

Identifying Characteristics of Dyslexia

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Abstract

The purpose of this study is to determine if teachers are able to identify dyslexia characteristics. This descriptive study surveyed 44 graduate students in the Master of Education program of a small liberal arts college. The survey identified some areas where teachers are successful in identifying characteristics; however, the majority of dyslexia characteristics were not identified. Research in this area should continue with a sample of teachers in preschool to third grade. Another area of research would be how the use of and advancements in technology are helping dyslexic students and how these resources may minimize dyslexic characteristics. It is important for any student in need of interventions to receive appropriate, research-based intervention as early as possible to provide academic success.

CHAPTER I

INTRODUCTION

Overview

The ability to read is necessary in our culture. It is extremely difficult for dyslexic individuals to learn to read at an appropriate level. Dyslexic individuals are not ‘thick’, ‘stupid’, ‘lazy’ or ‘careless’, labels that are incorrectly utilized. Kibby, Marks, Morgan, and Long (2004) found that “developmental reading disabilities (RD) are frequently characterized as an unexpected difficulty in learning to read despite at least average intelligence, adequate educational background, and intact sensory functioning” (p. 349). Up to 10% percent of individuals worldwide have dyslexia characteristics, and four to five percent have severe difficulties (Riddick, 2001). The International Dyslexia Association (IDA) estimates a bit higher percentage, with 10-16% of individuals being dyslexic. Identifying these individuals early and providing timely and evidence-based training is essential (Aladwani & Al Shaye, 2012).

Appropriate and timely interventions will enable dyslexic individuals to reach culturally acceptable standards of literacy. As this researcher can attest, working with dyslexic students can be challenging but also rewarding. Students with dyslexia are often very bright, and their inability to read on grade level is a frustration to them. With appropriate interventions, they can learn to read at or close to grade level.

Reading intervention is one piece. Research from the Institute of Education Sciences (IES) found that dyslexic students have difficulty with working memory and abstract and inferential reasoning (Connor, Alberto, Compton, & O’Connor, 2014). Teachers’ understanding of this piece of dyslexia is important so they can work with students on learning ways to enhance memory such as memory games and instruction on abstract concepts.

Intervention can begin at an early age. However, we do not want to be too quick to label or diagnose at an early age. Assessment is difficult prior to formal reading programs being in place, typically in first grade. Therefore, it is important for early education teachers to identify characteristics of dyslexia to enable early intervention.

If interventions are not provided to dyslexic individuals, their inability to read on an appropriate level can cause them to be shunned by society. The inability to read can have a tremendous impact on children's self image, and, as they get older, these people may have difficulty functioning in society. They may not be able to complete applications for jobs, find their way around a city or airport, or follow written instructions or directions.

The researcher developed an interest in dyslexia due to the fact that her son is dyslexic. At home his behavior was fine: he had some interest in books, and he was skilled at anything that had to do with building, taking apart, and putting mechanical pieces together. Also, he could draw the intricacies of an engine at age four. At the end of first grade, however, he was not reading on grade level. He was tested in the fall of second grade, and it was determined he had a learning disability in reading: dyslexia. This researcher's objective is to help others identify the characteristics of dyslexia in preschool and kindergarten children so interventions can be started at that time.

Statement of Problem

The purpose of this study was to determine whether teachers can identify the characteristics of dyslexia.

Operational Definitions

Dyslexia characteristics are displayed throughout a student's elementary or early education years. Dyslexia is difficult to identify prior to formal reading instruction. However,

there are characteristics that, when identified, can be successfully addressed if an intervention plan is put in place. Dyslexia also falls under a continuum; some students are affected to a greater extent than other students.

Students in a specific college's Graduate Programs in Education were enlisted to complete a survey. The researcher surveyed graduate students in education to determine the extent to which they were able to identify characteristics of dyslexia.

CHAPTER II

REVIEW OF THE LITERATURE

This review of the literature will discuss dyslexia. Section one will provide a working definition of this learning difference. Section two discusses characteristics of students with dyslexia. Section three explores the accuracy of assessment in identifying dyslexia in young children. Section four explores the need for teacher awareness of dyslexia in young children, and section five provides a summary.

Definition of Dyslexia

The definition of dyslexia has evolved over time. To identify children with dyslexia, it is necessary to understand the current definition and how the definition has evolved.

The first models of dyslexia were medical. The term dyslexia was first used by Berlin, a German ophthalmologist, in 1887. He could not find a specific visual impairment, but he determined that the condition was caused by disease of the brain (Lopes, 2012). In 1917 an eye surgeon, Hinshelwood, characterized dyslexia as “congenital word blindness” (Riddick, 2001, p. 229). According to Riddick (2001), Orton, a neurologist, identified specific (often inherited) impairments as the basis of dyslexia. From a social model perspective, these early beliefs operated on the basis that dyslexia was a deficit and there existed a need to correct or lessen this deficit.

Through the 1960's and 1970's, difficulties with reading and writing were attributed to lack of intellectual capacity, a lack of motivation, or a poor home environment (Riddick, 2001). Labels are used to explain certain difficulties that are not physically evident. Unfortunately, labels such as 'thick', 'stupid', 'lazy', or 'careless' were incorrectly utilized. The formal label of specific learning disability counters the negative view generated by these inaccurate labels.

Singleton (as cited in Riddick, 2001) suggests, “The deficit model of dyslexia is now steadily giving way to one in which dyslexia is increasingly recognized as a difference in cognition and learning” (p. 232). Tolerance in education is crucial to help society accept those with differences. A dyslexic student in Riddick’s (2001) study commented on the problems of having a difficulty that is not physically evident:

There are times in the library if I had a white stick and a guide dog I wouldn’t feel so bad. Sometimes I can’t find something and I can’t find it for looking for it, and everything is blending into one another... Then I go and ask the librarian and on several occasions they have been really rude and said it is on the shelf all you have to do is look for it. (p. 231)

The International Dyslexia Association (as cited in Aladwani & Al Shaye, 2012) refers to dyslexia as a learning disability because it can make it very difficult for a student to succeed academically in the typical instructional environment. Williams and Lynch (2010) state:

The International Dyslexia Association (IDA, 2002), established the following definition of dyslexia: Dyslexia is a specific learning disability that is neurological 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. (p. 66)

Williams and Lynch (2010) also identified that dyslexia was addressed under the category of learning disabilities in the Individuals with Disabilities Education Improvement Act

(IDEA 2004) and the Education of All Handicapped Children Act in 1975. IDEA defined a specific learning disability as:

...a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.... (Williams & Lynch, 2010, p. 68)

IDEA excludes from specific learning disability learning problems that are primarily a result of sensory, emotional or physical disability, mental retardation, or disability caused by a cultural or economic disadvantage (Williams & Lynch, 2010).

When IDEA was enacted in 2004, schools were required to deliver services for learning disability students who demonstrated a discrepancy between their IQ and achievement (Williams & Lynch, 2010). IDEA now allows use of Response to Intervention (RTI), a system of screening and progress monitoring to identify learning disabilities. IDEA also allows 15% of state funding to be used for early intervening services. This provides earlier assistance to struggling readers to prevent more serious problems.

Some feel RTI is flawed with culturally and linguistically diverse students. When students do not respond to interventions, some educators assume it is the fault of the child, not the quality and appropriateness of instruction (Klingner, Dunsmore, & Edwards, 2011). To appropriately perform RTI with a culturally and linguistically diverse population, the screening batteries must span the entire range of language and literacy skills needed for academic success. Progress monitoring must include analysis of oral reading, oral reading fluency, writing, and

content understanding. Also, parents can provide valuable insight in distinguishing between second language acquisition and learning disability. Valid assessment must take into consideration culture and language; including manner the child organizes and expresses his/her understanding (Klingner et al., 2011).

The environment cannot be overlooked when formulating the definition of dyslexia. Riddick (2001) provides two models of dyslexia, educational and social. The educational model is a deficiency in the environment such as inadequate teaching methods or inadequate exposure to literacy. These deficiencies compound learning difficulties. The aim of the educational model is to utilize intervention to enable children to reach culturally acceptable standards of literacy. The social model poses that impairments become disabilities due to negative attitudes of society.

Literacy is extremely important in the world. Education and literacy are closely related, and if a person is illiterate and uneducated, he or she may be looked upon negatively by society. Given that 10% or more of individuals have dyslexia-type difficulties and four to five percent have severe difficulties, an intervention model focused on improving children's performance is needed along with a social model challenging our belief and assumptions about literacy (Riddick, 2001). Some argue for the use of Individual Education Plans (IEPs), although IEPs are intended to address curriculum adaptation and therefore focus on remediating an individual child.

Remediation in this way perpetuates the notion of a deficient child.

In public schools in the US, the terms reading disability and learning disability are more likely to be used than dyslexia. This is because most states do not have programs specifically addressing dyslexia, and those that do may not provide additional funding for instruction (Williams & Lynch, 2010).

Identification of Dyslexic Children

Recent studies have demonstrated that intervention is effective and that prevention of reading failure is possible if preschool and school-age children at risk of dyslexia are identified early and offered timely and evidence-based training (Aladwani & Al Shaye, 2012). Aladwani and Al Shaye (2012) provide the following characteristics of dyslexic children from a US Department of Education 2004 report. According to the Department of Education, dyslexic students “a) had adequate instruction, b) are normal learners in other subject areas, c) have no identifiable adverse environmental influences, d) demonstrate no emotional disturbance, and e) possess normal vision and hearing” (p. 503).

Aladwani and Al Shaye (2012) identify the two underlying deficits of dyslexics as word recognition and the lack of phonological awareness. Similarly, Kibby et al. (2004) found “developmental reading disabilities (RD) are frequently characterized as an unexpected difficulty in learning to read despite at least average intelligence, adequate educational background, and intact sensory functioning” (p. 349).

Thompson et al. (2015) also identify reading fluency as a predictor of dyslexia. Reading fluency consists of letter knowledge, phoneme awareness, and rapid automatized naming (RAN). Williams and Lynch (2010) note that the International Dyslexia Association describes the characteristics of dyslexia in young children as “difficulty reading single words, difficulty learning to associate letters and sounds, confusion of small words such as ‘at’ and ‘to’, letter reversals, and word reversals” (pps. 66-67). The difficulty with this is letter and word reversals are developmental in nature and are found typically in readers up through age seven. Therefore, it is difficult to identify dyslexia. Other signs of dyslexia provided by Williams and Lynch include language difficulties, articulation or pronunciation problems, and word finding problems.

Dyslexics have difficulty on an auditory level with phonological awareness. They have problems with rhyming and hearing individual sounds (phonemes), syllables, and words in sentences. There is difficulty with separating and blending phonemes. Williams and Lynch (2010) found:

Children with dyslexia often are late in developing language and may have difficulty formulating speech sounds after the age when these are typically acquired. They may use terms such as things or stuff because they cannot think of the specific word they want to use at the moment. (p. 67)

Dyslexia causes difficulty with reading, writing, spelling, and oral expression. The degree of difficulty varies and is influenced by the intelligence and educational opportunities of the student (Williams & Lynch, 2010). The following examples from Williams and Lynch are difficult for students with dyslexia:

Reading:

- Reversal of letters and numbers: b/d, p/q, p/9
- Sounding out words: bat - |b| |ă| |t|
- Blending sounds into words: |b| |ā| |k| = bake
- Decoding

Writing and Spelling:

- Confusion with vowels; *I ned my cot becuase its cld.*
- Hearing syllables within words and phonemes within syllables; *I was sprised at frst that I lerned all the prsdnts.*
- Visualizing the correct spelling of words; *I hav enough mony to buy a gam.*
- Spelling rules and sentence structure; *You finnish the storie befor peple wil go relly.*

- Confusion with homophones; *allowed/aloud; there/their/they're; grate/great*

Speaking:

- Delay in learning to talk
- Rhyming
- Sequencing: saying the alphabet, the days of the week or months of the year, or counting
- Remembering words
- Pronouncing words: '*aminal*' for '*animal*', '*busgetti*' for '*spaghetti*'

Research by Thompson et al. (2015) found family risk is predictive of dyslexia. Further, the research found other predictors of reading challenge include letter knowledge, phoneme awareness, rapid automatized naming (RAN), speech perception, and verbal short term memory. Thompson et al. performed a study that showed that at age 3½ years; only family risk and letter knowledge were significant predictors of dyslexia. At age 4½ years, family risk, phoneme awareness, letter knowledge, RAN, and executive function skills were the best predictors of dyslexia. At age 5½ the best predictors of dyslexia were family risk, phoneme awareness, and letter knowledge. At age six to seven years, added to phoneme awareness and letter knowledge is motor skills as a predictor. Family risk was not as significant a predictor at six to seven years of age.

In a study of children of three groups: 1. children with family risk of dyslexia, 2. children with poor language in preschool, and 3. children with both of these risk factors, family risk was predictive of dyslexia at every age. Language skill was not a significant predictor until five years of age (Thompson et al., 2015). Thompson et al. (2015) identified the factors that can be utilized to identify children at risk of reading difficulties and suggested that these factors “include a family history of dyslexia, delayed language development and difficulties in learning

letters and in reflecting on the sound structure of spoken words” (p. 984). Research has also shown that children at risk for dyslexia may experience difficulty coordinating and integrating information in order to effectively process material (Kibby et al., 2004).

Research from the Institute of Education Sciences (IES) states that the “cognitive processes, including working memory and abstract and inferential reasoning, have been found to be critical for students’ reading success” (Connor et al., 2014, p. 15). According to Connor et al. (2014), reading success can be improved by using toys or other visual imagery to support all students’ reading and listening comprehension skills. Kibby et al. (2004) found that reading disabled children have difficulty storing verbal material, whether presented orally or visually. These students respond better to visual cues such as diagrams, pictures, and demonstrations.

Pasnak et al. (as cited in Connor et al., 2014) identifies reading ability as impacted by kindergartners’ understanding of abstract principles such as the “oddity principle, seriation, and conservation impact reading ability” (p. 17). An example of this with phonological awareness is the ability to change one phoneme to change a word such as “pin” to “pan” and the knowledge that reversing order of phonemes also changes the word such as “tip” to “pit”. An example in younger children of this deficit is a child’s inability to identify an object that does not belong in a set of objects that are different colors when the differentiating characteristic to be identified is shape or size (Connor et al., 2014).

Many characteristics can aid in identifying students at risk of dyslexia. However, we must not be too quick in labeling or diagnosing. Research by Gibbs and Elliott (2015) found the label of dyslexia may not be helpful for a child’s education. It is simply a label and does not provide insight regarding the strengths and weaknesses of the individual. Their research concluded the term dyslexia was not helpful in the development of interventions; in teaching the

child. However, the early identification of difficulties can assist students in learning to their strengths and providing interventions in kindergarten.

Assessment

Formal assessment is not accurate for children prior to formal literacy education and is the reason the characteristics identified above are so important (Connor et al., 2014). Connor et al. (2014) commented that the “Institute of Education Sciences funded researchers are further developing, evaluating, and refining two screening measures; Individual Growth and Development Indicators (IGDI) and Get Ready to Read!” (p. 5). Connor et al. note that both of these measurement systems were designed to identify preschool children at risk for poor reading. Neither achieved the accuracy recommended by Jenkins (as cited in Connor et al., 2014). As children move into first grade with formal reading instruction, research indicates classification accuracy can be achieved; however, more work needs to be done across diverse samples of children (Connor et al., 2014).

The 2014 Institute of Education Sciences report suggests that additional research is needed to develop assessments to identify kindergarten and preschool students at risk for learning disabilities (Connor et al., 2014). Therefore, it is very important for teacher awareness of characteristics of dyslexic children at this age to provide intervention at this critical age.

The Importance of Teacher Awareness

Since assessments do not accurately identify preschool and kindergarten children at risk for reading disabilities, it is important for teachers of these students to look for and identify students at risk. Kame’enui (as cited in Petersen, Allen, & Spencer, 2016) states “the importance of early identification as a ‘tyranny of time’” (p. 200). Dyslexic children need specific intervention instruction early on. Aladwani and Al Shaye (2012) note that “Recent studies have

demonstrated that intervention is effective and prevention of reading failure is possible if preschool and school children at risk of dyslexia are identified early and offered timely and evidence based training” (p. 501). A great number of students in the United States have some symptoms of dyslexia compared with the population that is obtaining assistance in school for the learning disability (Aladwani & Al Shaye, 2012). Too often, dyslexic students are not identified.

Aladwani and Al Shaye (2012) identify the benefits of teacher awareness as the following:

- Students receive appropriate interventions,
- Teachers will reflect on their knowledge and strive for additional knowledge to provide appropriate intervention, and
- Administrators and educational policy makers will have valid data to provide appropriate support, strength and weaknesses of interventions, and develop better and appropriate interventions.

Summary

Society is challenged to achieve high literacy standards and high tolerance (Riddick, 2001). Landerl et al. (as cited in Riddick, 2001) state:

Reform of the language should be considered and that if we do not go down this road we have to acknowledge that we are seriously disadvantaging dyslexic children by not doing so. If we make a crude analogy with physical and sensory impairments this can perhaps be seen as an access issue. (p. 228)

Dyslexic children do not have access to a language they can utilize efficiently. Teacher awareness and helping dyslexic children at an early age will provide an improvement of literacy.

CHAPTER III

METHODS

Design

This was a descriptive study using a questionnaire with a convenience sample. The questionnaire explored teachers' ability to identify characteristics of dyslexia.

Participants

There were 44 students in Graduate Programs in Education at the study college who completed the questionnaire. Thirty-six of the graduate students were currently teaching. Sixteen of the graduate students were teaching K–5, and 20 of the graduate students were teaching middle school, secondary school, or adult students. Eight of the graduate students were not currently teaching. Six of those not teaching were mentor teachers and two were aids in the classroom. Four of the graduate students were teaching special education students.

Instrument

The researcher utilized dyslexia characteristics derived through the literature review to develop the questionnaire. The questionnaire had two parts. A copy of the questionnaire is attached as Appendix A. The questionnaire had a “yes” or “no” question asking “Are dyslexia characteristics displayed throughout a student’s elementary or early education years” as respondents were teaching at various levels of education. The survey included a few unstructured short response items to identify whether the respondent was currently teaching, how long teacher has taught, the grade currently teaching, and other grades taught.

The two parts of questionnaire were preceded with the statement “...student who appears to be in a stable home environment, has normal vision and hearing, no emotional problems, and English is his/her only language.”

The first part of the survey provided five examples of student behavior and requested response “yes” or “no” as response to whether the indicated behavior is an example of dyslexic behavior. The second part provided five examples of behaviors and participants identified using a five-point Likert Scale ranging from one at the lowest to five at the highest the degree of dyslexia exhibited.

The questionnaire was developed by the researcher and was not tested for validity or reliability.

Procedure

Students in four classes of the study school’s Graduate Programs in Education were asked to complete the survey. The director the program assisted the researcher in choosing which graduate classes to complete survey. In two of the classes the instructor provided the survey to the students and collected upon completion. In two of the classes the researcher asked students at beginning of class to complete and then the researcher collected upon completion.

The questionnaire took five to 15 minutes for graduate students to complete. Some students showed apprehension toward completion due to their lack of knowledge of dyslexia. When the researcher was questioned by graduate students about whether they should answer unknown questions, the researcher said “yes” and requested that students complete as best as they could. The two groups that asked whether they should participate were those teaching secondary students and those who had little knowledge of dyslexia. A few students told the researcher they had already completed the survey in another class, and the researcher told them not to complete it a second time.

CHAPTER IV

RESULTS

The purpose of this study was to determine whether teachers are able to identify the characteristics of dyslexia. The results of a survey provided to students in the study school's Graduate School of Education were analyzed.

The survey results indicated that 95% of the respondents confirmed that dyslexia characteristics are displayed throughout a student's elementary or early education years.

The first five questions the respondent was requested to respond "yes" or "no" if the example displayed a characteristic of dyslexia for an elementary or early education student.

The first behavior posed was "Student is unable to make the sound of a letter presented the day after being taught in class." Overall, 48% responded "no", this is not a characteristic of dyslexia, while 52% indicated "yes".

The second behavior posed was "When presented with 5 objects of different colors, student is not able to identify an object that does not belong by its shape or size." Overall 68% responded "no", this is not a characteristic of dyslexia, while 32% indicated "yes". The respondents not currently teaching were more likely to respond "yes" (63%) than those currently teaching (24%).

The third behavior posed was "Student has difficulty remembering word he/she wants to say." Overall 41% responded "no", this is not a characteristic of dyslexia, while 59% indicated "yes".

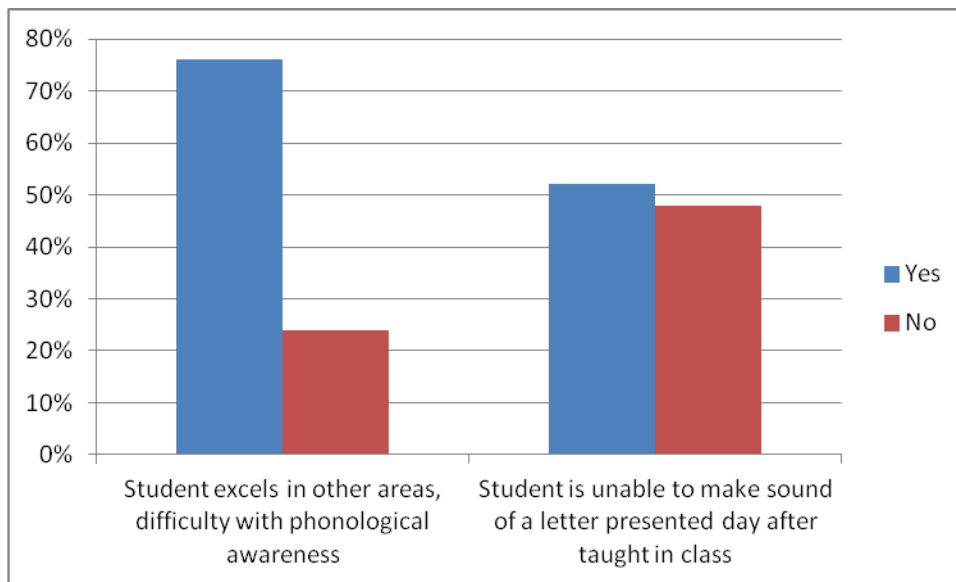
The fourth behavior posed was "Student is curious and loves to perform science experiments, however, when it comes to phonetic lessons student appears to pay attention, but

cannot consistently produce sound of a letter when letter from lesson provided visually.” Overall 24% responded “no”, this is not a characteristic of dyslexia, while 76% indicated “yes”.

The fifth behavior posed was “The use of pictures to assist student with directions does not improve the student’s ability to follow directions.” Overall 81% responded the use of pictures will improve the student’s ability to follow directions, while 19% indicated they would not.

Figure 1

Response to Characteristics of Dyslexia



The following five examples of dyslexia characteristics utilized a five-point Likert Scale ranging from 1 at the lowest and 5 at the highest the degree of dyslexia exhibited. In the following review of results, the rating scales 1 and 2 were added together and 4 and 5 added together to discuss results.

Twenty-two percent of respondents did not feel that a student’s inability to blend the phonemes |b| |ă| |t| into the word bat displays a high degree of dyslexia, while 36% did feel

displays a high degree of dyslexia. A greater percentage of the respondents not currently teaching felt displayed a high degree of dyslexia (62%) than those currently teaching (30%).

Thirty-six percent of respondents did not feel that a student's inability to provide a word that rhymes with bat displays a high degree of dyslexia, while 40% did feel displays a high degree of dyslexia. A greater percentage of the respondents not currently teaching felt displayed a high degree of dyslexia (50%) than those currently teaching (37%).

Fifty-six percent of respondents did not feel that a student's inability to say the days of the week in order displays a high degree of dyslexia, while 21% did feel displays a high degree of dyslexia. A greater percentage of the respondents not currently teaching felt displayed a high degree of dyslexia (63%) than those currently teaching (12%).

Eleven percent of respondents did not feel that a student's reversal of 'b' and 'd' displays a high degree of dyslexia, while 75% did feel displays a high degree of dyslexia. A greater percentage of the respondents not currently teaching felt displayed a high degree of dyslexia (100%) than those currently teaching (69%).

Thirty-seven percent of respondents did not feel that a student's difficulty pronouncing some words correctly, such as 'aminal' for 'animal', or 'busgetti' for 'spaghetti', displays a high degree of dyslexia, while 34% did feel displays a high degree of dyslexia. A great percentage of the respondents not currently teaching felt displayed a high degree of dyslexia (51%) than those currently teaching (28%).

Table 1

Response to the Degree of Dyslexia Displayed by Behavior

Characteristic	Exhibits high degree of dyslexia (4-5 on Likert Scale)	Neutral response (3 on Likert Scale)	Exhibits low degree of dyslexia (1-2 on Likert Scale)
After being taught the phonemes b ă t , student cannot blend the sounds into word bat.	36%	42%	22%
Student is unable to say the days of the week in order.	21%	23%	56%
Student reverses "b" and "d".	75%	14%	11%

CHAPTER V

DISCUSSION

The individuals involved in the study had difficulty identifying the array of characteristics of dyslexia. Three fourths of the graduate students identified letter reversal (i.e. reversing “b” and “d”) as a dyslexic characteristic. In addition, most graduate students recognized the use of pictures will improve the understanding of a dyslexic student. Three quarters of the graduate students identified a dyslexic student will excel in other areas, but when it comes to reading, they struggle.

The graduate students were not as successful in identifying weakness with the following as potential characteristics of dyslexia: phonemic awareness, phonological awareness, abstract reasoning, working memory, and language development.

The graduate students not currently teaching, who were mentor teachers or aids in classroom, were more successful in identifying characteristics of dyslexia in the following areas: abstract reasoning, phonological awareness, and language development.

Theoretical Implications

The results of this researcher’s study indicate that teachers are not identifying students who are at risk for the learning disability of dyslexia. As nearly half the respondents were middle or secondary teachers, it is not surprising that early reading skills were not identified. Dyslexia characteristics evident in middle and secondary students need highlighting. Without teachers identifying these characteristics and putting interventions in place at any early age, the students may be at risk for failure or may not develop to the extent possible. As identified by Aladwani and Al Shaye (2012), teacher awareness provides appropriate interventions for students, teachers become more knowledgeable, and administrators and policy makers have valid data to provide

better and appropriate interventions. These benefits will not be recognized if the students are not identified and interventions put in place. Not recognizing the characteristics will perpetuate the lack of understanding of dyslexia.

Threats to Validity

There are numerous threats to validity. The sample utilized was a small convenience sample from one college graduate program in education. Additional responses from individuals teaching in elementary schools in preschool – third grade may have provided different results. Eighteen percent of the survey responders were from graduate students not currently teaching. Of the graduate students who are teaching, 22% have experience in early or elementary education. Most of the responders did confirm dyslexia characteristics are displayed throughout early or elementary education year. However, the middle and secondary teachers do not have the experience with some of the characteristics displayed in the survey to extent of those that are teaching on the elementary education level.

Connections to Previous Studies

This research did not support most of the findings from prior research. The majority of the individuals involved in this study did not identify the following as dyslexic characteristics: poor phonological awareness including phonemic awareness, blending, rhyming; language difficulties including articulation or pronunciation problems, word retrieval; difficulty with abstract and inferential reasoning, and working memory. The graduate students' inability to identify these characteristics of dyslexia could impact their effectiveness as teachers. Thompson et al. (2015) identified phoneme awareness as an indicator of dyslexia. Aladwani and Al Shaye (2012) identified phonological awareness as an underlying deficit of dyslexia.

As noted by Williams and Lynch (2010), the International Dyslexia Association describes the characteristics of dyslexia in young children as including difficulty reading single words, difficulty learning to associate letters and sounds, confusion of small words such as “at” and “to”, letter reversals, and word reversals. As letter reversals are developmental in nature and are typical through age seven, the reversals of “b” and “d” is not a clear way to identify dyslexia. Williams and Lynch also identify language difficulties, articulation or pronunciation problems, and word finding problems as characteristics of dyslexia. Again, the majority of the respondents to this researcher’s study did not identify these as dyslexic characteristics.

Connor et al. (2014) identified working memory and abstract and inferential reasoning as critical for students’ reading success. Reading success can be improved by using toys or other visual imagery to support all students’ reading and listening comprehension skills, according to Connor et al. Kibby et al. (2004) found that reading disabled children have difficulty storing verbal material, whether presented orally or visually. These students respond better to visual cues such as diagrams, pictures, and demonstrations. The respondents in this researcher’s study also confirmed use of visual cues, such as use of pictures to help follow directions will help a dyslexic child.

Pasnak et al. (as cited in Connor et al., 2014) identifies reading ability as impacted by kindergartners’ understanding of abstract principle. An example in younger children of this deficit is a child’s inability to identify an object that does not belong in a set of objects that are different colors when the differentiating characteristic to be identified is shape or size. The majority of respondents in this researcher’s study did not identify this as a characteristic of dyslexia.

Aladwani and Al Shaye (2012) investigated primary school teachers' knowledge and awareness of early signs of dyslexia and found that teachers' preparation and awareness level plays a significant role in identifying the early signs of dyslexia. Some of the areas identified by Aladwani and Al Shaye with respect to why teachers are not prepared and aware of early signs of dyslexia are that teachers have a great deal of requirements above and beyond teaching, teachers experience a constant redevelopment of lessons plans, and teachers have difficulty addressing the needs of all students. There is not enough time for workshops and conferences to gain knowledge of topics such as dyslexia. Also, size of classrooms has an impact on the ability for a teacher to identify students with specific needs. Items identified by Aladwani and Al Shaye to improve teacher knowledge and awareness are: (a) mandatory courses or workshops on learning disabilities for new teachers; (b) a national awareness project for current teachers on dyslexia and providing them training in technical skills and new methods; (c) increased awareness in the general public; (d) a mandatory program for all student teachers on teaching students with learning disabilities; (e) minimizing teachers' schedules and reducing administrative duties; (f) developing innovative teaching activities; and (g) consulting with specialists in the school climate to assist those with learning disabilities.

Implications for Future Research

Future research should include larger samples of teachers in the preschool – third grade level. It would be interesting to review the results by grade level, looking at the years of experience of teacher, number of years teaching, and number of courses/workshops teacher has attended for learning disabilities. Evaluation of each of these items would be interesting to determine what provides assistance in helping a teacher see the characteristics of dyslexia. Another area of research would be how the use and advancements in technology are helping

dyslexic students and also how these resources may minimize and potentially hide dyslexic characteristics.

Conclusion

Teachers have a great deal on their plate. The fact that the percentage of children who do not obtain the interventions needed for dyslexia is relatively high indicates that further teacher education is needed to identify the characteristics. The results of this researcher's study supports the need for a program developing greater awareness of teachers on the characteristics of dyslexia as well as an increase in awareness of the US population. Also, developing valid and reliable screening of students in preschool and Kindergarten that can be provided to students readily and easily by qualified individuals would be helpful.

The dyslexic characteristic identified in this researcher's study of letter reversal is an important behavior identified; however, as students through age seven often have this problem, this characteristic by itself is not a good indication of dyslexia. A very important characteristic of dyslexia was identified by responders that the dyslexic student is a normal learner in other subject areas but has difficulty learning to read. In preschool and Kindergarten this could be evident through an obvious high ability in one or some areas and poor phonemic awareness. Abstract and inferential reasoning and working memory "tests" can also be conducted with young students. We need to be careful to not label incorrectly or too early. It is important for any student in need of interventions to receive appropriate, research-based interventions as early as possible to provide academic success.

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Appendix A

I thank you for your assistance in my data collection for thesis to complete my Goucher MAT.

Please provide the following general information about yourself:

Do you currently teach? YES NO

What grade are you teaching now? _____

What other grades have you taught? _____

How long have you been teaching? _____

Are dyslexia characteristics displayed throughout a student's elementary or early education years? YES NO

In each of the following is an example of student behavior. Circle YES or NO if the example represents a characteristic of dyslexia for an elementary or early education student.

Each of the following examples pertains to a student who appears to be in a stable home environment, has normal vision and hearing, no emotional problems, and English is his/her only language.

1. Student is unable to make the sound of a letter presented the day after being taught in class. YES NO
2. When presented with 5 objects of different colors, student is not able to identify an object that does not belong by its shape or size. YES NO
3. Student has difficulty remembering word he/she wants to say. YES NO
4. Student is curious and loves to perform science experiments, however, when it comes to phonetic lessons student appears to pay attention, but cannot consistently produce sound of a letter when letter from lesson provided visually. YES NO
5. The use of pictures to assist student with directions does not improve the student's ability to follow directions. YES NO

One a scale of 1(lowest) to 5 (highest) identify the degree of dyslexia associated with each item (circle your response):

1. After being taught the phonemes |b| |a| |t|, student cannot blend the sounds into word bat.

1 2 3 4 5

2. Student is not able to provide a word that rhymes with bat.

1 2 3 4 5

3. Student is unable to say the days of the week in order.

1 2 3 4 5

4. Student reverses “b” and “d”.

1 2 3 4 5

5. Student has difficulty pronouncing some words correctly. Student will say ‘aminal’ for ‘animal’, or ‘busgetti’ for ‘spaghetti’.

1 2 3 4 5