault
_____ acid
_____ no idea

s3_5. If soparg is a word, the letter “o” would probably sound like the “o” in :
_____ docile
_____ spectator
_____ resolve
_____ nation
__x__ poetry
_____ no idea

For each of the words on the left, determine the number of morphemes:

s4_1. disassemble __2__
s4_2. heaven __1__
s4_3. monarchy __3__
s4_4. spinster __2__
s4_5. pedestal __2__
s4_6. frogs __2__
s4_7. teacher __2__
s4_8. dislocation __3__
s4_9. observer __2__
s4_10. undeniable __3__

APPENDIX J – *Revised Basic Language Constructs Survey*: Simple Structure

Demographic items and attitude items

d1. Highest level of education
_____ Bachelor's degree
_____ Master's degree
_____ Doctoral degree

d2. Current profession:
_____ Elementary Education (K-6) Teacher
_____ Speech-Language Pathologist
_____ Other, please provide: _____

d3. Years of experience in your current profession: _____

d4. Certifications or Licensure (Please check all that apply):
_____ CALP
_____ CALT
_____ CCC-SLP
_____ Dyslexia Therapist
_____ Elementary Education
_____ Elementary Reading Certification
_____ Literacy Coach
_____ Reading Interventionist
_____ Other, please provide: _____

d5. Work setting:
_____ Public school
_____ Private school
_____ Parochial school
_____ Private practice
_____ Clinic or hospital
_____ Other, please provide: _____

d6. Geographic region where you work:
_____ Northeast United States
_____ Midwest United States
_____ South United States
_____ West United States
_____ Other: _____

d7. Course(s) you took that instructed you in reading education, including courses in phonetic, multisensory structured language methods:

_____

d8. College or university where you were trained to teach reading:

_____

a1. I am well-prepared to teach reading skills to beginning readers:

_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

d9. In your work setting, do speech-language pathologists participate in reading instruction?

_____ Yes
_____ No
_____ Not sure

If participants answer "Yes" to question d9, ask questions d10, d11, a2, and a3.

d10. Speech-language pathologists participate in reading instruction in your work setting:

_____ Less than 1 hour per week
_____ 1-2 hours per week
_____ 2-3 hours per week
_____ 3-4 hours per week
_____ 4-5 hours per week
_____ More than 5 hours per week

d11. Location where speech-language pathologists deliver reading instruction:

_____ General education classroom
_____ Special education classroom
_____ SLP therapy room
_____ Other, please describe: _____

a2. Speech-language pathologists are effective when teaching beginning readers:

_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

a3. I like that speech-language pathologists participate in reading instruction:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

If participants answer "No" or "Not sure" to question d9, ask question a4.

a4. It would be good if speech-language pathologists could teach beginning reading skills:
_____ Strongly disagree
_____ Disagree
_____ Neither agree nor disagree
_____ Agree
_____ Strongly agree

Knowledge items (randomized in electronic questionnaire)

k1_2. Phonological awareness is:
_____ the ability to use letter-sound correspondences to decode.
__x__ the understanding of how spoken language is broken down and manipulated.
_____ a teaching method for decoding skills.
_____ the same as phonics.
_____ no idea

k1_5. When a child is able to say the syllables of a word separately, without having the written word to look at, this is an example of:
_____ syllabication.
__x__ phonological awareness.
_____ phonics.
_____ alphabetics.
_____ phonemic awareness.

k2_7. When a child is able to change one sound to another to make a new word, with no written stimuli, this is an example of:
_____ alphabetic principle
__x__ phonological awareness
_____ phonics
_____ blending
_____ morphological awareness

k3_2. A combination of two or three consonants pronounced so that each letter keeps its own identity is called:
_____ silent consonant
_____ consonant digraph
_____ diphthong
__x__ consonant blend
_____ no idea

k3_5. Which of the following words has two closed syllables?
_____ pilot
__x__ napkin
_____ hide
_____ bobble
_____ none of the above
_____ no idea

k4_2. The use of prefixes and suffixes to aid in determining the meaning of words is part of:
__x__ morphological awareness
_____ syllabication
_____ phonological awareness
_____ phonics
_____ blending

Skill items

How many speech sounds are in the following words? For example, the word "cat" has 3 speech sounds, /k/ /a/ /t/. Speech sounds do not necessarily equal the number of letters.

s2_1. box __4__
s2_2. grass __4__
s2_3. nation __5__
s2_5. brush __4__
s2_6. through __3__
s2_8. spoil __4__
s2_10. blind __5__

For each of the words on the left, determine the number of morphemes:

s4_1. disassemble __2__
s4_2. heaven __1__
s4_9. observer __2__
s4_10. undeniable __3__

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