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FACTORS FOR INFLUENCING INTERVENTION FOR DYSLEXIA

by

Michele Schraeder

A Dissertation
Submitted to the Graduate School,
the College of Education and Human Sciences
and the School of Education
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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ABSTRACT

Although instructional leadership and transformational leadership styles of elementary school principals have been found to be effective variables in increasing academic progress for students, the integration of instructional and transformational leadership behaviors has proved to be the most effective form of leadership. However, many students in elementary schools have difficulty learning to read despite good leadership by the principal, with 5-20% of students being diagnosed with dyslexia. While these students need phonetic, multisensory intervention to build necessary reading skills, many principals report lack of knowledge of this specialized instruction. Therefore, the purpose of this research was to explore variables that determine the school-based level of appropriate intervention for students with dyslexia.

A questionnaire assessing leadership skills, knowledge and beliefs about dyslexia, preparation in reading disorders and/or dyslexia received from degree programs and professional development, and services provided to students with dyslexia was given to principals serving in K-2 elementary schools across the United States.

Results indicate the variables of leadership style of the school principal, knowledge received from the principal's degree program, and knowledge received from professional development provided outside of the local school district do not significantly influence the school-based level of intervention for students with dyslexia. However, this study found that principals who have greater knowledge and more correct beliefs about dyslexia, along with those who received more knowledge from internal professional development, are those who provide more appropriate services for students with dyslexia.

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In addition to my dissertation committee, I would like to thank another outstanding professional, Daphne Cornett. Daphne also was my mentor, and she taught me so much about working with students with speech, language, and reading difficulties. I appreciate your continued guidance and friendship.

DEDICATION

To my family for their love, support, and constant encouragement—I could not have done this without you.

To the children over the years of my professional practice who have inspired me with their courage, positive attitudes, and hard work in the face of constant learning challenges and have taught me more than I ever taught them.

To their parents for trusting me to work with their children.

To the teachers and staff of the DuBard School for Language Disorders I have been privileged to work alongside in this journey to bring language to children and hope to their families.

These groups are true heroes.

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CHAPTER I - INTRODUCTION

Background

For most children, learning to talk is a natural development. For these children, the oral forms of language, listening and speaking, are naturally acquired (Shaywitz, 2003; Soifer, 2011). In fact, a human's brain has specific areas that are used for understanding and using speech and language (Wolf, 2007). Children begin learning to talk through exposure to the speech and language of others and progress through developmental milestones until speech and oral language skills are well-developed (American Speech-Language-Hearing Association [ASHA], n.d.a; Soifer, 2011). However, although written language is similar to and reliant on oral language, the written forms of language, reading and writing, are not naturally-developing and must be taught to most children (Lyon, 1998; Soifer, 2011; Wolf, 2007).

Reading is described as the product of word recognition and language comprehension (Gough & Tunmer, 1986; Hoover & Gough, 1990; Scarborough, 2001) with the ultimate goal being comprehension of the written text (Carreker, 2011; Scarborough, 2001). Word recognition includes the skills of phonological awareness, decoding using phoneme-grapheme recognition, and instant recognition of high-frequency words (Scarborough, 2001). Language comprehension includes background knowledge, vocabulary, language structures, verbal reasoning, and literacy knowledge (Scarborough, 2001). Without accurate and efficient skills in both of these areas, children are at risk for reading failure.

Reading is one of the most important skills that children learn in elementary school (Henry, 2010). Some children learn this skill almost effortlessly, and numerous

others learn to read with little difficulty once given instruction in school (Lyon, 1998).

However, many children do not learn this essential skill easily (Lyon, 1998; Walsh, Glaser, & Wilcox, 2006). Approximately 30% of American kindergarteners are at risk for reading failure, with many of these students having language deficiencies due to the lack of prerequisite oral language skills needed for reading (Lyon, 1998; Walsh et al., 2006). Additionally, the National Center for Education Statistics (NCES, 2015), indicated that 24% of fourth grade students in the United States and 31% of eighth grade students scored below Basic on the National Assessment of Educational Progress (NAEP) in reading. The achievement-level descriptions used on the NAEP indicate skills that students need to accurately decode and comprehend grade-level texts. Students who score Basic exhibit partial mastery for grade level skills, and students who score below Basic have not mastered these essential skills (NCES, 2015).

Students who are poor readers may be classified as having dyslexia. Dyslexia is an unexpected difficulty in learning to read, unexpected because a student with dyslexia typically has average intelligence, sensory systems, neurological functioning, and has had acceptable reading instruction (Shaywitz, 1998). Dyslexia is defined by the International Dyslexia Association (IDA, 2002) as

> …a specific learning disability that is neurobiological in origin. It is characterized
> by difficulties with accurate and/or fluent word recognition and by poor spelling
> and decoding abilities. These difficulties typically result from a deficit in the
> phonological component of language that is often unexpected in relation to other
> cognitive abilities and the provision of effective classroom instruction. Secondary
> consequences may include problems in reading comprehension and reduced

reading experience that can impede growth of vocabulary and background

knowledge. ("Definition of Dyslexia")

Other definitions of dyslexia also highlight this phonological theory of dyslexia (Catts,

1989; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001; Shaywitz & Shaywitz,

2007) as well as the idea that dyslexia is a language-based learning disability (ASHA,

n.d.b).

Common characteristics of dyslexia include difficulty organizing spoken and

written language; difficulty learning phoneme-grapheme associations; slow and labored

decoding; and difficulties with spelling and written expression (ASHA, n.d.b; Birsh,

2011; IDA, 2002; Rayner et al., 2001). In addition to written language difficulties,

students with dyslexia often have low self-esteem, depression, anxiety, and attention

deficit/hyperactivity disorder (Butler & Edmonson, 2009; Schulte-Körne, 2010).

Individuals with dyslexia may present with comorbid, or coexisting, oral language

problems (Catts, Adlof, Hogan, & Weismer, 2005; Gillon, 2002; Lewis, Freebairn, &

Taylor, 2000; Pennington & Bishop, 2009).

Because so many children enter school at risk for dyslexia, and because these

students do not acquire reading skills easily, the National Institute of Child Health and

Human Development (NICHD, 2000), investigated the essential elements of effective,

research-based reading programs. NICHD published the National Reading Panel (NRP)

report which indicated five areas are included in effective reading programs: phonemic

awareness, phonics, fluency, vocabulary, and text comprehension (Fielding-Barnsley &

Purdie, 2005; NICHD, 2000; Rayner et al., 2001). In addition to including these five

areas, effective intervention includes phonic-based multisensory instruction (Birsh, 2011;

Farrell & Sherman, 2011; International Multisensory Structured Language Education Council [IMSLEC], 1995; Joshi, Treiman, Carreker, & Moats, 2008; Kirk & Gillon, 2009; Lim & Oei, 2015; Moats, 2009; Moats & Tolman, 2009; Shaywitz, 2003; Taylor, Pearson, Clark, & Walpole, 2000). This effective instruction includes explicit phonics, or the idea that teachers directly teach the phoneme-grapheme relationships used in written English, and uses input from all sensory modalities to increase memory and learning (Farrell & Sherman, 2011). These modalities include visual, auditory, tactile, and motorkinesthetic (Farrell & Sherman, 2011; Martin, 2012). Other important aspects of phonetic, multisensory instruction include instruction in phonology, spelling, and morphology (Berninger, Nielsen, Abbott, Wijsman, & Raskind, 2008; IDA, 2017b; Kirk & Gillon, 2009). As a result of this type of instruction, students make improvements in decoding, and they show improvement in neurological organization during functional magnetic resonance imaging (Shaywitz, et al., 2004). Additionally, students report improved self-confidence and decreased anxiety following this type of instruction (Butler & Edmonson, 2009).

Unfortunately, as many as 92% of teachers indicated that they lack the specific knowledge necessary to implement this type of instruction with students with dyslexia (Bell, 2013; Fielding-Barnsley & Purdie, 2005; Moats & Foorman, 2003; Moreau, 2014; Shetty & Rai, 2014). They also report frustration when teaching students with dyslexia in the general education classroom (Wadlington, & Wadlington, 2005). Numerous teachers, once they enter the classroom, find that their preservice educational programs did not prepare them to provide this specialized instruction. A review of preservice programs indicated that fewer than 20% of these programs provide information on or require

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student mastery of the five components of reading deemed essential by the NRP (Moats, 1999; Moreau, 2014; Walsh et al., 2006). Additionally, these programs lack instruction in metalinguistics, or the ability to use language to monitor language-related activities (Aaron, Joshi, & Quatroche, 2008; Fielding-Barnsley & Purdie, 2005).

Teachers also report that the professional development they receive once they enter the classroom is not adequate, with these professional development opportunities being one-time events rather than being sustained throughout the school year (Chambers & Hausman, 2014). Additionally, these opportunities lack instruction in strategies that would be effective for students with dyslexia, indicating the need for more applicable professional development (Bell, 2013; Chambers & Hausman, 2014; Moats & Foorman, 2003). Providing this appropriate professional development, ultimately, is the responsibility of the school administrators (Lunenburg & Ornstein, 2012).

Fortunately, school leadership has been found to have a positive influence on student learning, including reading skills, by creating the conditions under which instruction is delivered (Heck & Hallinger, 2014). In fact, only teaching has a greater influence on student learning (Leithwood, Louis, Anderson, & Wahlstrom, 2004). In recent years, both transformational and instructional leadership styles have proven effective in improving schools (Hallinger & Murphy, 1985; Hallinger, 2003; Leithwood, 1994; Leithwood & Jantzi, 1999).

Transformational leaders improve learning by creating second order changes, or the changes in the school environment which indirectly influence student learning (Hallinger, 2003). These include creating a positive culture (Blasé & Blasé, 1999; DuFour & Mattos, 2013), empowering teachers with content knowledge (Leithwood et

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al., 2004), encouraging collaboration among teachers (Blasé & Blasé, 1999; DuFour & Mattos, 2013), and inviting teachers to share in decision making (Urick & Bowers, 2014). Transformational leaders concentrate on developing relationships with teachers so that teacher satisfaction is high (Chambers & Hausman, 2014; Huber, 2004). However, critics of transformational leadership indicate that it is not adequate to increase student outcomes because of a lack of focus on curriculum and instruction (Urick & Bowers, 2014).

Instructional leadership, on the other hand, is highly focused on curriculum and instruction, with the instructional leader's primary role being to guide the teaching and learning (Bush, 2007; Hallinger, 2003; Huber, 2004). In this leadership model, the principal is seen as the primary source of educational expertise (Bush, 2007; Hallinger, 2003; Huber, 2004). Because student learning is directly related to curriculum and instruction, improvements made by instructional leaders in these areas are seen as first order changes (Hallinger, 2003). However, critics of instructional leadership indicate principals do not have enough content knowledge to serve as the curriculum specialists in all areas (DuFour & Mattos, 2013; Hallinger, 2003; Leithwood, 1994) and the principal has too much power (Hallinger, 2003).

Often, principals indicate the distinction between leadership styles is not always clear (Urick & Bowers, 2014) and that circumstances at different times require different leadership styles (Hallinger, 2003; Urick & Bowers, 2014). Therefore, an integrated style of leadership often is practiced. Integrated leadership uses the best of both transformational and instructional leadership (Hallinger, 2003; Marks & Printy, 2003). The principal who uses an integrated style of leadership has transformational leadership

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qualities used to improve teacher commitment and instructional leadership qualities used to improve curriculum and instruction (Marks & Printy, 2003). When school leaders practice integrated leadership, student performance improves (Marks & Printy, 2003), and the instructional skills and commitment of the teachers increase (Marks & Printy, 2003; Urick & Bowers, 2014).

Regardless of leadership style used, strong school leadership is needed to improve services for all students, but especially for students with dyslexia (Dean, Dyal, Wright, Carpenter, & Austin, 2016; Moats, 2009). In order to do that, it is important for school leaders to have an adequate knowledge base of effective reading instruction and appropriate intervention for students with dyslexia. However, principals report that their preservice training programs and the professional development opportunities in which they have participated included only basic information about reading disabilities so that they lack knowledge of effective intervention for students with reading difficulties (DiPaola & Walther-Thomas, 2003; DuFour & Mattos, 2013; Fletcher, Grimley, Greenwood, & Parkhill, 2013; Sanzo, Clayton, & Sherman, 2011).

In order to be the most effective educational leaders to support students with dyslexia, principals need to be knowledgeable about characteristics of students with dyslexia and appropriate strategies to use for intervention with these students (Chambers & Hausman, 2014; Lim & Oei, 2015; Matsumura & Garnier, 2010; Taylor et al., 2000). Principals who are more knowledgeable about intervention for students with dyslexia, including phonetic, multisensory intervention, are better able to support staff who work with these students (Dean et al., 2016; Matsumura & Garnier, 2010; Ritchey & Goeke, 2006).

Statement of the Problem

The literature clearly indicates that many students are not able to easily learn the skills needed for accurate and efficient reading (Fletcher & Lyon, 1998; Lyon, 1998; NCES, 2015; Walsh et al., 2006). Additionally, students identified as having dyslexia need intensive, multisensory instruction in the areas of phonemic awareness, phonics, fluency, vocabulary, and text comprehension to build these necessary skills (Birsh, 2011; Farrell & Sherman, 2011; Fielding-Barnsley & Purdie, 2005; IMSLEC, 1995; Joshi et al., 2008; Kirk & Gillon, 2009; Lim & Oei, 2015; Moats, 2009; Moats & Tolman, 2009; NICHD, 2000; Rayner et al., 2001; Shaywitz, 2003; Taylor et al., 2000). Furthermore, teachers and principals report that they have not received, either through their preservice education or through professional development, instruction on teaching these skills (Aaron et al., 2008; Bell, 2013; Chambers & Hausman, 2014; DiPaola & Walther-Thomas, 2003; DuFour & Mattos, 2013; Fielding-Barnsley & Purdie, 2005; Fletcher et al., 2013; Moats, 1999; Moats & Foorman, 2003; Moreau, 2014; Sanzo et al., 2011; Walsh et al., 2006). Although principals may practice different leadership styles, the principal's role as leader of the school and the positive effect that this leadership has on student outcomes is well-documented in the literature (Chambers & Hausman, 2014; Lunenburg & Ornstein, 2012; Marzano, Waters, & McNulty, 2005; Matsumura & Garnier, 2010; Peterson & Deal, 1998). However, little research exists documenting how the variables of leadership style, knowledge of dyslexia and appropriate intervention, and preparation for teaching students with dyslexia in degree programs and professional development determine the amount and type of intervention provided to students with dyslexia.

Purpose

The purpose of this study is to determine how different variables determine the school-based level of appropriate intervention given to students with dyslexia in K-2 elementary schools. These variables are 1) the leadership style of the school principal; 2) the level of knowledge that the school principal has about dyslexia and appropriate intervention; and 3) the principal's level of preparation in reading disabilities and dyslexia received from preservice education and professional development.

Justification of the Study

Research has shown that as many as 5-20% of students in elementary school are identified as having a dyslexia (IDA, 2002; Lyon, 1998) and as such, do not learn to read accurately or efficiently. Additionally, research has indicated that phonetic, multisensory instruction is critical for these students, but teachers report they are not equipped with this knowledge, either through their preservice educational programs (Moats, 1999; Moreau, 2014; Walsh et al., 2006) or the professional development they receive once they enter the classroom (Bell, 2013; Chambers & Hausman, 2014; Moats & Foorman, 2003). Furthermore, school principals, as the instructional leaders of the school, do not possess knowledge of this specialized instruction so are not able to provide the most appropriate professional development to their teachers or appropriate programming for their students (DuFour & Mattos, 2013; Fletcher et al., 2013; Sanzo et al., 2011). As a result, many students with dyslexia do not receive the phonetic, multisensory instruction needed for them to make the most progress in reading.

By exploring the knowledge that school principals have about dyslexia, better identification of students may begin. Therefore, it is possible that students with dyslexia

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may be identified at a younger age, and appropriate intervention may begin earlier. Additionally, results from this study may provide elementary school principals with the knowledge of effective intervention so they may improve their services for students with dyslexia, both through the professional development opportunities they provide for their teachers and for the programming they provide for these students. By providing appropriate intervention to students with dyslexia, the school principal may help prevent the failure these students experience while in school.

Transformational and Instructional Theories of Educational Leadership

School principals, as educational leaders, may adopt differing styles of leadership based on different theoretical frameworks. Two theories of educational leadership, the transformational theory and the instructional theory, serve as the foundation upon which the principal's actions towards improving services for students with dyslexia are set.

In the transformational leadership theory, the principal leads by developing relationships with the staff (Bass, 1990; Bass & Avolio, 1993; Blasé & Blasé, 1999; Leithwood, 1994). The structure of the school is based on leadership that is shared among all stakeholders which leads to higher levels of commitment to the organization and increased motivation (Jacobson, 2010; Leithwood, 1994; Ross & Gray, 2006). A transformational leader creates a vision for the school (Leithwood, 1994; Marzano, 2012) and encourages innovation among the staff members (Bass & Riggio, 2006; Leithwood, 1994). This leader provides a model of professional behavior and coaches staff members to reach their highest potential (Leithwood, 1994).

In the instructional theory of educational leadership, the school principal serves as the instructional leader of the school. Smith and Andrews (1989) determined the

following characteristics of strong instructional leaders. For these leaders, teaching is the priority, and as such, curriculum and instruction are foundational. A strong instructional leader leads by example, by being knowledgeable about and modeling teaching behaviors, and participating in professional development alongside staff members. Additionally, this leader supports effective use of resources, including the resource of time (Smith & Andrews, 1989). Marzano et al. (2005) characterized a strong instructional leader as being the "resource provider, instructional resource, communicator, and visible presence" in the school (p. 18). This leader serves as the resource for instruction by modeling teaching behaviors, participating in professional development, and giving priority to quality instruction (Marzano et al., 2005).

Integration of Transformational and Instructional Leadership

Although both transformational leadership and instructional leadership have been shown to have a positive influence on student outcomes (Heck & Hallinger, 2014; Jacobson, 2010, Robinson, Lloyd & Rowe, 2008), principals may need to use different styles of leadership based on different situations (Bush 2007; Hallinger & Murphy, 1985; Huber, 2004; Jacobson, 2010). This type of educational leadership, in which the principal exhibits characteristics of both transformational leadership and instructional leadership, is referred to as integrated leadership (Marks & Printy, 2003; Printy, Marks, & Bowers, 2009). Using this style of educational leadership, a principal focuses on increasing the effectiveness of the teachers through shared leadership and building relationships (Marks & Printy, 2003; Printy et al., 2009). This principal also focuses on teaching and learning through managing the curriculum, providing instructional support

to the teachers, and overseeing the assessment procedures (Marks & Printy, 2003; Printy et al., 2009).

<center>Phonological and Double-Deficit Theories of Dyslexia</center>

In order for principals to be the most effective instructional leaders for students with dyslexia, it is important that they are familiar with the theoretical bases of dyslexia. The phonological theory of dyslexia indicates that this disorder results from the inability to process phonological information in the brain in a typical fashion (Catts, 1989; IDA, 2002; Rayner et al., 2001; Shaywitz & Shaywitz, 2007). The definition of dyslexia states that "difficulties typically result from a deficit in the phonological component of language" (IDA, 2002, "Definition of Dyslexia"). Physical evidence for this theory of dyslexia is found in brain differences in individuals with dyslexia. These differences have been noted as early as the late 19th century by the French neurologist Dejerine (Lyon, Shaywitz, & Shaywitz, 2003), and current research using functional magnetic resonance imaging (fMRI) confirms brain differences in the left hemisphere of individuals with dyslexia (Richlan, Kronbichler, & Wimmer, 2011). The phonological theory of dyslexia explains why individuals with dyslexia are unable to accurately and effectively make the phoneme-grapheme connections needed for efficient decoding (Richlan, 2012). Additionally, multisensory, structured language intervention that targets this deficit area of the brain may help improve those neural connections and improve decoding skills in students with dyslexia (Lyon et al., 2003).

A second theory of dyslexia, the double-deficit theory, indicates individuals with dyslexia may have a secondary problem with naming speed (Bowers & Wolf, 1993; Catts, 1993; Richlan 2012). The phonological inefficiency that these individuals display,

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along with the inability to name familiar visual symbols at a rapid pace, make it difficult

for individuals with dyslexia to develop strong phoneme-grapheme relationships

necessary for automatic decoding (Bowers & Wolf, 1993; Vellutino, Fletcher, Snowling,

& Scanlon, 2004).

Research Questions

In order to guide this study, the following research questions are presented:

1. Does principal knowledge and beliefs about dyslexia moderate the relationship

between the leadership style of the elementary school principal and the school-based

level of appropriate intervention for students with dyslexia?

2. Is there a relationship between the level of integration between transformational

leadership and instructional leadership styles of the elementary school principal and the

school-based level of appropriate intervention for students with dyslexia?

3. Is there a relationship between the level of principal knowledge and beliefs about

dyslexia and the school-based level of appropriate intervention for students with

dyslexia?

4. Where have principals received their level of preparation in reading disabilities and/or

dyslexia (degree programs or professional development), and does this in any way inform

the school-based level of appropriate intervention for students with dyslexia in their

schools?

Definitions

Allophones: The subtle differences in the way a phoneme may be produced due to the

effect of coarticulation (Wagner & Torgeson, 1987).

Alphabetic principle: The idea that the sounds of words are represented by the letters of

    the alphabet (Liberman, Shankweiler, & Liberman, 1990).

Automaticity: The ability to complete a task with speed but without effort or conscious

    awareness (Logan, 1997).

Bottom-up leadership: A leadership style in which the principal makes changes to

    increase commitment and motivation of the instructional staff which help them

    make changes in instruction (Hallinger, 2003).

Brain plasticity: The ability of the brain to reorganize as a response to learning (Eden et

    al., 2004).

Central Auditory Processing Disorder (CAPD): The difficulties in processing auditory

    information in the central nervous system, including transmission, organization,

    storage, retrieval, and use (ASHA, 2005).

Coarticulation: The subtle change in articulation of a phoneme caused by the properties

    of phonemes spoken either before or after it in connected speech (Zamuner,

    Moore, & Desmeules-Trudel, 2016).

Decoding: The ability to determine the sounds of language that are represented by written

    letters (ASHA, n.d.c.).

Double-deficit theory of dyslexia: An individual with dyslexia has difficulty with the

    phonological component of language and a secondary problem with naming speed

    (Bowers & Wolf, 1993; Wolf & Bowers, 2000; Wolf, Bowers, & Biddle, 2000);

    also known as the multiple deficit theory of dyslexia (Pennington & Bishop,

    2009).

Dyslexia: A specific learning disability that is neurobiological in origin resulting from a

deficit in the phonological component of language and characterized by

difficulties with accurate and/or fluent word recognition, poor spelling, and

decoding abilities (IDA, 2002).

Encoding: The ability to sequence letters according to the correct spelling (ASHA,

n.d.c.).

Executive function: The ability of an individual to regulate and control supervisory

thought processes (Key-DeLyria & Altmann, 2016).

Fluency: The ability to read text accurately and efficiently, with automaticity, phrasing,

and intonation which leads to the facilitation of reading comprehension (Kuhn,

Schwanenflugel, & Meisinger, 2010).

Graphemes: The letter or letters of the alphabet used to represent speech sounds (IDA,

2017b).

Instructional leadership theory: The principal is highly focused on curriculum and

instruction, with the primary role being to guide the teaching and learning (Bush,

2007; Hallinger, 2003; Huber, 2004).

Integrated leadership: The principal has transformational leadership qualities used to

improve teacher commitment and instructional leadership qualities used to

improve curriculum and instruction (Hallinger, 2003; Marks & Printy, 2003); also

known as shared instructional leadership, distributed leadership, parallel

leadership, or leadership capacity (Printy et al., 2009).

Lexicon: The words that are used in an individual's vocabulary (Rescoral, Alley, &

Christine, 2001).

Metalinguistics: The ability to use language to monitor and manipulate the structural features of language (Ball, 1993).

Multiple deficit theory of dyslexia: An individual with dyslexia has difficulty with the phonological component of language and a secondary problem with naming speed (Pennington & Bishop, 2009); also known as the double-deficit theory of dyslexia (Bowers & Wolf, 1993; Wolf & Bowers, 2000; Wolf et al., 2000).

Multisensory instruction: Simultaneous input of information from all sensory modalities, including visual, auditory, tactile, and motorkinesthetic, is used to increase memory and learning (ASHA, n.d.c.; IMSLEC, 1995; Martin, 2012; Ritchey & Goeke, 2006; Snowling & Hulme, 2012; Tannock et al., 2016; van Staden & Purcell, 2016; Warnick & Caldarella, 2016).

Orthography: The particular sequence of graphemes in a word that represents the correct spelling (Apel, 2011).

Phoneme: The smallest unit of speech sounds (Ball, 1993).

Phoneme segmentation: The ability to break words into their component sounds (Werfel & Schuele, 2012).

Phonemic awareness: The ability to think about, manipulate, and compare the speech sounds of words (Goldstein et al., 2017; Seidenberg, 2017).

Phonics: A method of teaching reading that includes instruction in the phoneme-grapheme relationships used in written English (NICHD, 2000).

Phonological awareness: The explicit understanding of the phonological structure of language that includes the reader's ability to identify units of oral language (Liberman et al., 1990; Stahl & Murray, 1994).

Phonological theory of dyslexia: The inability to accurately and efficiently make the

    connection between the visual information gained from the graphemes of a word

    and the phonological information needed to assign meaning to those graphemes

    (Catts, 1989; Rayner et al., 2001; Shaywitz & Shaywitz, 2007).

Phonology: The speech sounds of a language and the rules dictating the patterns of

    interaction (Liberman et al., 1990).

Rapid automatized naming: The ability to name familiar visual symbols such as letters,

    numbers, or colors at a rapid pace (Georgiou, Parrila, Cui, & Papadopoulos, 2013;

    Wolf et al., 2000).

Second order changes: The changes in the school environment which indirectly influence

    student learning (Hallinger, 2003).

Semantics: The meaning of both oral and written language (IMSLEC, 1995).

Shared leadership: A leadership style in which the principal focuses on curriculum and

    instruction while building the effectiveness of teachers to create an environment

    for increased student outcomes (Heck & Hallinger, 2014); also known as

    "leadership for learning" (Heck & Hallinger, 2014, p. 658), distributed leadership,

    parallel leadership, or leadership capacity (Printy et al., 2009).

Simple View of Reading: Reading is defined as the product of decoding and language

    comprehension (Gough & Tunmer, 1986; Scarborough, 2001).

Structured Literacy: The idea that different multisensory methodologies may have

    different sequences of instruction or different features but contain the same content

    and principles of instruction to teach reading (IDA, 2014).

Syntax: The guidelines that dictate word order and function of words in sentences and

questions; includes grammar, sentence variation, and mechanics of language (IMSLEC, 1995).

Top-down leadership: A leadership style in which the principal has the majority of the responsibility for making changes that directly influence instructional practices and lead to increased student outcomes (Hallinger, 2003; Leithwood, 1994).

Transformational leadership theory: The principal leads by developing relationships with the staff to increase commitment and motivation (Bass, 1990; Bass & Avolio, 1993; Blasé & Blasé, 1999; Leithwood, 1994).

Working memory: The part of the memory system that holds information in temporary storage so that it can be manipulated during mental operations (Gutiérrez-Clellen, Calderón, & Weismer, 2004).

Delimitations of the Study

The following delimitations will limit the scope of this study:

- The participants in the study were limited to principals in schools serving students in elementary grades.
- The participants in the study were limited to principals who belong to state administration associations or received permission from their district superintendents to participate in the study.

Assumptions of the Study

The following assumptions may be made for this study:

- While reading skills or student outcomes are not observed or measured in this study, it is assumed that the information assessed is important to improving reading instruction for students with dyslexia.

- Although participation in this study was voluntary, it is assumed that the sample obtained was representative of the population of principals serving students in elementary schools.

Overview of Methodology

Survey research was used to measure principal leadership styles, the knowledge and beliefs principals have about dyslexia, and the principals' level of preparation for reading disabilities and/or dyslexia received from degree programs and professional development. Data about the intervention services provided in elementary schools to students with dyslexia also were collected. Following approval of this project by the Institutional Review Board (IRB) at The University of Southern Mississippi, questionnaires were sent via email to state administrator associations with requests to forward the questionnaire to their membership and to school superintendents with requests to forward the questionnaire to the elementary school principals in their school districts. The author had no direct contact with the principals; however, distribution of the questionnaire by the state associations and by the district superintendents implied permission for their principals to complete the survey. All participants remained anonymous; however, in order to determine any regional trends that may exist, the state in which each participant works was included in the survey questions. Following collection of data, the relationship between the participants' leadership styles, their knowledge of dyslexia and appropriate intervention, and their level of preparation in reading disabilities and/or dyslexia received from degree programs and professional development were studied to determine the school-based level of appropriate intervention provided to these students.

CHAPTER II - REVIEW OF THE LITERATURE

Students who struggle with learning to read in the typical elementary classroom because they have dyslexia may improve their reading skills if given appropriate intervention (Lim & Oei, 2015; Ritchey & Goeke, 2006; Shaywitz, 2003). However, reading instruction for all students, including students with dyslexia, is not uniform across school districts, giving students with dyslexia in different school settings different types of services (NICHD, 2000; Walsh et al., 2006). The purpose of this study was to determine how different variables influence the level of appropriate intervention given to students with dyslexia in elementary schools. These variables are 1) the leadership style of the school principal; 2) the level of knowledge that the school principal has about dyslexia and appropriate intervention; and 3) the amount of professional development and/or preservice training in reading disabilities that the principal has received. Therefore, literature in the areas of reading and reading disabilities, dyslexia, preservice training and professional development of teachers and principals, appropriate intervention for students, and different styles of educational leadership was explored.

Reading Definitions

Reading has been defined as the product of decoding and linguistic, or language, comprehension (Gough & Tunmer, 1986; Hoover & Gough, 1990; Scarborough, 2001). This definition highlights the importance of both of these factors in reading and indicates that these factors interact with each other to produce fluent reading. Gough and Tunmer (1986) in their seminal work about reading, identified this relationship between decoding and language comprehension as the *Simple View of Reading*. In this work, they indicated that decoding often is identified as sounding out words by identifying the relationship

between the phonemes, or the speech sounds of the word, and the graphemes, or the letter or letters used to represent those sounds. They defined decoding as the ability to "read isolated words quickly, accurately, and silently" (p. 7). This ability, while necessary for reading, is not the same as nor is it sufficient for reading (Gough & Tunmer, 1986). In order to be a successful reader, one must translate decoded print into language (Gough & Tunmer, 1986; Buckingham, Wheldall, & Beaman-Wheldall, 2013). In other words, once symbols are decoded, a reader uses oral language skills to attach meaning, making oral language the basis for written language (ASHA, n.d.c.; Catts & Hogan, 2003; Joshi et al., 2008; Rayner et al., 2001).

Scarborough (2001) expanded on the Simple View of Reading by elaborating on the components of each factor. He included decoding under the word recognition strand but also included phonological awareness skills and sight recognition of familiar words. Phonological awareness is the explicit understanding of the phonological structure of language and includes the reader's ability to identify units of oral language (Liberman et al., 1990; Stahl & Murray, 1994). Phonological awareness may be demonstrated by skills such as rhyming, identification of words that begin with the same phoneme, phoneme segmentation, identification of number of words in a sentence, or identification of number of syllables in a word (Goldstein et al., 2017; Wagner & Torgesen, 1987; Weinrich & Fay, 2007). Included in phonological awareness is phonemic awareness which is the ability to think about, manipulate, and compare the speech sounds of words (Goldstein et al., 2017; Seidenberg, 2017). Sight recognition of familiar words occurs when decoding processes have been practiced to the point of automaticity so that little effort is used to read these words accurately (Seidenberg, 2017). The word recognition

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strand must become "increasingly automatic" for one to become a skilled reader (Scarborough, 2001, p. 98).

The second strand of Scarborough's model (2001) was termed language comprehension. This strand includes background knowledge, breadth and precision of vocabulary, knowledge of the structure of language including morphology, syntax and semantics, verbal reasoning, and literacy knowledge. The language comprehension strand must become "increasingly strategic" for one to become a skilled reader (p. 98). Skilled readers use these two strands of reading, word recognition and language comprehension, accurately and efficiently to derive meaning from written text (Scarborough, 2001).

ASHA (2001) described reading as the process by which a reader decodes printed symbols and then attaches meaning. ASHA (n.d.c.) defined decoding as "the ability to transform orthographic patterns of alphabetic letters into phonological patterns of a corresponding spoken word" ("Reading"). In other words, the reader takes information from the visual patterns of the letters of a word and translates the visual information into the speech sounds to which those letters are associated. To do this accurately and efficiently, a reader must understand the predictable relationship between the phonemes, or the smallest unit of speech sounds, and the graphemes, or the letter or letters used to represent those sounds (Hulme, Bowyer-Crane, Carroll, Duff, & Snowling, 2012; Lyon, 1997; Rayner et al., 2001). Orthographic knowledge develops as beginning readers are exposed to written words and begin to identify acceptable written patterns (Seidenberg, 2017). This is called the alphabetic principle. Liberman et al. (1990) defined the alphabetic principle as the "awareness of the internal phonological structure of words of

the language" that letters of the alphabet represent (p. 2). A student's ability to associate graphemes with the phonemes they represent is predictive of later reading achievement (Earle & Sayeski, 2017; Lyon & Chhabra, 2004; Snowling & Hulme, 2012) because this understanding of phoneme-grapheme relationships is necessary for an early reader to develop a phonological representation for each phoneme (Hulme et al., 2012, Liberman et al., 1990; van Staden & Purcell, 2016). After developing appropriate phoneme-grapheme relationships, a reader must understand that a particular sequence of graphemes in a word, the orthography, represents the correct spelling for the phonology, or the sounds in a word (Shaywitz, 1998). Therefore, difficulties in making phoneme-grapheme associations affect the development of a robust orthographic lexicon (Richlan et al., 2011).

<center>Prevalence of Reading Disabilities</center>

Some children learn to read almost effortlessly, and many others learn to read with little difficulty once given instruction in school; however, many children do not learn this essential skill easily (Lyon, 1997, 1998; Lyon & Chhabra, 2004; Walsh et al., 2006). When students have difficulties with any of the component skills required for word recognition and language comprehension, reading difficulties may occur (Gough & Tunmer, 1986). Approximately 30% of American kindergarteners are at risk for reading failure, with many of these students having language deficiencies due to the lack of prerequisite oral language skills needed for reading (Lyon, 1997, 1998; Walsh et al., 2006). In fact, children with oral language problems are 4-5 times as likely as their typically developing peers to develop reading problems (ASHA, 2001). Language

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problems are a major component of almost all reading disabilities because language

problems both cause reading problems and are exacerbated by them (ASHA, 2001).

A significant gap in the reading acquisition skills of students continues to be seen

in first grade between students who learn to read easily and those with reading

difficulties, and this gap continues throughout elementary school (Ferrer et al., 2015).

The authors of the Connecticut Longitudinal Study (Shaywitz, Shaywitz, Fletcher, &

Escobar, 1990) identified 7.6% of students in second and third grade as having reading

disabilities. These students who have not mastered basic reading skills and achieved

reading fluency by third grade are likely to remain poor readers (Catts, 1993;

Rickenbrode & Walsh, 2013; Scarborough, 2001). In fact, Ferrer et al. (2015) indicated

that intervention started after first grade does not close the reading achievement gap.

Statistics indicate that reading problems exist beyond the early elementary school

years. According to the National Center for Education Statistics (NCES, 2015), 24% of

fourth-grade students in the United States and 31% of eighth-grade students scored below

Basic on the National Assessment of Educational Progress (NAEP) in reading. The

achievement-level descriptions used on the NAEP indicate skills that students need to

decode and comprehend grade-level texts accurately. Students who score Basic exhibit

partial mastery for grade level skills, and students who score below Basic have not

mastered these essential skills (NCES, 2015).

The literacy problem continues into adulthood. Kutner et al. (2007) discussed the

results of the 2003 National Assessment of Adult Literacy (NAAL) given to 19,000

adults aged 16 and older. Three percent of all adults in the sample could not answer the

easiest questions about prose reading and were considered to be nonliterate. Fourteen

percent of adults in the sample scored Below Basic, indicating they had only the most

basic and simple literacy skills, 29% demonstrated Basic skills, and 44% had

Intermediate literacy skills. These statistics have not changed significantly since the

previous administration of the NAAL in 1992. Only 13% of adults in the sample

demonstrated mastery of complex and challenging literacy skills. This number is

significantly lower than the adults who demonstrated proficiency during the 1992 NAAL,

indicating fewer adults who have proficient literacy skills.

<center>Dyslexia</center>

These statistics indicate reading difficulties affect a large percentage of

individuals in the United States. Many of these individuals who are poor readers may be

classified as having dyslexia. Dyslexia is defined by IDA (2002) as

> …a specific learning disability that is neurobiological in origin. It is
>
> characterized by difficulties with accurate and/or fluent word recognition and by
>
> poor spelling and decoding abilities. These difficulties typically result from a
>
> deficit in the phonological component of language that is often unexpected in
>
> relation to other cognitive abilities and the provision of effective classroom
>
> instruction. Secondary consequences may include problems in reading
>
> comprehension and reduced reading experience that can impede growth of
>
> vocabulary and background knowledge. ("Definition of Dyslexia")

Because individuals with dyslexia typically have average intelligence, sensory systems,

neurological functioning, and have had acceptable reading instruction and opportunity to

learn, their difficulty in learning to read is unexpected (Galaburda, Menard, & Rosen,

1994; Pennington & Bishop, 2009).

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Phonological Theory of Dyslexia

This definition highlights the phonological theory of dyslexia which states dyslexia results from an inability to process phonological information in the brain in a typical fashion (ASHA, 2001; IDA, 2002; Magpuri-Lavell, Paige, Williams, Akins, & Cameron, 2014; Olulade, Napoliello, & Eden, 2013; Pennington & Bishop, 2009; Ramus et al., 2003; Rayner et al., 2001; Shaywitz, 1998; Shaywitz & Shaywitz, 2007; Snowling & Hulme, 2012; Wagner & Torgesen, 1987). Ramus (2003) indicated the role of phonological deficits as causal factors in dyslexia was "overwhelming" (p. 216). These phonological deficits, or the difficulties readers have making phoneme-grapheme associations, are caused by an inefficient or nonexistent phonological representation of the speech sounds (Hulme et al., 2012; Ramus & Szenkovits, 2008; Richlan, 2012; van Staden & Purcell, 2016).

Although the exact cause of a reader's inability to develop "well-developed and robust phonological representations" (van Staden & Purcell, 2016, p. 42) of phonemes is largely unknown, various factors may contribute to this problem. First is the arbitrary nature of the phoneme itself. A spoken word presents as a continuous acoustic signal, but the reader needs to segment the continuous signal into discrete component phonemes so that necessary phonological representations for those phonemes develop (Medwetsky, 2011; Shaywitz, 1998; Wagner & Torgeson, 1987; Zamuner et al., 2016). This is complicated by the fact that a single phoneme can be represented by a variety of allophones, which are the subtle differences in the way a phoneme may be produced due to coarticulation (Wagner & Torgeson, 1987). Coarticulation is the subtle change in the articulation of a phoneme caused by the properties of phonemes spoken either before or

after it in connected speech (Zamuner et al., 2016). The effect of coarticulation may be

seen in differences in production between the sound of the letter *p* in words such as *pin*,

spoon, and *drop.*

Additionally, the reciprocal nature of reading and phonological awareness makes

it difficult to determine causality of reading difficulties. Phonological awareness is both

a component of learning to read and a product of learning to read (Shaywitz, 1998; Wolf,

2007). Therefore, gains made in phonological awareness increase reading skills, and

gains made in reading improve phonological awareness, thus allowing for the

establishment of more efficient phonological representations (ASHA, 2001; Duff &

Clarke, 2011).

Another possible factor is speech perception and production difficulties because

children who lack awareness of the oral movements necessary for speech and those who

are unable to produce these movements may develop inaccurate phonological

representations of phonemes (Berninger, V.W. et al., 2008; Catts, 1993; Joanisse, Manis,

Keating & Seidenberg, 2000; Pennington & Bishop, 2009; Rayner, et al., 2001). Other

difficulties that may contribute to these problems are central auditory processing

disorders (Galaburda et al., 1994; Galuschka, Ise, Krick, & Schulte-Körne, 2014;

Pennington & Bishop, 2009; Ramus, 2003; Ramus et al., 2003; Rayner et al., 2001; van

Staden & Purcell, 2016) and problems with working memory (Alloway et al., 2005; Catts

& Hogan, 2003; Ramus & Szenkovits, 2008). Working memory deficits may occur

because individuals with dyslexia have reduced capacity to store needed information

(Ramus & Szenkovits, 2008).

Evidence for the phonological theory of dyslexia may be found in brain

differences in individuals with dyslexia. Reading, unlike speaking, is not a naturally

occurring manifestation but must be overlaid upon areas of the brain originally used for

spoken language (Dehaene & Cohen, 2007; Liberman et al., 1990; Moats, 1999;

Shaywitz & Shaywitz, 2004; Walsh et al., 2006; Wolf, 2007). Therefore, investigation of

the areas used for spoken language indicate differences between individuals with dyslexia

and individuals with typical reading skills. These areas located in the left hemisphere of

the brain include the temporo-parietal region, the occipito-parietal region, and the inferior

frontal cortices. To explain briefly, the occipito-parietal region is responsible for

mapping the visual symbol to its phonological representation for automatic recall which

is necessary for fluent reading. The temporo-parietal region is responsible for

phonological awareness, word analysis, and decoding, and the inferior frontal cortex,

including Broca's area, is responsible for articulation and language comprehension

(Richlan, 2012; Shaywitz, 2003; Shaywitz & Shaywitz, 2004).

Historically, in 1891 the French neurologist Dejerine, through his postmortem

examination of the brains of patients with reading difficulties acquired through strokes or

brain injuries, found evidence of differences in the left parieto-temporal area and the left

occipito-temporal area of the brain (Lyon et al., 2003; Shaywitz, 2003). He is credited as

the first to link these areas to reading (Shaywitz, 2003).

Current research using post-mortem dissection, positron emission tomography

(PET), and fMRI indicated both functional and anatomical differences are found between

individuals with dyslexia and individuals who are typical readers (Eden et al., 2004;

Vellutino et al., 2004). These neurological differences account for 50-80% of the

variance in reading outcomes for individuals with dyslexia (Fletcher, 2009). Anatomical

variations discovered upon post-mortem examinations include greater symmetry between

the right and left brain hemispheres in individuals with dyslexia than in individuals who

are typical readers (Galaburda & Kemper, 1979) and differences between these two

groups in the amount of gray and white matter found in the brain (Galaburda et al., 1994).

Krafnick, Flowers, Luetje, Napoliello, and Eden (2014) also found less gray matter

volume in individuals with dyslexia; however, they indicated this difference was a result

of reduced reading experience rather than the cause of dyslexia.

Functional variations in brain activation in individuals with dyslexia include

underactivation of the left temporo-parietal region and underactivation of the left

occipito-temporal region (Eden, et al., 2004; Richlan, 2012; Richlan et al., 2011;

Shaywitz, 2003; Shaywitz, Mody, & Shaywitz, 2006). These readers have difficulty with

word analyzation and with fluent phoneme-grapheme association (Shaywitz, 2003). In

addition to these areas of underactivation, individuals with dyslexia may exhibit

overactivation of the frontal lobe area as compensation for decoding difficulties (Eden, et

al., 2004; Richlan et al., 2011; Shaywitz, 2003; Vlachos, Andreou, & Delliou, 2013).

Overactivation of the inferior frontal gyrus, or Broca's area, may indicate the reader's

extra effort at using language while decoding (Shaywitz, 2003). Overactivation of this

area, which is responsible for motor speech, may indicate individuals with dyslexia rely

on subvocalized speech production to help during decoding tasks (Richlan, 2012;

Vlachos et al., 2013). Shaywitz, Lyon, and Shaywitz (2010) referred to this atypical

pattern of left temporo-parietal and left occipito-temporal underactivation along with

frontal lobe overactivation as the "neurobiological signature" of dyslexia (p. 1).

Additionally, readers with dyslexia demonstrate activation in areas of the right hemisphere of the brain which disallows for automatic recall of phoneme-grapheme associations and decreases reading fluency (Shaywitz & Shaywitz, 2004).

Double-Deficit Hypothesis of Dyslexia

The phonological theory of dyslexia is well-documented (ASHA, 2001; IDA, 2002; Magpuri-Lavell et al., 2014; Pennington & Bishop, 2009; Ramus, 2003; Ramus et al., 2003; Rayner et al., 2001; Shaywitz, 1998; Shaywitz & Shaywitz, 2007; Snowling & Hulme, 2012; Wagner & Torgesen, 1987). However, some poor readers have adequate decoding skills and do not respond well to phonological intervention (Wolf & Bowers, 2000). These individuals with dyslexia may have difficulty with naming speed (Bowers & Wolf, 1993; Catts, 1993; Catts & Hogan, 2003; Pennington & Bishop, 2002; Ramus, 2003; Richlan, 2012; Rubenstein, Raskind, Berninger, Matsushita, & Wijsman, 2014; Vellutino et al., 2004). Naming speed, also referred to as rapid automatized naming, is the ability to name familiar visual symbols such as letters, numbers, or colors (Georgiou et al., 2013; Wolf et al., 2000). Naming-speed deficits disallow for rapid access to and retrieval of the phonological codes needed for reading (Wolf & Bowers, 2000). Naming-speed deficits interfere with phoneme-grapheme associations, limit orthographic representations of speech in the long-term memory system, and increase the amount of practice time needed to secure these phonological and orthographic representations in long-term memory (Wolf et al., 2000).

The presence of both phonological awareness difficulties and difficulties with rapid automatic naming as causal factors for dyslexia is known as the double-deficit hypothesis of dyslexia (Bowers & Wolf, 1993; Wolf & Bowers, 2000; Wolf et al., 2000)

or the multiple deficit theory (Pennington & Bishop, 2009). Naming-speed deficits make it difficult for a reader to develop strong orthographic memory and to detect orthographic patterns needed for sight word recognition because of slow identification of the letters in a word (Bowers & Wolf, 1993; Vellutino et al., 2004). Rapid naming speed also is predictive of later reading fluency (Jones, Snowling, & Moll, 2016; Rubenstein et al., 2014). Dyslexia may result from phonological problems that are independent of naming speed, naming-speed deficits that are independent of phonological awareness, or a combination of these (Wolf & Bowers, 2000; Wolf et al., 2000).

Prevalence of Dyslexia

Reading skills exist along a continuum with excellent readers at one end and individuals with dyslexia at the other (Lyon, 1998; Seidenberg, 2017; Shaywitz & Shaywitz, 2004; Vellutino et al., 2004; Washburn, Binks-Cantrell, & Joshi, 2013). Individuals at the low end of the continuum also differ in the severity of presentation of dyslexia (ASHA, n.d.c.; Duff & Clarke, 2011; Joanisse et al., 2000; Washburn et al., 2013), making it difficult to identify an exact prevalence of the disorder. Additionally, no universally accepted standard exists for identification of dyslexia (Williams & O'Donovan, 2006). The estimated prevalence of individuals with dyslexia is between 5%-20% (Duff & Clarke, 2011; Hurford et al., 2016b; Ramus, 2003; Rubenstein et al., 2014).

Comorbid Conditions

Another problem determining the exact percentage of individuals with dyslexia is that individuals may present with comorbid, or coexisting, difficulties. Oral language disorders may be present in individuals with dyslexia because of the reciprocal nature of

oral and written language; that is, oral language influences the development of written language, and written language supports oral language (ASHA, n.d.c.; Catts, 1993; Catts, Fey, Tomblin, & Zhang, 2002; Fletcher, 2009; Hoover & Gough, 1990; Joanisse et al., 2000; Moats, 2009; Pennington & Bishop, 2009; Richlan, 2012; Snowling & Hulme, 2012; Wolf, 2007). Children with early speech and/or language difficulties are at much greater risk for reading difficulties than their peers with typical language skills (Catts, 1993, 1997; Ferrer et al., 2015), and children with more severe language disorders have more severe reading difficulties (Catts et al., 2002). As many as 50% of children with language impairments have reading difficulties in 2nd grade (Catts, 1993; Catts & Hogan, 2004), even when they no longer meet the criteria for language impairment (Catts et al., 2002). Because skills needed for reading begin to develop before formal schooling (Catts, 1997; Scarborough, 2001), it has been suggested that measures of oral language administered at the preschool or kindergarten level may identify students who are at risk for later reading failure (Catts, 1997; Ferrer et al., 2015).

In addition to oral language difficulties coexisting with dyslexia, attention deficit hyperactivity disorders (ADHD) often present with dyslexia. Approximately 30% of students with dyslexia have co-occurring ADHD (IDA, 2008; Washburn et al., 2013). Although ADHD does not cause dyslexia, students with ADHD have difficulty attending to the text which may cause them to skip words, misread words, and demonstrate fluency problems (IDA, 2008; Washburn et al., 2013).

Central auditory processing disorders (CAPD) also frequently coexist with dyslexia (Galuschka, et al., 2014; Rayner et al., 2001). Ramus (2003) and Ramus et al. (2003) reported that between 39%-50% of individuals with dyslexia have CAPD. ASHA

(2005) describes CAPD as the difficulty in processing auditory information in the central nervous system, including transmission, organization, storage, retrieval, and use. Problems may occur in areas such as discrimination, pattern recognition, and auditory performance and are not the result of a peripheral hearing loss (ASHA, 2005). Once auditory information enters the brain, the language system and the auditory system must work together to process the acoustic signal into the language it represents (Medwetsky, 2011); however, CAPD interferes with the ability to develop accurate phonological representations needed for reading (Ramus et al., 2003).

Once accurate phonological representations are developed, good readers retrieve them efficiently so that fluent reading may occur. In individuals with dyslexia, however, coexisting short-term and working memory problems may interfere with this process (DeWeerdt, Desoete, & Roeyers, 2013; Kallitsoglou, 2017; Ramus & Szenkovits, 2008; van Staden & Purcell, 2016). Kallitsoglou (2017) also reported deficits in other executive functions, such as response inhibition and planning, were correlated to reading disorders because good executive function skills are necessary for reading success.

Dyslexia and Vision

Historically, visual-based differences were thought to be causally related to dyslexia because of the idea that poor readers reverse letters or read backwards (Fletcher & Currie, 2011; IDA, 2017a; Washburn et al., 2013); however, no evidence supports this idea (American Academy of Pediatrics, 2009, 2014; Catts & Hogan, 2003; IDA, 2017a; Vellutino et al., 2004). Vision is fundamental to reading because of a sighted reader's need to input written information, but processing the visual signal into language is necessary for reading to occur (American Academy of Pediatrics, 2009, 2014).

Differences in visual function may be seen in individuals with dyslexia, but those differences are consequences or side effects of the reduced reading experience seen in individuals with dyslexia (Olulade et al., 2013). Visual problems are not the cause of dyslexia, but instead, dyslexia is caused by problems with the phonological system and/or deficits in naming speed (ASHA, 2001; Bowers & Wolf, 1993; IDA, 2002; Magpuri-Lavell et al., 2014; Olulade et al., 2013; Pennington & Bishop, 2009; Ramus, 2003; Ramus et al., 2003; Rayner et al., 2001; Rubenstein et al., 2014; Shaywitz, 1998; Shaywitz & Shaywitz, 2007; Snowling & Hulme, 2012; Wolf & Bowers, 2000; Wolf et al., 2000). The American Academy of Pediatrics (2009, 2014) reported that children with dyslexia do not display significant differences in visual function or ocular health compared to their peers with typical reading skills. Differences in letter sequences for spelling may be mistaken as "reading backwards," but occur when students are not able to remember correct orthographic representations for words (IDA, 2012, p. 2). Furthermore, vision therapy used as remediation for dyslexia is not supported (American Academy of Pediatrics, 2009, 2014; Fletcher & Currie, 2011; Galuschka et al., 2014; Washburn et al., 2013).

Genetic Factors of Dyslexia

Although no one clearly defined cause of dyslexia exists, (Vellutino et al., 2004), a genetic basis of dyslexia has been well-documented. Dyslexia tends to be familial; that is, it tends to run in families (Pennington & Bishop, 2009; Rubenstein et al., 2014; Shaywitz, 2003). The familial tendency of dyslexia was documented by Hinshelwood as early as 1907 (Williams & O'Donovan, 2006). Children who have a parent with dyslexia have a greater risk of having the disorder than children whose parents are typical readers

(Scarborough, 2001; Shaywitz, 2003). Additionally, a child who has dyslexia is likely to have at least one sibling who also has the disorder (Shaywitz, 2003). Moreover, genetic factors have been identified in individuals with dyslexia (Galuschka et al., 2014; Shaywitz, 2003; Snowling & Hulme, 2012), and specific chromosomal locations have been identified for difficulties with reading (Carrion-Castillo, Franke, & Fisher, 2013; Williams & O'Donovan, 2006) and with rapid-naming deficits (Rubenstein et al., 2014).

Gender Differences in Dyslexia

The prevalence of dyslexia differs between genders with ratios reported as low as 1.2:1 to as high as 6.78:1 (Quinn & Wagner, 2015). More males have been found to have reading difficulties than females, and as these reading difficulties become more severe, the ratio of males to females increases (Quinn & Wagner, 2015; Wheldall & Limbrick, 2010). Additionally, more boys than girls are identified as having dyslexia in schools based on behaviors they exhibit (Quinn & Wagner, 2015; Shaywitz, 2003; Shaywitz et al., 1990; Washburn et al., 2013). These behaviors may include motivation towards reading and frequency of reading, with girls presenting with more positive behaviors than boys (Logan & Johnston, 2009; McGeown, Goodwin, Henderson, & Wright, 2012). Additional behaviors may include increased frustration and disruptive behavior, again with girls presenting with more positive behaviors (Quinn & Wagner, 2015). Studies have shown that when identification of dyslexia is made using decoding skills as the criteria rather than behavioral criteria, these ratios of male to female identification are reduced (Quinn & Wagner, 2015; Shaywitz et al., 1990, Shaywitz, 2003; Shaywitz & Shaywitz, 2004; Wheldall & Limbrick, 2010). Moreover, both structural and functional differences have been found in the brains of males and females. Males with dyslexia

have been found to have areas of more prominent asymmetry in the left temporal gyrus than females with dyslexia (Altarelli et al., 2014). Functionally, brain activation patterns during reading have been found between men and women while completing rhyming tasks. Although women demonstrated more right hemisphere involvement during this task than men, there was no significant difference between genders on this task performance (Shaywitz, 2003).

Characteristics of Individuals with Dyslexia

According to the phonological theory, the core deficit in dyslexia lies in difficulties with developing phonological representations for written symbols, so one of the primary characteristics seen in individuals with dyslexia is difficulty in decoding phoneme-grapheme relationships (Catts & Hogan, 2003; IDA, 2002; Seidenberg, 2017) Additionally, the double-deficit hypothesis lists difficulty with naming speed as a second core deficit, so naming-speed deficits are another primary characteristic (Bowers & Wolf, 1993; Pennington & Bishop, 2009; Wolf & Bowers, 2000; Wolf et al., 2000). However, a large amount of variability exists among individuals with dyslexia (Duff & Clarke, 2011; Joanisse et al., 2000), so other characteristics may be present.

Individuals with dyslexia often have difficulties with phoneme manipulation (Duff & Clarke, 2011; Wolf, 2007), encoding, also referred to as spelling, vocabulary development, and written expression (ASHA, n.d.c.; Catts & Hogan, 2003; IDA, 2017a; Joshi et al., 2008; Lyon et al., 2003). Other difficulties include poor predictability for language tasks, messy handwriting, directional uncertainties, word retrieval, memory for sequences, and poor organizational skills (IDA, 2017a; Martin, 2012). Additional problems may be seen in reduced reading speed which interferes with reading

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comprehension (ASHA, n.d.c.; IDA, 2017a; Schulte-Körne, 2010), with some students presenting with difficulties in math (IDA, 2017a; Lyon et al., 2003).

Dyslexia often results in academic difficulties (IDA, 2012; Kallitsoglou, 2017) because reading is a basic skill that influences all areas of learning in schools (Lyon, 1997). Students with dyslexia may present with more than a two-year gap in reading achievement as compared to what would be expected based on chronological age (Williams & O'Donovan, 2006). These academic difficulties may lead to frustration, low self-esteem, decreased motivation for learning, and other psychological symptoms such as anxiety and depression (Butler & Edmonson, 2009; Galuschka et al., 2014; IDA, 2017a; Lyon, 1997; Schulte-Körne, 2010). Schulte-Körne (2010) indicated 40-60% of individuals with dyslexia experience these psychological symptoms, with stress exacerbating the symptoms of dyslexia. Students with dyslexia are more likely than their typically reading peers to exhibit behavior problems, with 14% of students with reading difficulties having identified conduct problems (Kallitsoglou, 2017).

Effective Intervention for Dyslexia

As noted earlier, reading is not a natural process like speech (Dehaene & Cohen, 2007; Liberman et al., 1990; Moats, 1999; Shaywitz & Shaywitz, 2004; Walsh et al., 2006; Wolf, 2007), and as such, must be taught for most children to become proficient. To determine the components of an effective reading program, the NICHD (2000), investigated reading studies focused on instruction in kindergarten to 3rd grade to determine the components necessary to teach children to learn to read. Based on this analysis, they published the National Reading Panel (NRP) report that indicated the following evidence-based components should be included in excellent reading programs:

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1) explicit instruction in phonology and phonemic awareness; 2) systematic instruction of

phoneme-grapheme relationships, or phonics; 3) vocabulary instruction; 4) fluency

instruction; and 5) comprehension strategies. These evidence-based components also are

referred to as the science of reading (Hurford et al., 2016b; Moats, 1999; Walsh et al.,

2006).

The evidence-based components indicated by the NRP report (NICHD, 2000)

should be included in reading instruction for all beginning readers. For individuals with

dyslexia, additional specific intervention strategies should be used. The content of

intervention and the principles of instruction were first delineated by IMSLEC (1995) and

later by IDA (2010) as necessary for all teachers and therapists to teach students with

dyslexia effectively. The content includes 1) phonology and phonological awareness; 2)

phoneme-grapheme association; 3) syllable instruction; 4) morphology, or the study of

the smallest units of meaning in language; 5) syntax, or the guidelines that dictate word

order and function of words in sentences and questions; and 6) semantics, or meaning of

both oral and written language. The principles of instruction include 1) simultaneous

multisensory input of visual, auditory, motorkinesthetic, and tactile information using all

of the sensory areas of the brain to increase memory and learning; 2) systematic and

cumulative instruction that is organized according to language development and begins

with basic elements and moves to more complex; 3) direct instruction of concepts; 4)

diagnostic teaching to determine a student's strengths and weaknesses to develop an

individualized therapy plan, with automatic recall of oral and written skills being

necessary for introduction of new material; and 5) synthetic and analytic instruction

moving both from parts of language to the whole and from the whole of language to the parts.

Other researchers have indicated that intervention strategies listed in the content and principles of instruction (IDA, 2010; IMSLEC, 1995) are beneficial for students with dyslexia. Instruction in phonology and phonemic awareness is necessary to increase the phonological representations needed for reading (Berninger, V.W. et al., 2008; Chambers & Hausman, 2014; Fielding-Barnsley & Purdie, 2005; Joanisse et al., 2000; Lyon & Chhabra, 2004; Magpuri-Lavell et al., 2014; Moats, 1999; Rayner et al., 2001; Tannock et al., 2016; Walsh et al., 2006). Direct, explicit, systematic instruction in phoneme-grapheme relationships is beneficial to all children learning to read but is essential for students with dyslexia (ASHA, n.d.c.; Catts & Hogan, 2003; Duff & Clarke, 2011; Earle & Sayeski, 2017; Fletcher, 2009; Hulme et al., 2012; Joshi et al., 2008; Rayner et al., 2001; Snowling & Hulme, 2012; Walsh et al., 2006). Snowling & Hulme (2012) noted, "It follows directly that interventions that train letter-sound knowledge and phoneme manipulation skills should help children who are struggling to master decoding skills" (p. 4).

This instruction should also be multisensory which means different sensory modalities should be used, including visual information, auditory information, motorkinesthetic information, and tactile information (ASHA, n.d.c.; IDA, 2017b; Martin, 2012; Ritchey & Goeke, 2006; Snowling & Hulme, 2012; Tannock et al., 2016; van Staden & Purcell, 2016; Warnick & Caldarella, 2016). Because reading skills begin to develop before the advent of reading instruction (Catts, 1997; Ferrer et al., 2015; Ozernov-Palchick & Gabrieli, 2018; Scarborough, 2001), researchers indicate the need

for early identification and early intervention to remediate and to prevent reading

disorders (Catts, 1993, 1997; Ferrer et al., 2015; Lyon & Chhabra, 2004; Poulsen, M.,

2018; Snowling & Hulme, 2012; Walsh et al., 2006; Washburn et al., 2013). Intervention

should be intensive, meaning delivered in smaller group settings and for longer periods of

time (Duff & Clarke, 2011; Ritchey & Goeke, 2006; Snowling & Hulme, 2012) and also

should include activities to improve oral language, reading comprehension, and

vocabulary (ASHA, n.d.c.; Gough & Tunmer, 1986; Hoover & Gough, 1990;

Scarborough, 2001). Repeated practice of material helps develop neural pathways in the

brain that allow for automatic recall, and continual review of previously taught

information helps to maintain skills (Earle & Sayeski, 2017; Medwetsky, 2011; Moats,

2009; Snowling & Hulme, 2012; Walsh et al., 2006; Wolf, 2007). When word

recognition is automatic, cognitive resources are available for better comprehension of

text (Magpuri-Lavell et al., 2014).

    Efficacy of intervention. Intervention delivered to students with dyslexia using the

phonetic, multisensory strategies recommended by IMSLEC (1995) and IDA (2010) has

been shown to significantly increase phonological awareness skills (Hulme et al., 2012;

Joshi, Dahlgren & Boulware-Gooden, 2002; Olulade et al., 2013; Snowling & Hulme,

2012), decoding skills (Berninger, V.B. et al., 2008; Galuschka et al., 2014; Hulme et al.,

2012; Joshi et al., 2002; Magpuri-Lavell et al., 2014; Olulade et al., 2013; Shaywitz et al.,

2004; Simos et al., 2002; Snowling & Hulme, 2012; Tannock et al., 2016; Warnick &

Caldarella, 2016), word-level reading skills (Hulme et al., 2012; Hwee & Houghton,

2011; Lim & Oei, 2015; Magpuri-Lavell et al., 2014), sentence level reading (Hwee &

Houghton, 2011), reading fluency (Magpuri-Lavell et al., 2014; Shaywitz et al., 2004),

and reading comprehension (Joshi et al., 2002). Intervention improved spelling skills for students with dyslexia (Berninger, V.W. et al., 2008; Galuschka et al., 2014; Lim & Oei, 2015; van Staden & Purcell, 2016; Weinrich & Fay, 2007); however, persistent problems in spelling may continue for students after the completion of an intervention program (Berninger, V.W. et al., 2008). Although younger children were found to make more gains than older students (Lim & Oei, 2015), adolescents with dyslexia significantly improved reading skills following 30 hours of intervention (Warnick & Caldarella, 2016). Treatment effects were more significant when students presented with less severe disabilities than with more severe problems (Galuschka et al., 2014). Additionally, students reported increased feelings of success and improved self-confidence following intervention (Butler & Edmonson, 2009).

Brain differences following intervention. In addition to increasing reading skills, phonetic multisensory intervention changes the functionality of the brains of individuals with dyslexia as seen using fMRI. Increased activation of the left hemisphere language areas was reported as well as increased neural development in these areas (Shaywitz et al., 2004). More specifically, Simos et al. (2002) reported more activation in the left superior temporal gyrus following 80 hours of intensive phonologically based intervention. The ability of the brain to reorganize as a response to learning is referred to as brain plasticity (Eden et al., 2004). Brain changes continued to be seen at one year post-intervention, with decreased activation in the right hemisphere, indicating more typical neural activation during reading (Shaywitz et al., 2004).

Methodologies used for intervention. Various methodologies which meet the standards for content and principles of instruction as indicated by IMSLEC (1995) and

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IDA (2010) have been used as intervention for students with dyslexia. Some of these

methodologies include the Orton-Gillingham approach (Gillingham & Stillman, 1946,

1997, 2003), Alphabetic Phonics (Cox, 1980), Association Method (DuBard, 1974;

DuBard & Martin, 1994, 1997, 2000; Martin, 2012; McGinnis, 1939), the Slingerland

Approach (Slingerland, 1971), and the Spalding Method (Spalding & DesRoches, 1986).

IDA (2014) adopted the term *Structured Literacy* to indicate that although these different

methodologies may have different sequences of instruction or different features, all of

these programs teach reading using the same content and principles of instruction.

Theories of Educational Leadership

Effective leadership is important for all students, including students with dyslexia,

to make educational progress (Bush, 2007). In fact, leadership behaviors have been

found to account for 25% of the variability in student outcomes, with only the effect of

the teachers having more influence (Leithwood et al., 2004; Marzano et al., 2005).

However, little research exists that demonstrates a direct effect of leadership practices on

student outcomes (Leithwood et al., 2004; Ross & Gray, 2006, ten Bruggencate, Luyten,

Scheerens, & Sleegers, 2012). Direct effects have been reported through the use of a

climate that enhances teaching and learning, appropriate professional development, and

effective curriculum and instructional development (Setwong & Prasertcharoensuk,

2013). Most research, however, indicates that effective leadership influences student

outcomes indirectly by changing the conditions under which instruction is delivered

(Heck & Hallinger, 2014; Jacobson, 2010; Robinson et al., 2008). Two different theories

of effective educational leadership, instructional leadership and transformational

leadership, influence student outcomes in various ways.

Instructional Leadership

Instructional leadership theory began with the work of Edmonds (1979) in an attempt to refute the findings of Coleman et al. (1966) reported in the US Report of Equity and Educational Opportunities. These findings indicated attributes of students such as family background and low socioeconomic status (SES) accounted for more variance in student outcomes than did any factors related to the school or instructional climate. That is, students with uneducated families and low SES were expected to have lower achievement in school (Coleman et al., 1966). Edmonds' research (1979), along with that reported by Brookover and Lezotte (1979) and the New York State Office of Educational Progress (NYOEP, 1974), was an attempt to identify leadership behaviors that led to successful student achievement in schools with a majority of students of low SES. These behaviors included strong leadership, effective instructional practices that took precedence over any other activities, maintenance of an orderly environment conducive to learning, using data to monitor student achievement, and use of resources devoted to learning (Brookover & Lezotte, 1979; Edmonds, 1979; NYOEP, 1974). Additional leadership behaviors included stability of leadership and the ability to recruit and retain high quality teachers (NYOEP, 1974).

Based on these findings, Hallinger and Murphy (1985) identified three dimensions that provided the framework for instructional leadership: defining the mission of the school, promoting the school climate, and managing the instructional program. As instructional leader, the principal has the majority of responsibility for defining the

mission of the school by setting goals, communicating goals to stakeholders, and aligning

resources to meet goals (Hallinger, 2003; Hallinger & Murphy, 1985; Jacobson, 2010;

Miles & Frank, 2008; Robinson et al., 2008). The instructional leader is responsible for

improving the school climate by protecting instructional time (Hallinger, 2003; Hallinger

& Murphy, 1985; Robinson et al., 2008), providing professional development

opportunities to increase teacher capacity and teacher community (Blasé & Blasé, 1999;

Hallinger & Murphy, 1985; Huber, 2004; Jacobson, 2010; Robinson et al., 2008; Urick &

Bowers, 2014), and maintaining a safe and orderly environment with high expectations

for students in both academics and behavior (Hallinger & Murphy, 1985; Robinson et al.,

2008). A school climate that promotes teaching and learning promotes school

effectiveness (Setwong & Prasertcharoensuk, 2013).

Although defining the mission and improving the climate of the school are

integral parts of instructional leadership, this leadership style also is defined by the

principal's focus on teaching and learning (Hallinger, 2003; Huber, 2004; Leithwood et

al., 2004). As instructional leader, the principal has primary responsibility for providing

direction, instruction, and support for educational practices, including determining

appropriate curriculum and assessments used to measure student progress (Hallinger &

Murphy, 1985; Marks & Printy, 2003; Setwong & Prasertcharoensuk, 2013). The

principal also is responsible for improving teaching and learning by evaluating

instructional practices, providing effective feedback to teachers to improve those

practices, and modeling instructional behaviors (Blasé & Blasé, 1999; Huber, 2004;

Robinson et al., 2008). This type of leadership is referred to as top-down leadership

because the principal has the majority of the responsibility for making first order changes,

or those changes that directly influence instructional practices and lead to increased student outcomes (Hallinger, 2003; Leithwood, 1994). Strong instructional leadership is a major factor in effective schools (Setwong & Prasertcharoensuk, 2013).

Not all educational leaders adopt an instructional leadership style. Although first order changes are needed to improve instruction for students (Hallinger, 2003; Leithwood, 1994), if they are implemented without increasing teacher motivation and commitment, long-term use of these changes is limited (Leithwood, 1994). Additionally, critics indicate that too much power rests with the principal because the principal has most of the responsibility in the instructional leadership model (Hallinger, 2003). Moreover, critics report that most principals do not have adequate educational expertise in all subject areas to serve as instructional leaders (DuFour & Mattos, 2013; Hallinger, 2003; Leithwood, 1994).

Transformational Leadership

A second theory used by educational leaders, transformational leadership, began with the examination of leadership in the business sector with the work of Burns (1978) who discussed leadership as a purposeful relationship between leaders and followers. A leader who raises the motivation of followers by engaging in relationships with them and meeting their needs was labeled a transforming leader. The concept of transformational leadership was further refined to include four components: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass, 1990; Bass & Avolio, 1993; Bass & Riggio, 2006; Printy et al., 2009). Avolio, Waldman, and Yammarino (1991) termed these four components the Four I's of transformational leadership.

A transformational leader has idealized influence on followers by serving as an ethical and moral role model, demonstrating consistent behavior, and behaving in such a way to inspire trust and confidence. This leader demonstrates integrity and treats all followers with fairness (Bass & Riggio, 2006). Transformational leadership arouses an emotional response in followers such that they want to emulate the leader's behavior, creating a desire to build a positive relationship with the leader (Avolio et al., 1991; Bass, 1990; Bass & Avolio, 1993; Bass & Riggio, 2006). This leader motivates others by demonstrating commitment, enthusiasm, optimism, and a shared vision. A high level of team spirit and clearly communicated goals and expectations inspire followers to work beyond the level of their own self-interest to promote the interests of the company. Commitment to the organization is high (Bass, 1990, Bass & Avolio, 1993; Bass & Riggio, 2006; Printy et al., 2009; Ross & Gray, 2006).

Transformational leaders also create intellectually stimulating work places for followers by supporting creativity and innovation and by empowering others to solve problems. This allows for growth and achievement of creative potential (Bass, 1990; Bass & Riggio, 2006). Finally, a transformational leader provides individual consideration to each follower. The leader acknowledges the needs of each follower, provides a supportive environment, acts as mentor or coach when needed to help develop skills, and provides individualized learning opportunities (Bass, 1990; Bass & Riggio, 2006).

The concept of transformational leadership was expanded to the field of education with the work of Leithwood (1994). Leithwood built on the previous, business-based

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models of transformational leadership and defined four domains of effective transformational leadership for schools: purposes, people, structure, and culture.

Behaviors under the domain of purposes include developing and communicating a vision. The transformational leader seeks input from staff to help establish the vision and the goals needed to attain it (Leithwood, 1994; Marzano, 2012; Ross & Gray, 2006; Sanzo et al., 2011; Urick & Bowers, 2014). Along with this shared vision, teachers are encouraged to set their own personal goals for growth and professional development, and high expectations are set for professional behavior, innovation, and work ethic (Leithwood, 1994; McLeskey, Waldron & Redd, 2012; Urick & Bowers, 2014). They are encouraged to be creative as long as behaviors reflect the vision of the school (Leithwood, 1994).

Developing people is another domain under Leithwood's educational model of transformational leadership (1994). Transformational leaders form personal relationships with staff (Blasé & Blasé, 1999; Hallinger, 2003; Huber, 2004). They provide individualized support and intellectual stimulation to meet the needs of the staff through modeling professional practices, mentoring, coaching, providing appropriate professional development opportunities, or collaborating to develop plans for improvement (Leithwood, 1994; Ross & Gray, 2006; Urick & Bowers, 2014). Staff members are encouraged to try new instructional practices without fear of penalty for making mistakes (Leithwood, 1994). Leaders treat all staff fairly and equally, and they provide recognition and specific positive praise for excellence (Blasé & Blasé, 1999; Leithwood, 1994; Marzano, Marzano, & Pickering, 2003). A personal connection between the leader

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and staff members creates a positive culture of increased motivation and commitment to organizational success (Jacobson, 2010; Leithwood, 1994; Ross & Gray, 2006).

The structure of the school under the transformational leader is one of shared, or distributed, leadership. The transformational leader creates a powerful leadership team in which all stakeholders share the responsibility for school decisions and student learning (Hallinger, 2003; Leithwood, 1994; Leithwood & Jantzi, 1999; Marzano et al., 2005; Ross & Gray, 2006; Urick & Bowers, 2014). Working conditions under a transformational leadership structure are such that teaching teams have collaborative planning time to work together to assess data and determine goals for student outcomes (DuFour, 2007; DuFour & Mattos, 2013; Leithwood, 1994). In addition to collaborative planning time, the use of professional learning communities (PLCs), or job-embedded professional development, builds the content knowledge of teachers to allow them to improve their instruction (DuFour, 2007; DuFour & Mattos, 2013; Leithwood et al., 2004). Collaborative planning time and the use of PLCs help build teacher community which increases engagement and accountability for instructional practices (Chambers & Hausman, 2014; Odden & Picus, 2014; Urick & Bowers, 2014). It also reduces stress on the individual teacher since the responsibility is shared by the team (Miles & Frank, 2008; Odden & Picus, 2014).

The final dimension of transformational leadership is culture. The transformational leader builds a positive culture by promoting the school vision and communicating it to staff, families, and the community (Leithwood, 1994; Marzano, 2012; Sanzo et al., 2011; Urick & Bowers, 2014). Positive culture promotes a sense of well-being for all stakeholders and gives them an understanding of the purpose of the school (Marzano et

al., 2005). A positive culture also emerges when the leader supports collaboration among staff (Leithwood, 1994; DuFour & Mattos, 2013; Miles & Frank, 2008) and aligns resources with instructional goals (Chambers & Hausman, 2014; Miles & Frank, 2008). Additionally, a positive culture reduces conflict because all stakeholders are working toward a common goal (Marzano et al., 2005).

Leithwood and Jantzi (1999), seeing a lack of organizational stability using Leithwood's (1994) model of transformational leadership, added some managerial aspects to the educational model. This included staffing procedures to recruit and retain good quality teachers, providing support to teachers and staff for instruction through evaluation and feedback, monitoring the activities of the school, and garnering support from the community.

Transformational leaders, through affecting the environment and culture, target second order changes made in schools. These are changes made in the people in the school community, such as increased commitment and motivation, which help them make changes in instruction, or first order changes. More effective teachers lead to increased outcomes for students (Jacobson, 2010; Marzano et al., 2005). This is referred to as a bottom-up approach to leadership (Hallinger, 2003).

Although transformational leaders build quality relationships with their students and staff, critics of this leadership model claim the quality of these relationships does not predict the quality of student outcomes (Robinson et al., 2008). Additionally, transformational leadership is seen as inauthentic, with the leaders using the followers as a means to fulfilling their own agendas (Bass & Riggio, 2006). Critics report that transformational leadership is important in increasing student outcomes, but it is not

sufficient (Robinson et al., 2008; Printy et al., 2009; Urick & Bowers, 2014). Because transformational leadership influences student learning by making second order changes rather than making direct changes in instruction, critics indicate not enough focus is given to teaching and learning in this leadership model (Hallinger, 2003; Robinson et al, 2008). In fact, instructional leadership has been found to have 3-4 times more influence on increasing student outcomes than transformational leadership (Robinson et al., 2008).

Changing Needs of Leadership

Regardless of leadership style or use of a top-down or a bottom-up approach, effective educational leaders strive to increase student outcomes. Both instructional leadership and transformational leadership have been shown to have an indirect effect on student outcomes (Heck & Hallinger, 2014; Jacobson, 2010; Robinson et al., 2008). However, schools have been found to need different things from their educational leaders at different times under different conditions (Bush, 2007; Day, Gu, & Sammons, 2016; Hallinger & Murphy, 1985; Huber, 2004; Jacobson, 2010; Robinson et al., 2008). Furthermore, a true form of leadership style rarely exists because different leadership styles share commonalities, and these similar behaviors often overlap (Huber, 2004; ten Bruggencate et al., 2012; Urick, 2016; Urick & Bowers, 2014). Leithwood et al. (2004) noted that all leaders work to define the direction of the school, and the behaviors they exhibit are more important than the label given to the leadership style. These authors warned against "leadership by adjective" (p. 6). In fact, when instructional leaders use evaluation, feedback, and mentoring to increase teacher capacity, they build relationships with these teachers. In these cases "instructional leadership can be transformational" (Marks & Printy, 2003, p. 393). Moreover, transformational leaders, when providing

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individual consideration for teachers, help them increase their teaching capacity by providing professional development and coaching, thus serving as instructional leaders (Urick & Bowers, 2014).

Integrated Leadership

The most effective leadership in influencing student outcomes is seen when the educational leader exhibits characteristics of both instructional leadership and transformational leadership (Marks & Printy, 2003; Printy et al., 2009; Robinson et al., 2008). By integrating the practices of both instructional and transformational leadership, or "the layering of leadership" (Day et al., 2016, p. 240), administrators focus on teaching and learning through curriculum choices, instructional support, and appropriate assessment, and they enhance the effectiveness of the teachers by increasing teacher commitment (Blasé & Blasé, 1999; Heck & Hallinger, 2014; Marks & Printy, 2003; Urick & Bowers, 2014). They build relationships with the teachers and students, and they are knowledgeable about instructional practices (Robinson et al., 2008). Using an integrated style of leadership, educational leaders increase school performance by increasing the instructional capacity of the teachers (Huber, 2004; Marks & Printy, 2003; Printy et al., 2009). Sharing the responsibility of instruction with the teachers not only increases instructional capacity of the school, but it also helps prevent principal burnout (Hallinger, 2003). Other terms for integrated leadership include shared, distributed, or parallel leadership, or leadership capacity (Printy et al., 2009). Heck and Hallinger (2014) indicated leadership that focuses on curriculum and instruction while building the effectiveness of teachers creates an environment for increased student outcomes. They termed this leadership style shared leadership or "leadership for learning" (p. 658). In

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fact, integrated leadership has been found to have the most positive influence on student outcomes (Robinson et al., 2008; ten Bruggencate et al., 2012).

Regardless of the label used, effective leaders exhibit many of the same behaviors. These behaviors, while having an indirect effect on student outcomes, improve the culture of the school to allow for the best conditions in which teaching and learning can occur (ten Bruggencate et al., 2012). These behaviors include increasing administrative and instructional support for teaching (Blasé & Blasé, 1999; Chambers & Hausman, 2014; Marzano et al., 2005; McLeskey et al., 2012; Robinson et al., 2008; Setwong & Prasertcharoensuk, 2013), increasing instructional capacity of the teachers by providing sustained professional development (Chambers & Hausman, 2014; DuFour & Mattos, 2013; Heck & Hallinger, 2014; Leithwood et al., 2004 McLeskey et al., 2012; Miles & Frank, 2008; Setwong & Prasertcharoensuk, 2013; ten Bruggencate et al., 2012), and supplying adequate resources (Chambers & Hausman, 2014; Marzano et al., 2005; Sanzo et al., 2011). Other behaviors include building a positive culture through developing and sharing the vision and goals (Leithwood et al., 2004; Marzano et al., 2005; Sanzo et al., 2011; ten Bruggencate et al., 2012), building personal relationships (Chambers & Hausman, 2014), and building strong leadership teams (Marks & Printy, 2003; Marzano et al., 2005). Of the behaviors noted, increasing teacher knowledge through effective instructional leadership and sustained and appropriate professional development has been found to have the most influence on increasing student outcomes (Blasé & Blasé, 1999; Leithwood et al., 2004; Setwong & Prasertcharoensuk, 2013) because good teaching improves student learning (Heck & Hallinger, 2014).

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Preservice Instruction and Professional Development Needs

As noted, a good leader, either through serving as the instructional leader or providing appropriate professional development, is necessary for increasing teacher knowledge and improving student outcomes. However, these school professionals, both teachers and principals, may lack adequate knowledge of dyslexia. Common misconceptions exist about what dyslexia is. Almost 70% of professionals list letter reversals as the primary characteristic of students with dyslexia (Wadlington & Wadlington, 2005; Washburn et al., 2013). Other misconceptions that are described include visual perception difficulties, lack of motivation, or low intellectual abilities (Wadlington & Wadlington, 2005; Washburn et al., 2013). More than 70% of educational professionals also indicate vision therapy, including the use of tinted lenses or colored overlays, as helpful for students with dyslexia (Washburn et al., 2013), and others indicate that students will outgrow this disability (Shetty & Rai, 2014). Because dyslexia may coexist with other disabilities as discussed previously, students with dyslexia may have characteristics of several disabilities, making it difficult for educators to identify. However, for educators who received instruction in dyslexia at the preservice level, fewer misconceptions were reported (Wadlington & Wadlington, 2005). Reducing these misconceptions through education is imperative because "teacher misconceptions about dyslexia may lessen the likelihood of individuals with dyslexia receiving needed and appropriate literacy instruction" (Washburn et al., 2013, p. 14).

In addition to lacking information about the characteristics of dyslexia, as many as 92% of educators indicated inadequate knowledge about the specialized, appropriate intervention needed for these students (Shetty & Rai, 2014). As Buckingham et al.

(2013) noted, "one of the strongest pieces of evidence for ineffective teaching is children who don't have basic skills after three years of instruction" (p. 24). To serve students with dyslexia, teachers need skills in teaching oral and written language, specifically skills in teaching phonological awareness, phonics, spelling, syllable types and syllable division, orthography, fluency, and reading comprehension (Fielding-Barnsley & Purdie, 2005; Moats, 1999, 2009).

Teachers may recognize the importance of teaching phonological awareness and phonics for students with reading difficulties but do not know how to provide this instruction (Buckingham et al., 2013) or have not developed these foundational skills themselves (Hurford et al., 2016a; Moats & Foorman, 2003; Washburn et al., 2013). Teachers have been found to identify only 60% of language-structure items on a questionnaire regarding their knowledge of phonics-based instruction (Bos, Mather, & Dickson, 2001; Fielding-Barnsley & Purdie, 2005). Further, 85% of teachers identified the correct number of phonemes in words that were determined to be easy to segment, such as *cat*, but only 22% of teachers identified the correct number of phonemes in words that were determined to be hard to segment, such as *box* (Spencer, Schuele, Guillot, & Lee, 2008).

School principals also may lack knowledge of appropriate intervention for students with disabilities, including students with dyslexia (Christensen, Robertson, Williamson, & Hunter, 2013; DuFour & Mattos, 2013; Fletcher et al., 2013; Sanzo et al., 2011). Principals report leadership behaviors when dealing with students with dyslexia that include providing resources and current research and modeling instruction (Fletcher et

al., 2013); however, none of the principals studied could identify appropriate strategies to use (Christensen et al., 2013; Fletcher et al., 2013; Sanzo et al., 2011).

The lack of knowledge in providing appropriate intervention for students with dyslexia begins at the preservice level. Teachers and principals indicate the information they received at the preservice level about dyslexia or teaching the science of reading was inadequate (DiPaola & Walther-Thomas, 2003; Hurford et al., 2016a; Hurford et al., 2016b; Leithwood et al., 2004; Washburn, Binks-Cantrell, Joshi, Marin-Chang, & Arrow, 2015). In fact, 88% of teachers reported a lack of preparation in their preservice programs to identify students with dyslexia or to teach these students (Shetty & Rai, 2014; Wadlington & Wadlington, 2005). A study by Washburn et al. (2015) indicated preservice teachers in undergraduate elementary education programs were able to correctly identify less than 70% of the language constructs needed to teach reading to struggling students. An additional study by Martinussen, Ferrari, Aitken, & Willows (2015) indicated that preservice teachers scored less than 60% on a measure of phonemic awareness, a critical reading skill. Of the teachers in that study, fewer than 19% reported moderate or extensive knowledge of instructional practices used to teach phonemic awareness. Many preservice teachers stated the knowledge they had of dyslexia came from personal experience (Wadlington & Wadlington, 2005), and they reported frustration over their lack of knowledge and skills (Moreau, 2014; Wadlington & Wadlington, 2005).

Statistics such as these mentioned reflect the need for strong preservice education for teachers of reading in the early elementary years. However, the average number of reading courses included in elementary education university programs is 2.18 (Washburn

et al., 2013), with some university students reporting only one preservice class taught (Moats, 1999). Moreover, standards for preservice instruction in dyslexia are missing (Moats, 1999; Otaiba, Lake, Scarborough, Allor, & Carreker, 2016; Washburn, Mulcahy, Joshi, & Binks-Cantrell, 2016). Christensen et al. (2013) reported that 32% of school principals indicated they had received no preservice instruction in dyslexia or the science of reading, and of those who did receive this instruction, 68% described the delivery as haphazard. Walsh et al. (2006), in a study completed six years after the report of the NRP, found only 15% of preservice elementary education programs provided some exposure to the components of phonological awareness, phonics, vocabulary, fluency, and text comprehension, and 33% of preservice programs did not provide any exposure to these elements. A similar study completed thirteen years after the NRP report found these numbers were not significantly improved. Only 18% of preservice programs taught all of these components of a good reading program, and 33% did not teach any of them (Rickenbrode & Walsh, 2013). Phonics was found to be missing in six of seven reading classes in elementary education preservice programs (Walsh et al., 2006), and programs continue to allow teacher candidates to "develop their own personal philosophy of reading" (Hurford et al., 2016b, p. 5). Moreover, many university professors do not teach the science of reading because their own knowledge in that area is not adequate (Walsh et al., 2006).

Once preservice teachers complete their degree programs and become employed, they rely on professional development provided through the school district to increase their knowledge base. Providing appropriate professional development to teachers is the responsibility of the school principal (Moats, 2009), but principals report a lack of

knowledge of the type of professional development needed for teachers of students with learning disabilities, including dyslexia (Christensen et al., 2013). Unfortunately, principals may be unaware of the components needed for providing quality reading instruction to all students and the specific strategies needed for students with dyslexia (Fletcher et al., 2013; Sanzo et al., 2011). However, when professional development in specific intervention for students with dyslexia is provided and sustained throughout the school year (Chambers & Hausman, 2014), teachers report improved attitudes toward teaching students with dyslexia, increased knowledge of the characteristics of students, and improved knowledge of teaching methods (Srivastava, de Boer, & Pijl, 2015).

Summary

The Simple View of Reading explains reading as the product of decoding and language comprehension (Gough & Tunmer, 1986; Scarborough, 2001). However, between 5-20% of students struggle with decoding skills because of dyslexia (Lyon, 1998; IDA, 2002). The phonological theory of dyslexia indicates these students are not able to accurately and efficiently make the connection between the visual information gained from the graphemes of a word and the phonological information needed to assign meaning to those graphemes (Catts, 1989; Rayner et al., 2001; Shaywitz & Shaywitz, 2007). Therefore, they are not able to make the sound-symbol associations needed to decode. Additionally, the double-deficit theory of dyslexia indicates some students have an additional difficulty with the rapid retrieval of visual information, making this decoding process even more difficult (Bowers & Wolf, 1993; Vellutino et al., 2004).

Good reading instruction for all students includes the components of phonemic awareness, phonics, reading fluency, vocabulary, and text comprehension as indicated by

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the NRP report (Fielding-Barnsley & Purdie, 2005; NICHD, 2000; Rayner et al., 2001).

Additionally, students with dyslexia benefit when they are provided intervention that is

phonetic, multisensory, and is delivered in an intensive format (Birsh, 2011; Farrell &

Sherman, 2011; IMSLEC, 1995; Joshi et al., 2008; Kirk & Gillon, 2009; Lim & Oei,

2015; Moats, 2009; Moats & Tolman, 2009; Shaywitz, 2003; Taylor et al., 2000). IDA

(2014) termed this appropriate intervention as Structured Literacy. Various instructional

methodologies such as Alphabetic Phonics (Cox, 1980), the Association Method

(DuBard, 1974; DuBard & Martin, 1994, 1997, 2000; Martin, 2012; McGinnis, 1939),

and Orton-Gillingham (Gillingham & Stillman, 1946, 1997, 2003) meet the content and

principles of instruction of Structured Literacy and, as such, are appropriate for students

with dyslexia. Unfortunately, teachers and principals report that they have not received

instruction on teaching these skills (Aaron et al., 2008; Bell, 2013; Chambers &

Hausman, 2014; DiPaola & Walther-Thomas, 2003; DuFour & Mattos, 2013; Fielding-

Barnsley & Purdie, 2005; Fletcher et al., 2013; Moats, 1999; Moats & Foorman, 2003;

Moreau, 2014; Sanzo et al., 2011; Walsh et al., 2006).

As the educational leader of the school, a principal is responsible for student

progress, and for students with dyslexia to make the most progress, this leader needs to

have knowledge of dyslexia and appropriate intervention. The benefits of both

instructional leadership and transformational leadership have been well-documented in

improving student outcomes (Hallinger & Murphy, 1985; Hallinger, 2003; Leithwood,

1994; Leithwood & Jantzi, 1999). However, principals indicate different leadership

styles are necessary at different times (Hallinger, 2003; Urick & Bowers, 2014), and

characteristics of these two leadership styles often overlap (Urick & Bowers, 2014).

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Therefore, principals may adopt an integrated or layered style of leadership in which they demonstrate behaviors of both instructional leadership, such as demonstrating teaching behaviors, and transformational leadership, such as empowering teachers with leadership responsibilities (Day et al., 2016; Marks & Printy, 2003). Integrated leadership has been shown to be the most effective leadership style used to increase student outcomes (Robinson et al., 2008; ten Bruggencate et al., 2012).

CHAPTER III - METHODOLOGY

Overview

The intent of this quantitative and cross-sectional study was to determine how various factors influence the amount and type of services provided in elementary schools for students with dyslexia. Survey research was used to measure these factors: the leadership behaviors of the school principal, the principal's knowledge and beliefs about dyslexia, and the principal's level of preparation in reading disorders and dyslexia received from degree programs and professional development opportunities. Additionally, survey research was used to determine the school-based level of appropriate intervention for students with dyslexia. Figure 1 represents the conceptual framework of the study.

```
              ┌─────────────────────┐
              │ MV: Principal       │
              │ Knowledge and Beliefs│
              └─────────────────────┘
                         │
                         ▼
┌──────────────┐                    ┌────────────────────┐
│ IV: Principal│────────────────────▶│ DV: Appropriate    │
│ Leadership   │                    │ Dyslexia Intervention│
└──────────────┘                    └────────────────────┘
```
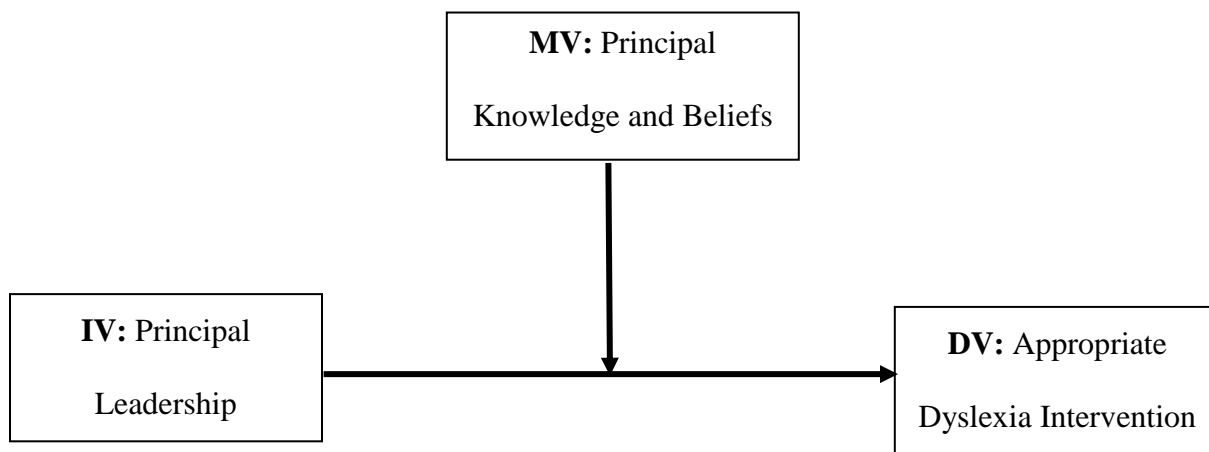
Figure 1. Conceptual framework.

Rationale

Principal leadership has been shown to have a positive effect on student's reading skills by influencing the conditions of instruction (Heck & Hallinger, 2014), with both instructional leaders and transformational leaders improving these school conditions (Hallinger & Murphy, 1985; Hallinger, 2003; Jacobson, 2010; Leithwood, 1994;

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Leithwood & Jantzi, 1999; Robinson et al., 2008). Instructional leaders improve school

conditions by focusing on improvements in curriculum and teaching (Hallinger, 2003;

Huber, 2004; Leithwood et al., 2004), and transformational leaders improve conditions

by increasing teacher motivation through the development of relationships (Blasé &

Blasé, 1999; Hallinger, 2003; Huber, 2004; Leithwood, 1994). However, when

principals integrate the characteristics of both instructional and transformational

leadership, they become most effective (Marks & Printy 2003; Printy et al., 2009;

Robinson et al., 2008; ten Bruggencate et al., 2013).

In spite of good leadership in schools, as many as 30% of elementary students do

not acquire typical reading skills, with 5%-20% of students being diagnosed with

dyslexia (Duff & Clarke, 2011; Hurford et al., 2016b; Ramus, 2003; Rubenstein et al.,

2014). These students with dyslexia may have a phonological deficit that prohibits the

acquisition of phoneme-grapheme associations (ASHA, 2001; IDA, 2002; Magpuri-

Lavell et al., 2014; Olulade et al., 2013; Pennington & Bishop, 2009; Ramus et al., 2003;

Rayner et al., 2001; Shaywitz, 1998; Shaywitz & Shaywitz, 2007; Snowling & Hulme,

2012; Wagner & Torgesen, 1987). They also may have difficulty with rapid automatized

naming which interferes with the automatic retrieval of phonological codes needed for

reading (Bowers & Wolf, 1993; Catts, 1993; Catts & Hogan, 2003; Pennington &

Bishop, 2002; Ramus, 2003; Richlan, 2012; Rubenstein et al., 2014; Vellutino et al.,

2004; Wolf & Bowers, 2000), or they may have a phonological deficit combined with a

deficit in naming speed which interferes with the development of orthographic memory

and rapid recognition of words (Bowers & Wolf, 1993; Pennington & Bishop, 2009;

Wolf & Bowers, 2000; Wolf et al., 2000).

Students with dyslexia benefit from evidence-based reading instruction that includes explicit instruction in phonology and phonemic awareness, systematic phonics, vocabulary, fluency, and comprehension strategies (NICHD, 2000). Additionally, these students need phonetic, multisensory intervention described by IMSLEC (1995) and IDA (2010) and termed Structured Literacy (IDA, 2014) to improve decoding and comprehension skills. However, school principals report insufficient knowledge of both dyslexia and appropriate intervention (Christensen et al., 2013; DuFour & Mattos, 2013, Fletcher et al., 2013; Sanzo et al., 2011; Shetty & Rai, 2014) and insufficient instruction in these areas at both the preservice level (DiPaola & Walther-Thomas, 2003; Hurford et al., 2016a; Hurford et al., 2016b; Leithwood et al., 2004; Shetty & Rai, 2014; Wadlington & Wadlington, 2005; Washburn et al., 2015) and through professional development (Christensen et al., 2013; Fletcher et al., 2013; Sanzo et al., 2011).

By exploring the various factors that predict the services provided in elementary schools for students with dyslexia, best practices for services for these students may be identified, appropriate intervention may begin for students at an earlier age, and the reading failure and frustration of these students with dyslexia may be reduced.

Research Questions

The following research questions were used to guide this study:

1. Does principal knowledge and beliefs about dyslexia moderate the relationship between the leadership style of the elementary school principal and the school-based level of appropriate intervention for students with dyslexia?

2. Is there a relationship between the level of integration between transformational leadership and instructional leadership styles of the elementary school principal and the school-based level of appropriate intervention for students with dyslexia?

3. Is there a relationship between the level of principal knowledge and beliefs about dyslexia and the school-based level of appropriate intervention for students with dyslexia?

4. Where have principals received their level of preparation in reading disabilities and/or dyslexia (degree programs or professional development), and does this in any way inform the school-based level of appropriate intervention for students with dyslexia in their schools?

Research Procedures

Survey research was used to measure principal leadership styles, the knowledge and beliefs principals have about dyslexia, and the principals' level of preparation for reading disabilities and/or dyslexia received from degree programs and professional development. Data about the intervention services provided in elementary schools to students with dyslexia also were collected. The questionnaire used is found in Appendix A.

Participants

To access the population of elementary school principals, the author conducted an internet search for lists of state and national school administrator associations and lists of school district superintendents across the United States. Following approval of this project by the Institutional Review Board (IRB) at The University of Southern Mississippi, questionnaires were sent via email to school administrator associations with requests to forward the questionnaire to their membership and to superintendents with

requests to forward the questionnaire to school principals in their school districts. Target

participants were principals who serve in schools serving students in elementary grades

across the United States. The author had no direct contact with the principals; however,

distribution of the questionnaire by the school administrator associations and by school

district superintendents implied permission for their principals to complete the survey.

The questionnaire took approximately 20-30 minutes to complete. Participation in the

survey was voluntary, and participants could choose to discontinue completion of the

survey without penalty. All participants remained anonymous; however, to determine

any potential regional trends in services for students with dyslexia, participants were

asked to list their state of employment.

Variables and Instruments of Measurement

Different instruments were used to measure different independent variables: the

Principal Instructional Management Rating Scale (PIMRS, Hallinger, 1982, 1990) was

used to measure the instructional leadership behaviors of the principal, and the

Leadership Practices Inventory (LPI, Posner & Kouzes, 1988) measured the

transformational leadership behaviors of the principal. To determine the integrated

leadership behaviors of the principal, an author-created rubric was used based on the

principal's scores from the PIMRS and the LPI. The moderating variable, principal

knowledge and beliefs about dyslexia, was measured by the *Knowledge and Beliefs about

Developmental Dyslexia Scale* (KBDDS, Soriano-Ferrer & Echegaray-Bengoa, 2014).

The principal's level of preparation for reading disabilities and/or dyslexia received from

degree programs and professional development was determined by survey research. The

dependent variable, appropriate intervention for students with dyslexia, was measured by a researcher-created instrument.

Assessing instructional leadership. The PIMRS (Hallinger, 1982, 1990) was developed to measure the "specific job related behaviors of school principals that concerned leading and managing teaching and learning in schools" (Hallinger, 2013, p. 2) through the use of a five-step procedure:

1. A review of literature was completed to determine the most important job functions of principals in instructionally effective schools.

2. Administrative staff members, including superintendents, principals, and assistant principals, developed a list of critical job-related behaviors.

3. Additional job-related behaviors were included as needed.

4. The list of behaviors was rewritten to describe discrete behaviors.

5. Each behavioral statement was adjusted to fit the response category of the questionnaire (Hallinger, 2013).

The original measure contained 11 subscales with 72 items and has been revised to 10 subscales and 50 items (Hallinger, 2012). This instrument assesses behaviors to identify "relative strengths" of instructional leaders (Hallinger, 1982, p. 60). The 10 subscales include the following: (a) framing the school goals; (b) communicating the school goals; (c) supervising and evaluating instruction; (d) coordinating the curriculum; (e) monitoring student progress; (f) protecting instructional time; (g) maintaining high visibility; (h) providing incentives for teachers; (i) promoting professional development; and (j) providing incentives for learning (Hallinger, 1990). The PIMRS uses three parallel forms to assess leadership behavior from three perspectives-the principal's self-

assessment, a teacher, and a supervisor. All items included in the principal's self-assessment form were used in the current study. This instrument is appropriate for principals and assistant principals at both the elementary and secondary school levels (Hallinger, 2013). Items are scored using a frequency scale ranging from (0) Almost Never to (4) Almost Always to indicate the frequency with which a principal enacts a particular leadership behavior. The instrument is scored by calculating the mean score for the items of each subscale. High scores on any of the 10 subscales indicate active leadership in those areas (Hallinger, 2012, 2013).

Hallinger (1982) indicated relatively high internal consistency of all subscales (average Cronbach's alpha >.80). The internal consistency of the subscales was assessed using the four-building-block approach of construct map, item design, outcome space, and measurement model (Hallinger, 2013). The content of all items was found to be appropriate through the use of content validity and school documentation analysis, and the items within each subscale had a good fit as determined by Rasch analysis (Hallinger, 2013). Subsequent studies have confirmed internal consistency. In a meta-analysis completed by Hallinger, Wang, and Chen (2013), 19 studies, completed between 1991-2012 in which the principal's self-assessment was used, found the whole scale average to have moderately high reliability (Cronbach's alpha = .96), with subscale averages ranging from .74-.80.

Assessing transformational leadership. The LPI was developed by Posner and Kouzes (1988) as a measure of specific leadership behaviors associated with transformational leadership. This instrument assesses five leadership practices: (a) challenging the process by searching for opportunities and experimenting and taking

risks; (b) inspiring a shared vision by envisioning the future and enlisting the support of others; (c) enabling others to act by fostering collaboration and strengthening others; (d) modeling the way by setting the example and planning for small wins; and (e) encouraging the heart by recognizing contributions and celebrating accomplishments (Posner & Kouzes, 1990, p. 207). Each leadership practice is assessed using six behavioral statements. These leadership practices reflect the themes of transformational leadership including vision, values, empowerment, and recognition and are based on case study analyses of the experiences of more than 1100 managers (Zagorsek, Stough, and Jaklic, 2006). The LPI uses two parallel forms, a self-assessment format and an observer format, to assess leadership behavior. All items included in the self-assessment format were used in the current study.

Individuals completing the scale rate 30 specific leadership behaviors on a frequency scale to indicate the frequency of occurrence of the behavior being described (Posner & Kouzes, 1988). The original scale used a 5-point rating but was reformulated in 1999 to a 10-point scale ranging from (0) Almost Never to (9) Almost Always (Posner, n.d.). Posner and Kouzes (1990) reported internal reliabilities that ranged from .77 to .90, with reliability of .70 to .84 for the self-reported scale. Additionally, they found test-retest reliability to be .94. Subsequent use of the LPI reported internal reliability for the self-reported scale of .73 to .90 as measured by Cronbach's alpha (Berry, 2007; Posner, n.d.; Posner & Kouzes, 2000; Posner, 2008).

Assessing integrated leadership. To determine the level of integrated leadership of each participant, the researcher first found the mean of the 50 items on the PIMRS to determine level of instructional leadership and the mean of the 30 items on the LPI to

determine level of transformational leadership. The product of each participant's

instructional leadership skills and transformational leadership skills was used to

determine the amount of integrated leadership for that participant. This number was

converted to standard z scores. Principals who scored high in both instructional and

transformational leadership (z score of +1 or greater) received a score of 3 based on an

author-created rubric (see Figure 2). Principals scoring high in one type of leadership

and low in the other (z score between +1 and -1) received a score of 2, and principals who

scored low in both instructional and transformational leadership (z score of -1 or less)

received a score of 1.

Figure 2. Integrated leadership scoring rubric.

Assessing knowledge and beliefs about dyslexia and intervention. The KBDDS was

developed by Soriano-Ferrer and Echegaray-Bengoa (2014) through the following four-

step procedure:

1. The authors completed a review of pertinent literature to compile 65 items regarding

knowledge of dyslexia. These items, including both positive and negative indicators of

dyslexia, were rated as *true, false,* or *don't know*.

2. A panel of experts comprised of 12 university professors who taught learning

disabilities reviewed the items for content and face validity, and items were revised based

on the suggestions given.

3. Items were divided into three subscales based on 80% agreement by the experts:

general information about dyslexia, symptoms and diagnosis of dyslexia, and appropriate

intervention for dyslexia. This process reduced the number of items to 50.

4. Pilot testing of the remaining 50 items was completed, and 14 items were deleted

based on item-total correlations, leaving the final scale of 36 items.

During the pilot testing, reliability for the total scale was found to be .76 using

Cronbach's alpha, and reliability for the subscales ranged from .64 to .69. This indicated

moderate internal consistency. Subsequent studies using the KBDDS found this

instrument to be an internally consistent measure of knowledge of dyslexia. Soriano-

Ferrer, Echegaray-Bengoa, and Joshi (2016) found the reliability of the total scale to be

.84, with subscale scores from .68-.73, and Echegaray-Bengoa, Soriano-Ferrer, and Joshi

(2017) found reliability of the total scale to be .81, with subscale scores from .67-.75.

The coefficients for Cronbach's alpha for the individual subscales were lower than that of

the total scale due to fewer items on each subscale than on the total instrument

(Echegaray-Bengoa et al., 2017; Soriano-Ferrer et al., 2016).

Determining appropriate intervention. To determine the level of appropriate

intervention provided in elementary schools to students with dyslexia, the following

information was collected through survey research: (a) grade level of identification of

students with dyslexia; (b) personnel providing intervention; (c) average number of days

per week that students receive intervention; (d) average number of students in each

intervention group; and (e) average length of each intervention session. Using the rubric

shown in Figure 3, answers to each question were given zero to four points, with higher

points given to practices deemed appropriate for students with dyslexia as determined by

IMSLEC (1995) and IDA (2010). To determine specific programming used in

elementary schools, participants also were asked whether or not multisensory structured

language intervention is used.

To demonstrate the content and face validity of the intervention rubric, the author

sent the scoring rubric for review to a panel of eight experts in the field of dyslexia

therapy. Each of these individuals serves as an instructor for an IMSLEC-accredited

multisensory structured language program, and each has the national credential of either

Instructor of Certified Academic Language Practitioner (ICALP) or Certified Academic

Language Therapist-Qualified Instructor (CALT-QI). These professionals represent

training programs in Ohio, Pennsylvania, New Jersey, and Texas. Feedback from these

individuals was used to make necessary changes in the scoring rubric to most accurately

represent appropriate intervention.

Determining preparation in reading disabilities and/or dyslexia. Principals used a

scale ranging from (0) No Knowledge to (3) Great Deal of Knowledge to rate the amount

of knowledge they gained from their degree programs, from professional development

provided at their local school system, and from professional development provided from

external sources. Additionally participants were asked to describe any specialized

training received for reading disabilities and dyslexia.

	0 points	1 point	2 points	3 points	4 points
When students are identified	Students not identified	3rd grade or later	2nd grade	1st grade	Kindergarten
Personnel providing services	No services provided	Teacher assistant/ digital program	Classroom teacher	Interventionist or literacy coach	Certified therapist or practitioner
Average days per week	1	2	3	4	5
Average number of students/group	9 or more	7-8	5-6	3-4	1-2
Average length of session	<15 min	15-30 min.	30-45 min.	45-60 min.	>60 min.

Figure 3. School-based level of appropriate intervention for dyslexia.

Data Analysis

To examine the first and second research questions, moderation analysis was used to determine if the principal's knowledge and beliefs about dyslexia moderate the relationship between leadership style and the school-based level of appropriate intervention for students with dyslexia. The third research question was addressed by regression analysis to determine if there is a relationship between principal's knowledge and beliefs about dyslexia and school-based level of appropriate intervention for students with dyslexia. The fourth research question was addressed by regression analysis to determine if there is a relationship between the principal's level of preparation in dyslexia received from degree programs and professional development and the school-based level of appropriate intervention for students with dyslexia. Figure 4 represents the statistical model that was used for data analysis.
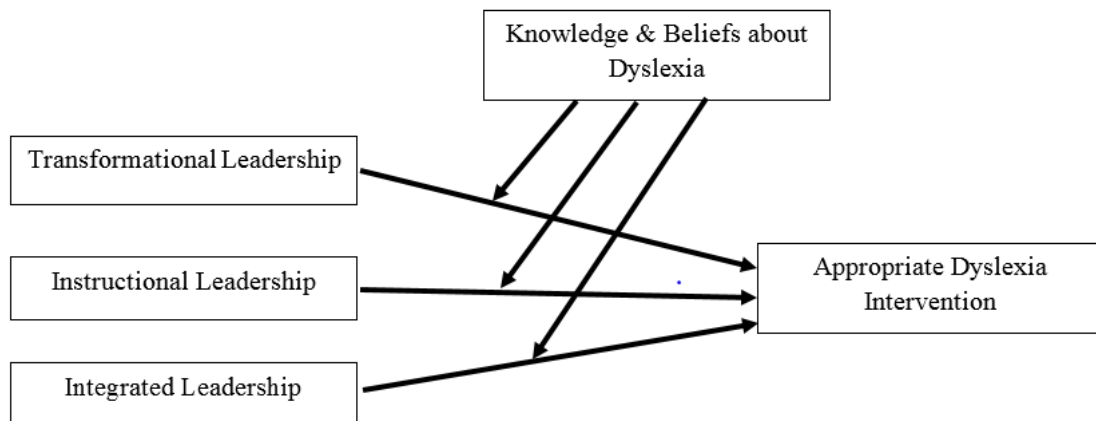
Figure 4. Statistical model for analysis.

Human Participants and Ethics Precautions

This project was approved by the Institutional Review Board (IRB) at The University of Southern Mississippi. Participation in this study was completely voluntary, and participants were able to discontinue participation at any time without risk. All responses remained anonymous, and data collected were securely maintained according to the guidelines of the IRB of The University of Southern Mississippi. Potential risks to participants included disruption of the work day due to time needed to complete the questionnaire. Additionally participants may have perceived psychological risks because they were asked about knowledge of dyslexia they possess.

CHAPTER IV – RESULTS

The purpose of this study was to determine how different variables predict the school-based level of appropriate intervention given to students with dyslexia in K-2 elementary schools. These variables were the leadership style of the school principal, level of knowledge that the school principal has about dyslexia and appropriate intervention, and the principal's level of preparation in reading disabilities and dyslexia received from preservice education and professional development. Survey research was used to collect these data. Four research questions were used to guide the study.

1. Does principal knowledge and beliefs about dyslexia moderate the relationship between the leadership style of the elementary school principal and the school-based level of appropriate intervention for students with dyslexia?

2. Is there a relationship between the level of integration between transformational leadership and instructional leadership styles of the elementary school principal and the school-based level of appropriate intervention for students with dyslexia?

3. Is there a relationship between the level of principal knowledge and beliefs about dyslexia and the school-based level of appropriate intervention for students with dyslexia?

4. Where have principals received their level of preparation in reading disabilities and/or dyslexia (degree programs or professional development), and does this in any way inform the school-based level of appropriate intervention for students with dyslexia in their schools?

Demographic Information

To collect a sample of elementary school principals, the author conducted an internet search for school administrator associations and for lists of school district superintendents across the United States. Approximately 15,000 emails were sent to school association administrators and school district superintendents requesting distribution to school principals in their organizations or school districts. Following that distribution, 349 individuals opened the questionnaire, with 144 individuals completing the questionnaire.

Almost 70% of the principals who completed the questionnaire were female. This finding was consistent with that of the National Teacher and Principal Survey (NTPS), a national survey conducted by the US Census Bureau to estimate the demographics of teachers and principals in public schools (Taie & Goldring, 2017). The NTPS found 68% of principals in elementary schools to be female (Taie & Goldring, 2017). The majority of participants worked in public schools. Principals completing the survey had varying years of total experience as a school principal, from one year to more than 15 years, with most principals serving from 2-4 years in their current school. According to the NTPS, the average years of experience for principals in public schools is 6.6, with an average of 4 years at the current school (Taie & Goldring, 2017). Additional demographic information is included in Table 1. The sample included principals who were employed in 25 states (see Figure 5), with regional trends indicating more participants in the Southeast and the Western regions of the United States.

Table 1

Demographic Information

Variable	Frequency	Percent
Gender		
Male	45	31.2%
Female	99	68.8%
Type of School		
Public School	116	80.6%
Private School	24	16.7%
Charter School	4	2.8%
Total Years of Principal Experience		
1 Year	13	9.0%
2-4 Years	40	27.8%
5-9 Years	32	22.2%
10-15 Years	34	23.6%
More than 15 Years	25	17.4%
Total Years in Current School		
1 Year	26	18.1%
2-4 Years	64	44.4%
5-9 Years	25	17.4%
10-15 Years	20	13.9%
More than 15 Years	7	4.9%
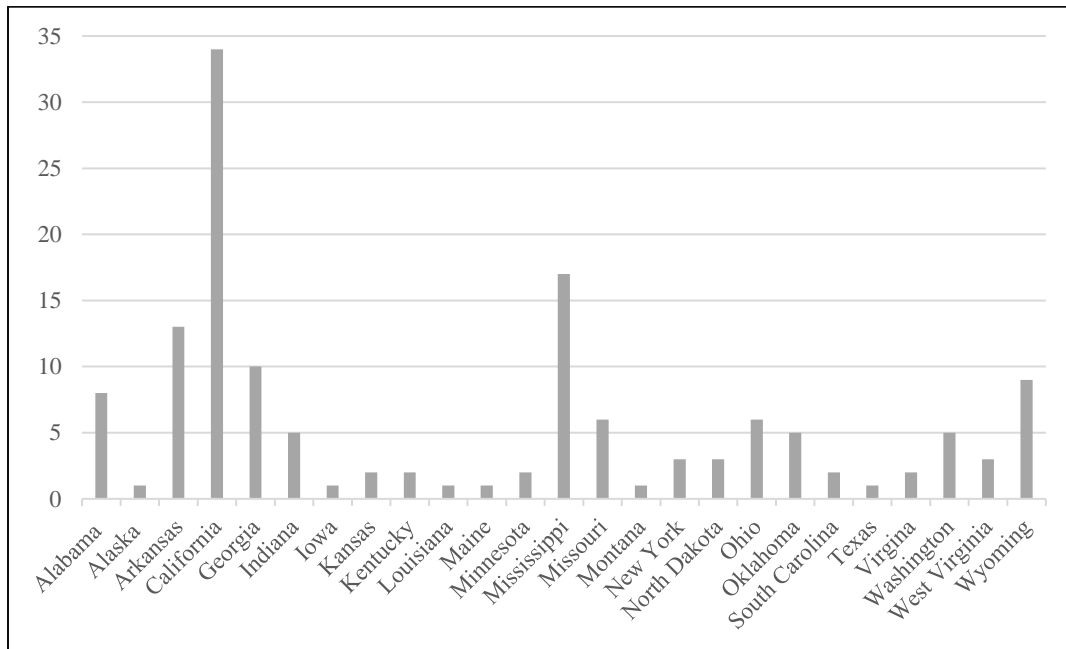
Figure 5. State of employment.

Instructional Leadership

The instructional leadership skills of each participant were measured using the PIMRS with a frequency scale ranging from Almost Never (0) to Almost Always (4). The mean of each participant's score on the 50 items of the principal's self-assessment form was used to determine the total level of instructional leadership. In this sample, participants' total scores ranged from a mean of 1.27 to 4.0, with an overall mean for the sample of 2.91 and a standard deviation of .496. Forty-seven percent of participants had a score above this overall mean, indicating average or above instructional leadership skills.

The PIMRS is divided into 10 subscales used to identify specific behaviors of instructional leaders: (a) framing the school goals; (b) communicating the school goals; (c) supervising and evaluating instruction; (d) coordinating the curriculum; (e) monitoring student progress; (f) protecting instructional time; (g) maintaining high visibility; (h) providing incentives for teachers; (i) promoting professional development; and (j) providing incentives for learning (Hallinger, 1990). The scores for each of these subscales ranged from 0 to 4. The mean and standard deviation for each subscale is listed in Table 2. In this sample, the principals indicated promoting professional development as the instructional leadership behavior used most frequently while providing incentives for teachers was indicated to be used most infrequently.

Table 2

PIMRS Subscale Scores

Subscale	N	Range	M	SD
Frame the Goals	144	.0 – 4.0	3.22	.69
Communicate Goals	143	.0 – 4.0	2.77	.76
Supervise Instruction	143	.0 – 4.0	3.05	.66
Coordinate Curriculum	143	.4 – 4.0	3.03	.69
Monitor Progress	142	1.0 – 4.0	2.83	.73
Protect Instruction	143	.8 – 4.0	3.02	.57
Maintain Visibility	142	1.2 – 4.0	2.81	.66
Provide Incentives	141	1.0 – 4.0	2.54	.77
Promote PD	141	1.6 – 4.0	3.28	.56
Learning Incentives	141	.4 – 4.0	2.73	.76

Transformational Leadership

The transformational leadership skills of each participant were measured using the

LPI with a frequency scale ranging from Almost Never (0) to Almost Always (9). The

mean of each participant's score on the 30 items of the self-assessment format was used

to determine the total level of transformational leadership. In this sample, participants'

total scores ranged from a mean of 4.3 to 9.0, with an overall mean of 7.4 and a standard

deviation of 1.0. Fifty-eight percent of participants had a score above the overall mean

for the sample, indicating average or above transformational leadership skills.

The LPI includes assessment of five specific leadership practices associated with

transformational leadership: (a) challenging the process by searching for opportunities

and experimenting and taking risks; (b) inspiring a shared vision by envisioning the

future and enlisting the support of others; (c) enabling others to act by fostering

collaboration and strengthening others; (d) modeling the way by setting the example and

planning for small wins; and (e) encouraging the heart by recognizing contributions and

celebrating accomplishments (Posner & Kouzes, 1988). The scores for each of these

practices ranged from 2.67 to 9.00. The mean and standard deviation for each practice

are listed in Table 3. In this sample, the principals indicated enabling others to act as the

transformational leadership behavior used most frequently while inspiring shared vision

was indicated to be used most infrequently.

Table 3

LPI Leadership Practices Scores

Leadership Practice	N	Range	M	SD
Challenge the Process	141	3.67 - 9.00	7.14	1.29
Inspire Shared Vision	141	2.67 - 9.00	6.93	1.46
Enable Others to Act	141	5.33 - 9.00	8.00	.83
Model the Way	142	4.17 - 9.00	7.49	.93
Encourage the Heart	141	3.33 - 9.00	7.45	1.19

Integrated Leadership

To determine the level of integrated leadership of each participant, the author used

the product of the total instructional leadership score and the total transformational

leadership score. This number was converted to a standard z score. Principals who

scored high in both instructional and transformational leadership (z score of +1 or

greater) received a score of 3 based on an author-created rubric (see Figure 2). Principals

scoring high in one type of leadership and low in the other (z score between +1 and -1)

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received a score of 2, and principals who scored low in both instructional and

transformational leadership (*z* score of -1 or less) received a score of 1. In this sample,

19% of principals scored high in integrated leadership, 65.5% scored high in one type of

leadership and low in the other, and 15.5% of principals scored low in both instructional

leadership and transformational leadership.

<div align="center">Determining Knowledge and Beliefs about Dyslexia</div>

To determine their amount of knowledge and beliefs about dyslexia, participants

answered the 36 items about dyslexia and appropriate intervention included on the

KBDDS. Participant answers were scored with credit being given for correct answers

and no credit being given for incorrect answers or answers of "I don't know." The scores

ranged from one correct item to 33 items correct. In this sample, the mean score for the

total scale was 22.69, and the standard deviation was 5.95. Table 4 lists the questions of

the KBDDS with the correct answers as well the percentage of participants who

answered each question correctly, with questions listed from highest percentage of

correct answers to lowest.

KBDDS Item Answers and Percentage of Correct Scores

Items	Correct Answer	Percent Correct
I think dyslexia is a myth, a problem that does not exist.	False	96%
A child can have dyslexia and be gifted.	True	95%
All poor readers have dyslexia.	False	94%
People with dyslexia have below average intelligence.	False	93%
People with dyslexia are not stupid or lazy. Knowing about the term helps children.	True	91%
Most teachers receive intensive training in working with children with dyslexia.	False	91%
Giving students with dyslexia accommodations is unfair to other students.	False	89%
Dyslexia refers to a relatively chronic condition that is often not completely overcome.	True	83%
Intervention programs that emphasize the phonological aspects of language with the visual support of letters are effective for students with dyslexia.	True	82%

Students with dyslexia need structured, sequential, direct instruction in basic skills and learning strategies.	True	81%
The reading of students with dyslexia is often characterized by inaccuracy and lack of fluency.	True	79%
Physicians can prescribe medications to help students with dyslexia.	False	77%
Modeling fluent reading is often used as a teaching strategy.	True	76%
Individuals with dyslexia tend to spell words wrong.	True	76%
Dyslexia is characterized by difficulty with learning to read fluently.	True	76%

Table 4 Continued

Dyslexia is the result of a neurologically-based disorder.	True	74%
Multisensory instruction is not an effective training method at the moment.	False	74%
Many students with dyslexia have low self-esteem.	True	73%
Difficulty with the phonological processing of information is one of the most important deficits in dyslexia.	True	70%
Many students with dyslexia continue to have reading problems as adults.	True	68%
Children with dyslexia have problems with decoding and spelling but not with listening comprehension.	True	66%
Repeated reading techniques are useful reading material to improve reading fluency.	True	65%
Dyslexia usually lasts for a long time.	True	64%
The brains of individuals with dyslexia are different from those of people without dyslexia.	True	59%
Children with dyslexia are more consistently impaired in phonemic awareness than any other ability.	True	56%
Most studies indicate that at least 5% of school-age students have dyslexia.	True	50%
Dyslexia is hereditary.	True	46%
Dyslexia has a greater occurrence in males than in females.	True	45%
Applying an individual reading test is essential to diagnosing dyslexia.	True	41%
Problems in establishing laterality are the cause of dyslexia.	False	34%
Children with dyslexia often have emotional and social disabilities.	True	33%
Seeing letters and words backwards is a basic characteristic of dyslexia.	False	26%
Dyslexia is caused by visual-perception deficits, producing the reversal of letters and words.	False	25%
Children with dyslexia can be helped by using colored lenses/colored overlays.	False	17%
Intelligence tests are useful in identifying dyslexia.	True	11%
Students who have reading disabilities without an apparent cause have dyslexia.	True	6%

_____

When total scores on the KBDDS were converted to standard scores, *z* scores

ranged from -3.41 to 3.70, with 10% of participants demonstrating low levels of

knowledge of dyslexia (*z* score of -1 or less), 77% of participants demonstrating moderate

levels of knowledge of dyslexia (z score between +1 and -1), and 13% of participants demonstrating high levels of knowledge of dyslexia (z score of +1 or greater).

Determining the School-Based Level of Appropriate Intervention for Dyslexia

The level of appropriate intervention provided in elementary schools for students with dyslexia was based on scores from an author-created rubric (see Figure 3) measuring five practices: grade level of identification, personnel providing intervention, days per week intervention is provided, length of intervention sessions, and number of students in each intervention group. Those practices deemed appropriate for students with dyslexia as determined by IMSLEC (1995) and IDA (2010) were given higher points on a scale of zero to four, with a possible high score for intervention practices of 20. In this sample, scores for appropriate intervention ranged from 0 to 18, with a mean of 7.28 and a standard deviation of 6.44, with 41% of participants indicating that students in their schools were not identified as having dyslexia. See Table 5 for additional intervention variables.

A cross tabulation of the variables of Grade Level of Identification and Personnel Providing Services revealed that students who are identified in first grade are more likely to receive services from a reading interventionist/literacy coach than another service provider. An additional cross tabulation of the variables of Grade Level of Identification and Average Days/Week of Intervention indicated that students who are identified in second grade or later are more likely to receive services five days per week.

Determining Preparation in Reading Disabilities and/or Dyslexia

Principals rated the knowledge they gained from their degree programs, from professional development received from their local school system (Internal PD), and from

professional development received outside of the local school system (External PD) using a scale ranging from (0) No Knowledge to (3) Great Deal of Knowledge. Scores for knowledge gained from degree programs had a mean of 1.25 and a standard deviation of .95, scores for knowledge gained from internal professional development had a mean of 1.63 and a standard deviation of .91, and scores for knowledge gained from external professional development had a mean of 1.71 and a standard deviation of 1.03. Additional variables are listed in Table 6.

Table 4

Intervention Practices

Variable	Frequency	Percent
Grade Level of Identification		
Kindergarten	14	9.8%
1st Grade	27	18.9%
2nd Grade	27	18.9%
3rd Grade or Later	17	11.9%
Students Not Identified	58	40.9%
Personnel Providing Services		
Certified Therapist or Practitioner	13	16.9%
Interventionist/Literacy Coach	37	48.1%
Classroom Teacher	11	14.3%
Assistant or Digital Program	15	19.5%
No Services Provided	1	1%
Average Days/Week of Intervention		
5 Days	34	40.5%
4 Days	15	17.9%
3 Days	16	19.0%
2 Days	16	19.0%
1 Day	3	3.6%
Average Number Students per Group		
1-2 Students	26	31.0%
3-4 Students	41	48.8%
5-6 Students	12	14.3%
7-8 Students	3	3.6%

	Frequency	Percent
9 or More Students	2	2.4%
Average Length of Sessions		
More than 60 Minutes	6	7.1%
45-60 Minutes	12	14.3%
30-45 Minutes	31	36.9%
15-30 Minutes	35	41.7%
<15 Minutes	0	0%

Table 5

Knowledge Received from Degree, Internal PD, and External PD

Variable	Frequency	Percent
Degree Program		
No Knowledge	32	22.2%
Little Knowledge	57	39.6%
Moderate Knowledge	32	22.2%
Great Deal of Knowledge	17	11.8%
Internal Professional Development		
No Knowledge	14	9.7%
Little Knowledge	50	34.7%
Moderate Knowledge	47	32.6%
Great Deal of Knowledge	27	18.8%
External Professional Development		
No Knowledge	20	13.9%
Little Knowledge	39	27.1%
Moderate Knowledge	42	29.2%
Great Deal of Knowledge	39	27.1%

In addition to rating the amount of knowledge gained from degree programs or professional development, participants listed specialized training they had received concerning reading disabilities and dyslexia. Responses ranged from no specialized training received to completion of a multisensory structured language education (MSLE) program accredited by IMSLEC and/or IDA. Twenty-six percent of participants indicated they had received no specialized training, with one participant stating, "Our

district stated they don't address dyslexia," and 5% of participants indicated the only specialized training they received came from personal research and self-study. Other participants indicated they received specialized training as part of their undergraduate or graduate preservice programs (18%) with training ranging from one course during the preservice degree for education to master's degrees in dyslexia therapy to specialist degrees in special education, and 28% of participants indicated they received some specialized training from their school districts and from outside professional development. Twelve percent of participants indicated they had received training from these programs accredited by IMSLEC and/or IDA: DuBard Association Method®, Orton-Gillingham, Shelton (SEE) Multisensory Structured Language, Slingerland Multisensory Approach, Texas Scottish Rites, and Wilson Language Training. An additional 11% of participants received training from non-accredited MSLE programs including Barton Reading and Spelling System, Language Essentials for Teachers of Reading and Spelling (LETRS), Lindamood Bell, and the Sonday System.

Data Analysis

Data were analyzed to address the research questions. Independent variables were centered during regression analysis to reduce violations of assumptions; however, minor violations of homoscedasticity and normality of residuals were found. Therefore, all results of data analysis should be interpreted with caution.

Addressing Research Question 1

To address the first research question, regression analysis was used to assess whether or not the principal's knowledge and beliefs about dyslexia moderate the

relationship between leadership style and the school-based level of appropriate intervention for dyslexia.

To assess transformational leadership, a multiple regression was calculated to predict the school-based level of intervention provided for students with dyslexia based on transformational leadership style and knowledge and beliefs about dyslexia. Together, these variables accounted for a significant amount of variance in the dependent variable, $R^2 = .20$, $F(2, 139) = 17.78$, $p < .001$. Knowledge and beliefs about dyslexia significantly predicted the school-based level of intervention ($\beta = .45$, $t = 5.95$, $p < .001$), but transformational leadership did not significantly predict this intervention ($\beta = .01$, $t = .14$, $p = .889$). However, when the interaction term between transformational leadership and knowledge and beliefs about dyslexia was added to the model, no significant difference was found in the school based level of intervention provided for students with dyslexia, $\Delta R^2 = .004$, $\Delta F(1, 138) = .61$, $p = .435$.

Instructional leadership style and knowledge and beliefs about dyslexia were the independent variables used in the regression analysis to assess instructional leadership. These variables accounted for a significant amount of variance in the school-based level of intervention provided for students with dyslexia, $R^2 = .18$, $F(2, 141) = 15.40$, $p < .001$. As in the previous model, knowledge and beliefs about dyslexia significantly predicted the school-based level of intervention ($\beta = .42$, $t = 5.54$, $p < .001$), but instructional leadership did not significantly predict this intervention ($\beta = -.04$, $t = -.46$, $p = .654$). Also, when the interaction term between instructional leadership and knowledge and beliefs about dyslexia was added to the model, no significant difference was found in the

school-based level of intervention provided for students with dyslexia, $\Delta R^2 = .01$, $\Delta F(1, 140) = 1.42$, $p = .235$.

Addressing Research Question 2

Regression analysis was used to determine if there was a relationship between the level of integration between transformational and instructional leadership styles and the school-based level of intervention for students with dyslexia. The variables of integrated leadership and knowledge and beliefs about dyslexia accounted for a significant amount of variance in the school-based level of intervention provided for students with dyslexia, $R^2 = .20$, $F(2, 139) = 17.82$, $p < .001$. Again, knowledge and beliefs about dyslexia significantly predicted the school-based level of intervention ($\beta = .45$, $t = 5.95$, $p < .001$), but integrated leadership did not significantly predict this intervention ($\beta = .02$, $t = .31$, $p = .756$). Adding the interaction term between the level of integrated leadership and knowledge and beliefs about dyslexia to the model did not make a significant difference in the school-based level of intervention provided for students with dyslexia, $\Delta R^2 = .01$, $\Delta F(1, 138) = .95$, $p = .331$.

Addressing Research Question 3

Regression analysis was used to determine if there was a relationship between the principal's knowledge and beliefs about dyslexia and the school-based level of appropriate intervention for students with dyslexia. Knowledge and beliefs about dyslexia explained a significant proportion of variance in the level of appropriate intervention for students with dyslexia in elementary schools, $R^2 = .18$, $F(1, 142) = 30.76$, $p < .001$.

Addressing Research Question 4

The fourth research question was addressed by using regression analysis to determine whether or not a relationship exists between the knowledge gained from degree programs, from internal professional development offered at the local school system (Internal PD), and from external professional development offered outside of the local school system (External PD) and the school-based level of appropriate intervention for students with dyslexia. Of these variables, only internal professional development explained a significant amount of variance in the level of appropriate intervention for students with dyslexia (see Table 7).

Table 6

Knowledge from Degree and Professional Development

Predictor	R^2	β	F	p
Degree Program	.01	.10	1.47	.227
Internal Professional Development	.05	.22	7.00	.009
External Professional Development	.00	-.01	.03	.872

Summary

The data collected for this study were analyzed using regression analysis to determine if different variables predict the school-based level of appropriate intervention for students with dyslexia. Of the variables included in this study, only the amount of knowledge that principals have about dyslexia as well as the amount of preparation they received from internal professional development offered by the school district explained a significant amount of variation in the school-based level of appropriate intervention for students with dyslexia.

CHAPTER V – DISCUSSION

The purpose of this study was to determine how the variables of leadership style of the school principal, the principal's knowledge and beliefs about dyslexia, and the principal's level of preparation in reading disabilities and dyslexia received from preservice education and professional development predict the school-based level of appropriate intervention given to students with dyslexia in K-2 elementary schools.

Summary of Findings

Although instructional leadership and transformational leadership have been found to be effective variables in increasing student outcomes (Hallinger, 2003; Jacobson, 2010; Leithwood, 1994; Marzano et al., 2005; Setwong & Prasertcharoensuk, 2013), neither instructional leadership nor transformational leadership accounted for a significant difference in the services provided to students with dyslexia in K-2 elementary schools. While integrated leadership, or the overlap of behavioral characteristic of instructional leadership with those of transformational leadership, has been found to be the most effective form of leadership (Marks & Printy, 2003; Printy et al., 2009; Robinson et al., 2008), this leadership style did not account for significant differences in these services. Additionally, previous reports indicated that principals receive inadequate knowledge about dyslexia and/or reading disabilities from degree programs and professional development so that they have little knowledge of effective intervention for students with reading difficulties (DiPaola & Walther-Thomas, 2003; DuFour & Mattos, 2013; Fletcher et al., 2013; Sanzo et al., 2011). In this study, the principals' knowledge received from degree programs and professional development provided outside of the local school system did not explain a significant amount of variance in intervention

services provided for students with dyslexia. However, on the basis of the findings of this study, it appears that principals who have greater knowledge and more correct beliefs about dyslexia, along with those who received more knowledge from internal professional development, are those who provide more appropriate services for students with dyslexia.

Research Question 1

While previous studies indicated that both instructional leadership and transformational leadership styles were important for improved student outcomes (Bush, 2007; Heck & Hallinger, 2014; Jacobson, 2010; Leithwood et al., 2004; Marzano et al., 2005; Robinson et al., 2008; Setwong & Prasertcharoensuk, 2013), neither of these leadership styles significantly predicted the school-based level of intervention provided to students with dyslexia in K-2 elementary schools. Additionally, the interaction between transformational leadership and knowledge and beliefs about dyslexia and the interaction between instructional leadership and knowledge of dyslexia did not account for significantly more variance in intervention services for students with dyslexia.

Research Question 2

The principal's knowledge and beliefs about dyslexia and appropriate intervention did not significantly moderate the relationship between integrated leadership style and the school-based level of appropriate intervention for students with dyslexia. Previous studies indicated that when the most positive aspects of instructional leadership are integrated with the most positive aspects of transformational leadership, principals become more effective in improving student outcomes (Heck & Hallinger, 2014; Marks & Printy, 2003; Printy et al., 2009; Robinson et al., 2008; ten Bruggencate, 2012).

However, no significant difference was found between the services provided for students with dyslexia and principals with high levels of integrated leadership and those with low levels.

Research Question 3

In this study, the principal's knowledge and beliefs about dyslexia and appropriate intervention positively predicted the school-based level of appropriate intervention for students with dyslexia, with those principals who have higher levels of knowledge and correct beliefs providing higher levels of appropriate intervention. This appropriate intervention is based on the recommendations of the National Reading Panel (NICHD, 2000), including explicit instruction in phonology and phonemic awareness, systematic phonics, vocabulary instruction, instruction in reading fluency, and comprehension strategies, and is known as the science of reading (Hurford et al., 2016b; Moats, 1999; Walsh et al., 2006). In addition, IMSLEC (1995) and IDA (2010) specified intensive, phonetic, multisensory instruction as essential for teaching students with dyslexia. IDA (2014) identified this type of instruction as Structured Literacy.

Participants varied widely on their knowledge of dyslexia and appropriate intervention, with an average correct score of 22.69 of 36, or 63%. Findings were consistent with some of the common misconceptions about dyslexia that have been previously reported. This study was consistent with those of Wadlington and Wadlington (2005) and Washburn et al. (2013) in finding that 74% of principals erroneously indicated a basic characteristic of dyslexia is seeing letters and words backwards, and 75% of principals incorrectly indicated visual-perceptual deficits caused dyslexia and produced letter and number reversals. Additionally, like the findings of Washburn et al. (2013),

this study found that the majority of principals (83%) believed the misconception that vision therapy, including colored lenses or colored overlays, can help students with dyslexia. Some of the findings of this study, however, did not correspond to previous reports. Shetty and Rai (2014) found that educators believe students outgrow dyslexia, but in this study, 83% of participants correctly identified dyslexia as a chronic condition that is often not overcome, and 68% correctly indicated that many students with dyslexia continue to have reading problems as adults.

Research Question 4

Research question 4 investigated the amount of preparation in reading disabilities and/or dyslexia that participants received from their degree programs, professional development provided by the local school, and professional development provided by external sources. Consistent with previous findings (Christensen et al., 2013; DiPaola & Walther-Thomas, 2003; Hurford et al., 2016a; Hurford et al., 2016b; Leithwood et al., 2004; Walsh et al., 2006; Washburn et al., 2015), this study found that knowledge received from degree programs did not significantly predict the services provided to students with dyslexia. Additionally, knowledge that principals received from external professional development did not significantly change the school-based level of intervention provided for students with dyslexia. However, the amount of knowledge gained from internal professional development did account for a significant amount of the variance in intervention for students with dyslexia. This is consistent with findings from Chambers and Hausman (2014) indicating sustained professional development improved teaching methods.

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Implications of the Study

While there is evidence in the literature about the influence of principal leadership style in increasing student outcomes (Chambers & Hausman, 2014; Lunenburg & Ornstein, 2012; Marzano et al., 2005; Matsumura & Garnier, 2010; Peterson & Deal, 1998), it may be that the positive relationships that knowledge and beliefs about dyslexia and internal professional development have with the school-based level of appropriate intervention for students with dyslexia lead to implications for practice.

Because specific content and principals of instruction have been identified by IMSLEC (1995) and IDA (2010) as necessary for students with dyslexia, principals need to increase their knowledge base in this area. This should begin at the preservice level in the degree program. Degree programs for educators, including school administrators, should include the components of good reading instruction as designated by the National Reading Panel report (2000) as well as those specialized skills necessary for teaching students with dyslexia as outlined by IMSLEC (1995) and IDA (2010).

As principals become more knowledgeable about dyslexia and appropriate intervention, they are better able to recognize the aspects of intervention that are necessary to improve skills in students with dyslexia. First, principals should encourage identification of students with dyslexia or reading disabilities as early as possible because early intervention proves important in the remediation of difficulties that students face in academics (Catts, 1993, 1997; Ferrer et al., 2015; Lyon & Chhabra, 2004; Poulsen, M., 2018; Snowling & Hulme, 2012; Walsh et al., 2006; Washburn et al., 2013). Next, principals should support intensive intervention for students identified with dyslexia. This intervention should be delivered more often, in small groups, and for longer periods

of time, with the intensity of services to match the severity of the reading disability, to be most effective (Duff & Clarke, 2011; Ritchey & Goeke, 2006; Snowling & Hulme, 2012). Finally, principals should ensure that personnel providing services to students with dyslexia have appropriate training and skills. This may be accomplished through hiring individuals trained in phonetic, multisensory structured language intervention and having credentials in Structured Literacy (IDA, 2014; IMSLEC, 1995) and by providing appropriate professional development to staff.

By increasing their knowledge about dyslexia and intervention, school principals are able to provide more appropriate internal and external professional development for their staff (DuFour & Mattos, 2013; Fletcher et al., 2013; Sanzo et al., 2011). Professional development should include content in the areas of phonology and phonological awareness, phonics, syllable instruction, syntax, and semantics and should include the principles of simultaneous multisensory instruction in both synthetic and analytic skills, systematic and cumulative language instruction, and direct and individualized instruction so that the student achieves automaticity (IMSLEC, 1995). By providing professional development that is appropriate for increasing skills in students with dyslexia, principals may increase their own knowledge and beliefs about dyslexia as well as that of their teachers. In this way, misconceptions about dyslexia may decrease, and teachers may improve the content of their instruction, both of which may lead to better outcomes for students.

While no specific leadership style was found to have a significant influence on the services provided to students with dyslexia in this study, strong leadership remains important. Principals should engage in behaviors that increase teacher commitment.

This may lead to increased investment by the teachers in the professional development provided, thereby increasing teacher capacity. Additionally, principals should participate in professional development alongside their teachers so they not only increase their own skills, but also increase relationships with their staff. With increased knowledge of dyslexia and intervention, principals will be able to make better curriculum choices and be able to model more appropriate instruction for their staff. They will be better equipped to evaluate the teachers' fidelity in implementing proven techniques for intervention and to support the teachers in their classroom efforts, thus serving as more effective school leaders.

<div align="center">Limitations of the Study</div>

Although knowledge and beliefs about dyslexia and appropriate intervention and the amount of knowledge gained from internal professional development were significantly related to the school-based level of appropriate intervention for students with dyslexia, this study had limitations that may reduce the generalization of findings to the population of school principals in K-2 elementary schools.

1. This study was designed to explore only a few variables, but other variables not included could affect outcomes. First, variables related to the school principals may include, but are not limited to, other leadership styles, the availability of funds principals have to provide appropriate professional development to staff, and curricular decisions made at the district level that may not fit into the recommended standards for students with dyslexia. Next, variables related to the teachers and staff who provide the intervention services were not included in the current study. These variables may include the teachers' knowledge and beliefs about dyslexia, their experience working with

students with dyslexia, and their investment in professional development. Finally, variables related to the students receiving services were not included in the study. These variables may include state requirements for identification of and services provided for students with dyslexia, the number and severity of comorbid conditions with which the students present, and student attendance and participation in therapy sessions.

2. The current study included five factors to determine the school-based level of appropriate intervention for students with dyslexia. However, other factors may contribute to appropriate intervention for students that were not included. These may include the proficiency in phonology and phonemic awareness of the service provider, the instruments used to identify students who have dyslexia, student attendance at therapy sessions, curricula used for intervention, program consistency across staff members, and physical resources such as sufficient space and lighting. Additionally, the scoring rubric for intervention was designed by the researcher and has not been used in additional studies. Content and face validity of this rubric was determined by sending it for review by a panel of experts in the field of dyslexia therapy, with recommended changes made to reflect the most appropriate intervention.

3. While the knowledge gained from degree programs, internal professional development, and external professional development were variables in the current study, specifics about these variables were not included. These specifics may include, but are not limited to, plan of study in the degree program, reading background of professors teaching in the degree program, type and intensity of professional development provided, and district support for practices learned in professional development.

4. While the current study examined the relationship of several independent variables with the school-based level of appropriate intervention for students with dyslexia, it was assumed that this appropriate intervention would influence student outcomes. However, student outcomes in reading skills were not included in the study.

5. The instruments used to determine integrated leadership and the school-based level of appropriate intervention for dyslexia were created by the researcher, and scoring of these instruments may have affected outcomes of the study.

6. A small sample of principals participated in the study. Additionally, these participants were from limited geographic areas and may not be representative of principals across the United States.

7. Minor violations of homoscedasticity and normality of residuals were found during data analysis which limit the generalization of findings.

Further Research

In addition to addressing the limitations found in the current study, future research into the relationship between principal leadership style and services for students with dyslexia is recommended. Because students with dyslexia are at a disadvantage in academic settings because of limited reading skills (IDA, 2012; Kallitsoglou, 2017), they often experience frustration, low self-esteem, decreased motivation for learning, anxiety, and depression (Butler & Edmonson, 2009; Galuschka et al., 2014; IDA, 2017a; Lyon, 1997; Schulte-Körne, 2010). Therefore, one area of future research should investigate those leadership behaviors that relate to positive changes in these social-emotional aspects of dyslexia. Additionally, little research exists that shows a direct effect between principal leadership and student outcomes (Leithwood et al., 2004; Ross & Gray, 2006,

ten Bruggencate et al., 2012) so research into this area, specifically as it relates to outcomes for students with dyslexia, is indicated.

The current study presented evidence that principals who have increased knowledge about dyslexia and appropriate intervention provided more appropriate services for students with dyslexia. However, the relationship between the services provided and an increase in students' reading skills may only be assumed. Therefore, further research is needed to determine whether or not providing more appropriate services for these students is related to increases in student reading skills.

Conclusion

In this study, principals displayed varying degrees of instructional, transformational, and integrated leadership styles, none of which predicted a significant change in the school-based level of appropriate services for students with dyslexia in K-2 elementary schools. However, the variables of knowledge and beliefs about dyslexia and the amount of knowledge received from internal professional development explained a significant difference in services provided to these students, with those principals who had more correct beliefs and greater knowledge providing more appropriate services. By knowing more about dyslexia and the phonetic, multisensory structured language intervention that students with dyslexia require, principals may be able to improve the academic environment in their schools, beginning with better and earlier identification of students with reading disabilities, earlier provision of intervention, and increased teacher capacity through appropriate professional development. These changes in the academic environment may allow the 5-20% of students identified with dyslexia to make progress in reading and alleviate the frustrations they feel due to lack of academic success.

Dear Principal,

Teaching students to read is one of the most important things we do in our elementary schools, and school administrators are a vital part of this process. Unfortunately, many children do not learn this essential skill because of dyslexia, and they struggle to complete the most basic academic tasks. This national study will provide information about what makes schools successful in providing services to students with dyslexia. I am asking you, as a school principal, to participate in this national study on trends in services provided for students with dyslexia.

Your participation will help me collect important information about leadership styles of school principals, their knowledge and beliefs about dyslexia, and preservice and professional preparation in this area. This information may be helpful in determining ways to improve services for students with dyslexia and create a generation of better readers.

Participation in this survey is voluntary and may be discontinued at any time without penalty or prejudice. Completing the questionnaire should take no more than 20-30 minutes. All personal data collected will be anonymous; however, you will be asked your state of employment so that any regional trends may be determined. Any information inadvertently obtained during the course of this study will remain completely confidential.

This project has been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-5997. If you have questions regarding this project, please contact Missy Schraeder at 601-325-6479 or missy.schraeder@usm.edu.

1. Does your school serve students in kindergarten through 3rd grade?
   - o Yes
   - o No

2. How many years, at the end of this school year, have you been a principal?
   - o 1
   - o 2-4
   - o 5-9
   - o 10-15
   - o more than 15

3. How many school years have you been a principal at your current school?
   - o 1
   - o 2-4
   - o 5-9
   - o 10-15
   - o more than 15

4. In which type of school do you work?
   - o Public school
   - o Private school
   - o Charter school

5. In which state is your school located?

6. What is your gender?
   - o Male
   - o Female

7. Regarding reading disabilities/dyslexia, how much knowledge did you gain from each of these sources?

   Degree program(s)
   - o no knowledge
   - o little knowledge
   - o moderate knowledge
   - o a great deal of knowledge
   - o did not attend

   Professional development at local school system
   - o no knowledge
   - o little knowledge
   - o moderate knowledge
   - o a great deal of knowledge
   - o did not attend

   Professional development outside of local school system
   - o no knowledge
   - o little knowledge
   - o moderate knowledge
   - o a great deal of knowledge
   - o did not attend

8. Please describe any specialized training you have received in reading disabilities/dyslexia.

Services for students with dyslexia and preparation of administrators to provide services for these students differ across schools and school districts. Please reflect on the services provided to students with dyslexia in your school setting and your preparation for serving these students, and answer the following questions:

9. In your school setting, at which grade level are most students with dyslexia identified using a screening instrument or other formal testing instrument?
   o Kindergarten
   o First grade
   o Second grade
   o Third grade or later
   o Students are not identified as having dyslexia

10. In your school setting, who primarily provides services/intervention to students with dyslexia?
   o Students do not receive services/intervention for dyslexia
   o Students use digital intervention (ex. Read 180 or Lexia)
   o A teacher assistant or aide
   o A classroom teacher
   o A reading interventionist or literacy coach
   o A nationally certified dyslexia therapist or practitioner
   o Other

11. In a typical school week, how many days per week do students with dyslexia receive services/intervention?
   o 1
   o 2
   o 3
   o 4
   o 5

12. Approximately how long do these intervention sessions last?
   o Less than 15 minutes/session
   o 15-30 minutes/session
   o 30-45 minutes/session
   o 45-60 minutes/session
   o More than 60 minutes

13. Approximately how many students are in each intervention group?
   o 1-2
   o 3-4

- o 5-6
- o 7-8
- o 9 or more

14. Does your school use a specific multisensory structured language methodology or program as intervention for students with dyslexia? (Examples include but are not limited to Orton-Gillingham, Spalding, Slingerland, DuBard Association Method, etc.)
- o Yes (name of methodology _____)
- o No
- o I don't know

Please consider each of the following questions in terms of your leadership over the past school year. Read each statement carefully. Then choose the number that best fits the specific job behavior or practice as you conducted it during the past school year. In some cases, these responses may seem awkward; use your judgement in selecting the most appropriate response to such questions.

15. To what extent do you frame the school goals?

Develop a focused set of annual school-wide goals
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Frame the school's goals in terms of staff responsibilities for meeting them
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Use needs assessment or other formal and informal methods to secure staff input on goal development
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Use data on student performance when developing the school's academic goals
- o Almost Never
- o Seldom

- o Sometimes
- o Frequently
- o Almost Always

Develop goals that are easily understood and used by teachers in the school
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

16. To what extent do you communicate the school goals?

Communicate the school's mission effectively to members of the school community
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Discuss the school's academic goals with teachers at faculty meetings
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Refer to the school's academic goals when making curricular decisions with teachers
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Ensure that the school's goals are reflected in highly visible displays in the school (e.g. posters or bulletin boards emphasizing academic progress)
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Refer to the school's goals or mission in forums with students (e.g.in assemblies or discussions)
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

17. To what extent do you supervise and evaluate instruction?

Ensure that the classroom priorities of teachers are consistent with the goals and direction of the school
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Review student work products when evaluating classroom instruction
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Conduct informal observations in classrooms on a regular basis (informal observations are unscheduled, last at least 5 minutes, and may or may not involve written feedback or a formal conference)
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Point out specific strengths in teacher instructional practices in post-observation feedback (e.g. in conferences or written evaluations)
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Point out specific weaknesses in teacher instructional practices in post-observation feedback (e.g. in conferences or written evaluations)
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

18. To what extent do you coordinate the curriculum?

Make clear who is responsible for coordinating the curriculum across grade levels (e.g., the principal, vice principal, or teacher-leaders)
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Draw upon the results of school-wide testing when making curricular decisions
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Monitor the classroom curriculum to see that it covers the school's curricular objectives
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Assess the overlap between the school's curricular objectives and the achievement tests
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Participate actively in the review of curricular materials
- o Almost Never

- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

19. To what extent do you monitor student progress?

Meet individually with teachers to discuss student academic progress
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Discuss academic performance results with the faculty to identify curricular strengths and weaknesses
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Use test and other performance measures too assess progress toward school goals
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Inform teachers of the school's performance results in written form (e.g., in a memo or newsletter)
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Inform students of school's academic progress
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

20. To what extent do you protect instructional time?

Limit interruptions of instructional time by public address announcements
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Ensure that students are not called to the office during instructional time
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Ensure that tardy and truant students suffer specified consequences for missing instructional time
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Encourage teachers to use instructional time for teaching and practicing new skills and concepts
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Limit the intrusion of extra- and co-curricular activities on instructional time
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

21. To what extent do you maintain high visibility?

Take time to talk informally with students and teachers during recess and breaks
- o Almost Never

- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Visit classrooms to discuss school issues with teachers and students
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Attend/participate in extra- and co-curricular activities
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Cover classes for teachers until a late or substitute teacher arrives
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Tutor students or provide direct instruction to classes
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

22. To what extent do you provide incentives for teachers?

Reinforce superior performance by teachers in staff meetings, newsletters, and/or memos
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Compliment teachers privately for their efforts or performance
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Acknowledge teachers' exceptional performance by writing memos for their personnel files
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Reward special efforts by teachers with opportunities for professional recognition
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Create professional growth opportunities for teachers as a reward for special contributions to the school
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

23. To what extent do you promote professional development?

Ensure that inservice activities attended by staff are consistent with the school's goals
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Actively support the use in the classroom of skills acquired during inservice training
- o Almost Never

- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Obtain the participation of the whole staff in important inservice activities
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Lead or attend teacher inservice activities concerned with instruction
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Set aside time at faculty meetings for teachers to share ideas or information from inservice activities
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

24. To what extent do you provide incentives for learning?

Recognize students who do superior academic work with formal rewards such as an honor roll or mention in the principal's newsletter
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently
- o Almost Always

Use assemblies to honor students for their academic accomplishments or for behavior or citizenship
- o Almost Never
- o Seldom
- o Sometimes
- o Frequently

o Almost Always

Recognize superior student achievement or improvement by seeing in the office
the students with their work
o Almost Never
o Seldom
o Sometimes
o Frequently
o Almost Always

Contact parents to communicate improved or exemplary student performance or
contributions
o Almost Never
o Seldom
o Sometimes
o Frequently
o Almost Always

Support teachers actively in their recognition and/or reward of student
contributions to and accomplishments in class
o Almost Never
o Seldom
o Sometimes
o Frequently
o Almost Always

For the following statements, please read each statement carefully, and using the rating
scale below, ask yourself "How frequently do I engage in the behavior described?" Be
realistic about the extent to which you actually engage in the behavior. Be as honest and
accurate as you can. Do not answer in terms of how you would like to behave or in terms
of how you think you should behave. Do answer in terms of how you typically behave
on most days, on most projects, and with most people. Be thoughtful about your
responses. For example, giving yourself 10s (Almost always) on all items is most likely
not an accurate description of your behavior. Similarly, giving yourself all 1s (Almost
never) or all 5s (Occasionally) is most likely not an accurate description either. Most
people will do some things more or less often than they do other things If you feel a
statement does not apply to you, it's probably because you don't frequently engage in the
behavior. In that case, assign a rating of 3 or lower.

25. How frequently do you engage in the behavior described?

I set a personal example of what I expect of others.
o Almost never

- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I talk about future trends that will influence how our work gets done.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I seek out challenging opportunities that test my own skills and abilities.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I develop cooperative relationships among the people I work with.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I praise people for a job well done.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I spend time and energy making certain that the people I work with adhere to the principles and standards we have agreed on.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I describe a compelling image of what our future could be like.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I challenge people to try out new and innovative ways to do their work.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often

- o   Usually
- o   Very frequently
- o   Almost always

I actively listen to diverse points of view.
- o   Almost never
- o   Rarely
- o   Seldom
- o   Once in a while
- o   Occasionally
- o   Sometimes
- o   Fairly often
- o   Usually
- o   Very frequently
- o   Almost always

I make it a point to let people know about my confidence in their abilities.
- o   Almost never
- o   Rarely
- o   Seldom
- o   Once in a while
- o   Occasionally
- o   Sometimes
- o   Fairly often
- o   Usually
- o   Very frequently
- o   Almost always

I follow through on the promises and commitments that I make.
- o   Almost never
- o   Rarely
- o   Seldom
- o   Once in a while
- o   Occasionally
- o   Sometimes
- o   Fairly often
- o   Usually
- o   Very frequently
- o   Almost always

I appeal to others to share an exciting dream of the future.
- o   Almost never
- o   Rarely
- o   Seldom
- o   Once in a while

- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I actively search for innovative ways to improve what we do.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I treat others with respect and dignity.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I make sure that people are creatively rewarded for their contributions to the success of our projects.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I ask for feedback on how my actions affect other people's performance.
- Almost never
- Rarely
- Seldom
- Once in a while
- Occasionally
- Sometimes
- Fairly often
- Usually
- Very frequently
- Almost always

I show others how their long-term interests can be realized by enlisting in a common vision.
- Almost never
- Rarely
- Seldom
- Once in a while
- Occasionally
- Sometimes
- Fairly often
- Usually
- Very frequently
- Almost always

I ask "What can we learn?" when things don't go as expected.
- Almost never
- Rarely
- Seldom
- Once in a while
- Occasionally
- Sometimes
- Fairly often
- Usually
- Very frequently
- Almost always

I involve people in the decisions that directly impact their job performance.
- Almost never
- Rarely
- Seldom
- Once in a while
- Occasionally
- Sometimes
- Fairly often

- Usually
- Very frequently
- Almost always

I publicly recognize people who exemplify commitment to shared values.
- Almost never
- Rarely
- Seldom
- Once in a while
- Occasionally
- Sometimes
- Fairly often
- Usually
- Very frequently
- Almost always

I build consensus around a common set of values for running our organization.
- Almost never
- Rarely
- Seldom
- Once in a while
- Occasionally
- Sometimes
- Fairly often
- Usually
- Very frequently
- Almost always

I paint the "big picture" of what we aspire to accomplish.
- Almost never
- Rarely
- Seldom
- Once in a while
- Occasionally
- Sometimes
- Fairly often
- Usually
- Very frequently
- Almost always

I identify measurable milestones that keep projects moving forward.
- Almost never
- Rarely
- Seldom
- Once in a while

- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I give people a great deal of freedom and choice in deciding how to do their work.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I tell stories of encouragement about the good work of others.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I am clear about my philosophy of leadership.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I speak with genuine conviction about the higher meaning and purpose of our work.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I take initiative in anticipating and responding to change.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I ensure that people grow in their jobs by learning new skills and developing themselves.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes
- o Fairly often
- o Usually
- o Very frequently
- o Almost always

I get personally involved in recognizing people and celebrating accomplishments.
- o Almost never
- o Rarely
- o Seldom
- o Once in a while
- o Occasionally
- o Sometimes

- o Fairly often
- o Usually
- o Very frequently
- o Almost always

26. Please answer the following questions based on your beliefs about dyslexia:

Dyslexia is the result of a neurologically-based disorder.
- o I believe this is true
- o I believe this is false
- o I don't know

Dyslexia is caused by visual-perception deficits, producing the reversal of letters and words.
- o I believe this is true
- o I believe this is false
- o I don't know

A child can have dyslexia and be gifted.
- o I believe this is true
- o I believe this is false
- o I don't know

Children with dyslexia often have emotional and social disabilities.
- o I believe this is true
- o I believe this is false
- o I don't know

The brains of individuals with dyslexia are different from those of people without dyslexia.
- o I believe this is true
- o I believe this is false
- o I don't know

Dyslexia is hereditary.
- o I believe this is true
- o I believe this is false
- o I don't know

Most studies indicate that at least 5% of school-age students have dyslexia.
- o I believe this is true
- o I believe this is false
- o I don't know

Dyslexia has a greater occurrence in males than in females.
- o I believe this is true
- o I believe this is false
- o I don't know

Children with dyslexia are more consistently impaired in phonemic awareness (i.e. ability to hear and manipulate sounds in language) than any other ability.
- o I believe this is true
- o I believe this is false
- o I don't know

Modeling fluent reading is often used as a teaching strategy.
- o I believe this is true
- o I believe this is false
- o I don't know

People with dyslexia have below average intelligence.
- o I believe this is true
- o I believe this is false
- o I don't know

The reading of students with dyslexia is often characterized by inaccuracy and lack of fluency.
- o I believe this is true
- o I believe this is false
- o I don't know

Seeing letters and words backwards is a basic characteristic of dyslexia.
- o I believe this is true
- o I believe this is false
- o I don't know

Difficulty with the phonological processing of information is one of the most important deficits in dyslexia.
- o I believe this is true
- o I believe this is false
- o I don't know

Intelligence tests are useful in identifying dyslexia.
- o I believe this is true
- o I believe this is false
- o I don't know

All poor readers have dyslexia.
- o I believe this is true

- I believe this is false
- I don't know

Children with dyslexia can be helped by using colored lenses/colored overlays.
- I believe this is true
- I believe this is false
- I don't know

Physicians can prescribe medications to help students with dyslexia.
- I believe this is true
- I believe this is false
- I don't know

Multisensory instruction is not an effective training method at the moment.
- I believe this is true
- I believe this is false
- I don't know

Students who have reading disabilities without an apparent cause have dyslexia.
- I believe this is true
- I believe this is false
- I don't know

People with dyslexia are not stupid or lazy. Knowing about the term helps children.
- I believe this is true
- I believe this is false
- I don't know

Giving students with dyslexia accommodations, such as extra time on tests, shorter spelling lists, special seating, etc., is unfair to other students.
- I believe this is true
- I believe this is false
- I don't know

Intervention programs that emphasize the phonological aspects of language with the visual support of letters are effective for students with dyslexia.
- I believe this is true
- I believe this is false
- I don't know

Most teachers receive intensive training in working with children with dyslexia.
- I believe this is true
- I believe this is false
- I don't know

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I think dyslexia is a myth, a problem that does not exist.
- o I believe this is true
- o I believe this is false
- o I don't know

Repeated reading techniques are useful reading material to improve reading fluency.
- o I believe this is true
- o I believe this is false
- o I don't know

Problems in establishing laterality (body schema) are the cause of dyslexia.
- o I believe this is true
- o I believe this is false
- o I don't know

Students with dyslexia need structured, sequential, direct instruction in basic skills and learning strategies.
- o I believe this is true
- o I believe this is false
- o I don't know

Dyslexia refers to a relatively chronic condition that is often not completely overcome.
- o I believe this is true
- o I believe this is false
- o I don't know

Many students with dyslexia continue to have reading problems as adults.
- o I believe this is true
- o I believe this is false
- o I don't know

Many students with dyslexia have low self-esteem.
- o I believe this is true
- o I believe this is false
- o I don't know

Children with dyslexia have problems with decoding and spelling but not with listening comprehension.
- o I believe this is true
- o I believe this is false
- o I don't know

Applying an individual reading test is essential to diagnosing dyslexia.
- o I believe this is true
- o I believe this is false
- o I don't know

Individuals with dyslexia tend to spell words wrong.
- o I believe this is true
- o I believe this is false
- o I don't know

Dyslexia usually lasts for a long time.
- o I believe this is true
- o I believe this is false
- o I don't know

Dyslexia is characterized by difficulty with learning to read fluently.
- o I believe this is true
- o I believe this is false
- o I don't know

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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.
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PROTOCOL NUMBER: 17121301
PROJECT TITLE: Factors Influencing Intervention for Students with Dyslexia
PROJECT TYPE: Doctoral Dissertation
RESEARCHER(S): Missy Schraeder
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: 12/13/2017 to 12/12/2018
Lawrence A. Hosman, Ph.D.
Institutional Review Board

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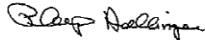
September 21, 2017

Michelle Schraeder

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Sincerely,

Professor Philip Hallinger

www.philiphallinger.com

WILEY

October 2, 2017

Missy Schraeder
118 College Drive #5215
Hattiesburg, MS 39406

Dear Ms. Schraeder:

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Best wishes for every success with your research project.

Cordially,

Ellen Peterson
Permissions Editor
Epeterson4@gmail.com

APPENDIX E – Permission for KBDDS

Michele Schraeder

From:	Manuel.Soriano@uv.es
Sent:	Sunday, August 06, 2017 5:39 PM
To:	Michele Schraeder
Subject:	Re: A Scale of Knowledge and Beliefs about Developmental Dyslexia
Attachments:	Escala de Conocimientos y Creencias acerca de la Dislexia Evolutiva CORRECCION SCORING.pdf; Escala de Conocimientos y Creencias acerca de la Dislexia Evolutiva VERSIÃ"N USO.pdf; Conocimientos de los maestros acerca de la dislexia evolutiva.Implicaciones educativas.pdf; JHHE.-2017 DYSLEXIA KNOWLEDGE.pdf; Knowledge and Beliefs about Developmental Dyslexia. Annals of Dyslexia 2016.pdf

Hi Missy: Of couse you have my permission to use BKDD. I adjunt some papers you could need. In the Appendix of paper 5 you have the complete scale in english.
Best,
Manuel

> Good afternoon,
> I am a doctoral student in educational leadership at The University of Southern Mississippi. My dissertation will explore both the leadership styles of elementary school principals and their knowledge about dyslexia, including their general information and their ability to identify characteristics of students who have dyslexia. I am writing to explore the possibility of using the scale you developed and reported in Social and Behavioral Sciences (A Scale of Knowledge and Beliefs about Developmental Dyslexia).
>
> I am asking for permission to administer your scale to elementary school principals serving in schools with K-2 grade students. As a speech-language pathologist, certified academic language therapist (CALT), and school administrator, I am very interested in learning more about the role of school administrators in providing services for students with dyslexia. Identifying the knowledge that these administrators have about dyslexia could be a step towards improving services for these students.
>
> Thank you for your consideration of this request. Of course, if permission is given, I will give appropriate credit 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.
>
>
> Missy Schraeder, M.S., CCC-SLP, CALT-QI
>
> Interim Director
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