

THE RELATIONSHIP OF THE WELL-BEING OF ADULTS WITH AND WITHOUT
DYSLEXIA: A CAUSAL-COMPARATIVE STUDY

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

2018

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ABSTRACT

This study examined the effects of dyslexia on well-being as an adult. The researcher compared adults given a diagnosis of dyslexia with adults not given a diagnosis of dyslexia for well-being using a quantitative causal-comparative method. Participants for this study were a convenience sample, consisting of 219 adults with and without a self-identified diagnosis of dyslexia per the Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV). The researcher used the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) and measured the well-being of adults who are diagnosed as dyslexic and adults that are not dyslexic. The researcher utilized a 14-item questionnaire for positive attributes of mental health, using a five-point Likert-scale with combined possible scores ranging from 14 to 60 with the well-being population mean score as 50.7. Data analysis consisted of an independent samples t test. There was a significant difference in the average scores between adults with dyslexia and adults without dyslexia. The findings suggest that adults without dyslexia have a greater sense of well-being than adults with dyslexia.

Keywords: dyslexia, well-being, adult, learning disability, reading disability

Dedication

I dedicate this effort to my husband, Craig. You have been there since the start, heard my gripes, made me laugh and given sound advice. To my children Lindsay and Dane, I hope I have served as a source of inspiration for you to keep going, no matter the lunacy around you. Work hard and pray; eventually...even after a long time...good things do come. I also dedicate this research to adults and children with dyslexia. It is time for more dyslexia awareness and action. It is time for dyslexics to stop suffering in silence.

Acknowledgments

I acknowledge Dr. Meredith Park as the lifeline in reinstating organization and direction in a fraught system. You were instrumental in recapturing my momentum and, in my opinion, a genuine reflection of Christianity. You helped to strengthen my faith by your example. I further acknowledge and am immensely grateful to my committee members Dr. Dennis and Dr. Inscore for excellent and timely feedback, further contributing to my momentum. Dōmo arigatōgozaimashita to Sarah Stadel for proofing my paper to a high-quality standard; I hope the repayment was satisfactory. To the Mom Squad, thank you for listening to my tales of woe; I think the good company and the tastings at the away horse shows helped tremendously. I acknowledge all who participated in my survey questionnaire; I look at survey solicitations much differently now.

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List of Abbreviations

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)

Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV)

CHAPTER ONE: INTRODUCTION

Background

Dyslexia affects one in five people, 20% of the population, without regard to race, ethnicity, or socioeconomic status (Yale Center for Dyslexia and Creativity, 2016); yet it is the most overlooked, unaddressed, and hidden disability with a surprising lack of awareness. Dyslexia is the most prevalent language-based learning disability; 80% of students with diagnosed learning disabilities are dyslexic (Dyslexia Center of Utah, 2016). The dropout rate for students diagnosed with dyslexia is as high as 35%, twice the national average (Lamki, 2012). The Ohio Department of Education (2016) indicates that greater than 65% of the prison population is illiterate; many of these inmates are dyslexic with a confirmed 85% of juvenile offenders having reading disabilities (Lamki, 2012). Ohio's fourth grade proficiency scores now predict the number of new prison beds within the next 10 years (Ohio Department of Education, 2016). Yet interventions and awareness for these students are almost non-existent despite the fact that 90% of children diagnosed with dyslexia can be educated in the regular classroom with strategies that benefit all readers (Dyslexia International, 2018). A study conducted of 326 schools revealed that only 9% of teachers had prior training in dyslexia, compared with 21% of teachers with prior training in autism, despite the disproportionate incidence of dyslexia as 1 in 5, and autism in students as 1 in 54 (Belgaumkar, 2014).

In the United States, only 14 states have legislation associated with dyslexia (Dyslexia.com, 2016). By contrast, even though there are substantially fewer affected individuals with an approximate identification of one in 68 individuals, 36 states have established a task force or commission for autism (National Conference of State Legislatures, 2016). Many educators are unaware of the identification, characteristics, or interventions for

students diagnosed with dyslexia because dyslexia curricula in post-secondary teaching colleges and universities is not yet mainstream in the United States. According to the Ohio Department of Education (2016) the absence of teacher training in dyslexia is a serious deficit:

- Less than 14% of teachers are confident that they can recognize a child with characteristics of dyslexia,
- Less than 9% of teachers feel confident that they could teach students diagnosed with dyslexia, and
- Four out of 5 teachers asked for extra training to teach students diagnosed with dyslexia.

As a result, students with dyslexia are mischaracterized and perceived as lazy, dumb, immature, a behavior problem, careless, or not trying hard enough (Davis, 1992). Consequently, educators are not providing differentiated instruction and specially designed, targeted instruction, interventions, and accommodations to meet the needs of students with dyslexia. It is even more troubling since dyslexia is not a recent phenomenon.

The earliest recorded case of word-blindness is thought to be in 1676, when German physician, Dr. Johann Schmidt, published his observations about a 65 year-old stroke victim who lost his ability to read (Shaywitz, 2012). The term word-blindness was changed to dyslexia by German ophthalmologist Rudolf Berlin who believed that the Greek-derived term of dyslexia or “difficulty with words” was more appropriate (Dyslexia Awareness, 2016). Children in England and Scotland from educated and concerned families were recounted by physicians to be motivated and bright, yet they could not read, despite dedicated teachers. (Shaywitz, 2012). In 1896, Dr. W. Pringle Morgan of Seaford, England described an otherwise bright and intelligent 14 year-old boy in the *British Medical Journal* as “word blind,” where written or

printed words are meaningless (Shaywitz, 2012). In 1925, Dr. Samuel T. Orton, an American neurologist whose teaching strategies are still in place today, placed a great emphasis on the dominance of one side of the brain (Dyslexia Scotwest, 2016). In the 1950's, a change occurred to the perception of dyslexia and the condition was now considered educational, not medical (Dyslexia Awareness, 2016).

More recently, in 1993, a controversial move occurred. The American Psychiatric Association (APA) Diagnostic and Statistical Manual of Mental Disorders (DSM-5) published the controversial removal of dyslexia, dyscalculia, and disorder of written expression. Instead, the more generic and broader term, Specific Learning Disorder, was put in its place (Landmark School, 2016).

Studies have shown dyslexia to run in families, but it is not entirely genetic (Shaywitz, 2012). Three main deficit theories comprise the causes of the characteristics of dyslexia:

- The magnocellular deficit theory surmises there is a problem due to auditory or visual deficits.
- The cerebellar deficit theory indicates that there is a problem in the central processing linked to learning and automaticity.
- The phonological deficit theory connects difficulty in linking sounds with symbols in spelling and reading (New Zealand Ministry of Education, 2010).

The most widely accepted theory with the most research and development is the phonological deficit theory (New Zealand Ministry of Education, 2010).

One overarching effect of dyslexia on individuals is its emotional toll related to self-esteem and social difficulties. According to the New Zealand Ministry of Education (2010), if interventions are not in place to help a student with dyslexia by the age of 10, it is “extremely

difficult to help these children develop a positive self-image” (p. 6). A follow-up study conducted by Anne Mari Undheim (2009) investigated the psychosocial facts of young Norwegian adults with a history of dyslexia in childhood whose results indicated that the dyslexic group showed strong tendencies toward depression, supporting earlier findings in this area. Nalavany, Carawan, and Rennick (2010) examined the psychosocial experiences of dyslexics, and nine distinct cluster themes on a concept map emerged: Pain, Hurt, and Embarrassment from Past to Present; On Being Overwhelmed; Emotional Downside; Fear of Disclosure; A Good Support System Makes the Difference; Why Can't They See it?; and Moving Forward, clearly displaying the social-emotional effects of being dyslexic. Daderman, Nilvang, and Levander (2014) wanted to compare levels of self-esteem in women with dyslexia and women without dyslexia. They determined that women with dyslexia had weaker self-esteem in all dimensions, talents and gifts, psychological health, physical characteristics, except relationships with family and parents.

Early intervention is critical for students with dyslexia, with best practice set at identification in the first year of school, at age five or six. A study conducted at Middlesex University in London showed that age of acquisition indicates that reader status with non-dyslexic students was faster than reader status with dyslexic students, demonstrating the need for early identification (Raman, 2011). Early clues to dyslexia include delay in talking, difficulties in pronunciation, and insensitivity to rhyme (Shaywitz, 2012). The Yale Center for Dyslexia & Creativity (2016) identified the following reading deficit signs of dyslexia:

- Kindergarten/First Grade – reading errors show no connection to the sounds of the letters; no comprehension that words segment; avoids reading; cannot sound out

simple consonant-vowel-consonant words, like cat; no association of letter sounds and letters.

- Second Grade and Up – slow to acquire reading skills; reading is awkward and slow; trouble reading unfamiliar words with wild guesses; avoids reading orally; no strategy for new words; difficulty speaking, often using “stuff” or “thing” in place of vocabulary.

Additional non-reading indicators for students with dyslexia are trouble remembering dates, telephone numbers, and names; extreme difficulty learning a foreign language; messy handwriting; low self-esteem; and life-long spelling difficulties (Yale Center for Dyslexia & Creativity, 2016). Other signs include constant confusion of right versus left, difficulty learning to tie shoes, trouble memorizing multiplication tables and directionality, dislike for school that can be intense, and extremely messy bedroom and desk (Barton Reading, 2016).

The issue of well-being has come to the forefront as an indicator of the mental health of certain sects. The instrument, the Warwick Edinburgh Mental Well-Being Scale (WEMWBS), was developed due to increasing international interest for mental well-being and its contribution to all aspects of human life, in particular a demand for instruments to identify mental well-being at a population level (Tennant, Hiller, Fishwick, Platt, Joseph, Weich, Stewart-Brown, 2007). The WEMWBS was developed in 2007 and comprises 14 positively worded items relating only to positive attributes of mental health (Stewart-Brown, Platt, Tennant, Maheswaran, Parkinson, Weick & Clarke, 2011). The WEMWBS theoretically follows Skinner’s behaviorism theory in which positive reinforcement increases the likelihood that the behavior will repeat in some respects but does not follow the negative reinforcement concept (Braun, 2016). So, by

concentrating on the positive elements of an adult with dyslexia, this can elicit the state of well-being.

Problem Statement

While extensive research on dyslexia has been conducted, the bulk of the research is targeted towards children and adolescents with dyslexia. Research has identified the characteristics of children and adults with dyslexia (The Yale Center for Dyslexia & Creativity, 2016). Research has also identified appropriate and effective interventions for children and adolescents with dyslexia (Youman and Mather, 2012). Studies have shown dyslexia to run in families, but it is not entirely genetic (Shaywitz, 2012).

Students are not receiving critical and appropriate interventions specific to dyslexia, and students are experiencing repeated and early failures in the classroom. Nalavany, Caraway and Rennick (2010) proved that despite myths to the contrary, children with dyslexia become adults who continue to be diagnosed with dyslexia. Research has also shown a connection between dyslexia and poor self-esteem in children and adolescents (Daderman, Nilvang, and Levander, 2014). Literature has addressed youth and adolescents with dyslexia but not adults (Nalavany and Rennick, 2011). Much of the research on dyslexia has focused on pre-school and school-aged children (Habib, Berget, Sandnes, Sanderson, Kahn, Fagernes and Olcay, 2012). There exists a scarcity of research that examines the complex factor of dyslexia in late adulthood, despite the growing body of research that indicates dyslexia persists into adulthood (Carawan, Nalavany, & Jenkins, 2016). Most of the research focus is on elementary students with dyslexia. Any studies regarding adults with dyslexia refer to characteristics and coping strategies employed by adults with dyslexia, such as working memory deficits. There is a call for more research on the emotional effects of adults with dyslexia so that awareness and appropriate

interventions for adults with dyslexia and LD can be developed. The problem is that there is little awareness relative to the effects of dyslexia to the adult.

Purpose Statement

The purpose of this study was to determine if a difference exists in the well-being (dependent variable) of adults who are diagnosed with dyslexia (independent variable) and the well-being of adults who not are diagnosed with dyslexia (independent variable). The population consisted of adults with a self-proclaimed identification of dyslexia. Currently, the well-being of children and adolescents with dyslexia is known. However, there is little information relative to the well-being of adults who are diagnosed with dyslexia. By completing this study, it will address the gap that exists in the literature by using a valid instrument to gauge the well-being of adults who are diagnosed with dyslexia.

Significance of the Study

Dyslexia is the most prevalent learning disability, going undetected, without recognition by society, teachers, and teacher curriculum by colleges and universities (Shaywitz, 2012) Bright, intelligent students are suffering silently, mischaracterized by educators, losing self-esteem, believing they are lazy, dumb, immature, a behavior problem, careless, or not trying hard enough (Davis, 1992). Students with dyslexia are among the hardest working students in the classroom due to the difficulties and challenges faced. A support system is vital to the success of the student. According to Shaywitz (2012), “A child with dyslexia is in need of a champion” (p. 95). A prevalent academic intervention for students with dyslexia is addressing the phonological weakness that is consistent among students with dyslexia with systematic, intensive, consistent, and targeted instruction (Shaywitz, 2012). Educators and administrators are not providing appropriate interventions, and students with dyslexia are falling behind. Children with dyslexia

are more likely to use self-defensive strategies, with repeated failure causing more anxious symptoms and avoidant behaviors (Alesi, Rappo, & Pepi, 2012).

In other words, despite myths to the contrary, children with dyslexia do not outgrow dyslexia but instead become adults who are diagnosed with dyslexia (Nalavany, Caraway, & Rennick, 2010). Current research on dyslexia has focused on pre-school and school-age children (Habib, Berget, Sandnes, Sanderson, Kahn, Fagernes & Olcay, 2012). This study will add to the body of knowledge regarding the effects of dyslexia on adults. This study will add to the knowledge base regarding dyslexia by giving more information about the relevance of the impact of dyslexia on adults. Dyslexia awareness is beginning to gain momentum. The Committee on Science, Space, & Technology authored the Research Excellence and Advancements for Dyslexia Act – the READ Act (Smith, Westerman, & Brownley, 2017). The READ Act gained unanimous Congressional Support and was signed into law in February of 2016. The new law points the National Science Foundation (NSF) to put dyslexia research as a priority that supports action.

Research Question

RQ1: Is there a difference between the *well-being* of adults who are diagnosed with dyslexia and adults who are not diagnosed with dyslexia as measured by the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS).

Null Hypothesis

The null hypothesis for this study is:

H₀1: There is no significant difference between the *well-being* of adults who are diagnosed with dyslexia and adults who are not diagnosed with dyslexia as shown by Warwick-Edinburgh Mental Well-Being Scale (WEMWBS).

Definitions

1. *Dyslexia* – Dyslexia is a specific learning disability that is neurobiological in origin, characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. (International Dyslexia Association, 2016).
2. *Well-being* – The subjective experience of happiness, life satisfaction, positive psychological functioning, good relationships, and self-realization (Stewart-Brown and Janmohamed, 2008).

Summary

Dyslexia is the most prevalent, yet overlooked, learning disability. Educators are unaware of the characteristics and assessments to identify dyslexia in learners. As a result, students are not receiving critical early intervention specific to dyslexia, causing students to underachieve and teachers to mischaracterize individuals with dyslexia. Consequently, students with dyslexia have been shown to develop poor self-esteem. However, little is known about whether or not this poor self-esteem persists into adulthood.

Chapter One presented the background of the problem along with the current knowledge about dyslexia. Chapter Two will provide a definition of dyslexia as well as the causes, effects and history of dyslexia. Chapter Two will also reveal the literature gap and the purpose of the research. Chapter Three will provide information about the methods the researcher will use to determine if well-being among adults with dyslexia and without dyslexia is significant. Chapter Four will deliver the data descriptives and raw data. Chapter Five will provide a discussion of the results, along with implications, limitations and recommendations for future research.

CHAPTER TWO: LITERATURE REVIEW

Overview

Individuals with dyslexia are mischaracterized and perceived as lazy, dumb, immature, a behavior problem, careless, or not trying hard enough (Davis, 1992). Educators are neither aware of characteristics of students with dyslexia nor trained to assess and provide interventions specific to individuals with dyslexia, although those interventions are effective for 90% of learners (Ohio Department of Education, 2016). Dyslexia is the most prevalent learning disability, going undetected, without recognition by society, and teacher training by teacher colleges. Bright, intelligent students are suffering silently, mischaracterized by educators, losing self-esteem, believing they are stupid, dim-witted, and incapable (Davis, 1992). The Dyslexia Research Institute (2016) reports on their Resources website that upwards to 70% of individuals incarcerated are dyslexic/ADD, demonstrating the critical need for dyslexia awareness.

As a result of this lack of awareness, individuals with dyslexia are not receiving critical early intervention. This oversight is causing students with dyslexia to feel failure, causing damage to self-esteem. Current research gives information on self-esteem of adolescents and youth who are dyslexic. However, a gap exists to determine the long-term effects of dyslexia for adults. This study will discuss a comprehensive definition of dyslexia, the history of dyslexia, its causes and effects, dyslexia awareness, characteristics and interventions for dyslexia, educational assessments, what it is like to be dyslexic, adults with dyslexia, and well-being.

The research literature is comprised of predominant tiers that form a basis for significance, effects, and gaps in the field of dyslexia. The review first defines dyslexia and its prevalence and significance among learners. Next, as defined by Maslow's Hierarchy of Needs, the research explores the self-esteem significance and how dyslexia affects well-being. Current

research for children with dyslexia will be discussed, including effective interventions, followed by research outlining adult studies with dyslexia, identifying the gap in literature. The aforementioned significance and prevalence of the effects of dyslexia in children will demonstrate the relevance of the study of well-being in adults with dyslexia.

Theoretical Framework

Abraham H. Maslow wrote, “I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail” (Maslow, 1966, p.15-16). Because dyslexia lacks specific awareness, it has become a "nail" in the educational system, and we must ensure that identification and intervention are consistent with the seriousness of the disorder of dyslexia (Shaywitz 2012). Students with dyslexia are approached academically in the same fashion as typical peers or are given improper special education interventions. As a result, dyslexia continues to go untreated most of the time which could lead to with possible long-term ramifications.

Maslow’s hierarchy of needs is nearly 50 years old. Maslow created categories of basic needs into five classifications: physiological, safety and security, belongingness, esteem, and self-actualization, believing that achievement is dependent on fulfilling each level before moving to the next (Lester, 2013). Without proper diagnosis/intervention, students are unable to advance through the hierarchy to enable them to achieve because they cannot fulfill each level to reach achievement.

Maslow’s pyramid can be further divided into three tenets: Physiological Needs and Safety Needs account for Basic Needs; Belongingness Needs and Esteem Needs account for Psychological Needs; and Self-Actualization accounting for Self-Fulfillment Needs, with a further break-down of the first four levels known as deficiency needs and the top level known as

growth or being needs (McLeod, 2016). At the physiological level, Maslow identified elements like food, warmth, rest, and water; Safety needs were defined as security and safety; Belongingness as intimate relationships and friends; Esteem needs as prestige and feeling of accomplishment; and Self-Actualization needs as achieving one's full potential, including creative activities (McLeod, 2016). The deficiency needs motivate when they become unmet or denied and will become stronger the longer the denial period occurs, like the feelings of being unsafe or hungry. In order to progress through the lower level, it is necessary to first satisfy the level completely and habitually (McLeod, 2016).

For some, the initial levels pose a challenge not easily overcome. Prince and Howard (2002) studied Maslow's hierarchy of needs in terms of children living in poverty with disturbing results. The researchers determined that poverty was significant for failure at every level of need, with a particularly negative effect intensifying the unloved and chronic hunger level. Maslow acknowledged that the path to self-actualization was a seldom-achieved path that only one in 100 people might attain; Maslow attributed the lack of progress to a failure or set-back from meeting lower level needs, such as a loss of job or divorce, and also to society's insistence on motivation reward being dependent upon love, esteem, and other social desires (McLeod, 2016).

In the 1970s, Maslow expanded the five-stage model to a seven- and eight-stage model, adding Cognitive Needs and Aesthetic Needs after Esteem Needs and in front of Self-Actualization Needs, and also adding Transcendence Needs after Self-Actualization Needs (McLeod, 2016). Cognitive Needs were defined as knowledge and understanding, need for meaning and predictability, curiosity, and exploration; Aesthetic Needs were listed as a search and appreciation for beauty, balance, and form; and Transcendence Needs were indicated as helping others achieve self-actualization (McLeod, 2016).

Maslow identified the growth of self-actualization to be continuous and an ever-present quest for discovery and determining a meaning to life that is relevant to them (Maslow, 1962). This discovery is unique to the person, taking a form that is individual and meaningful, such as in the classroom, in a board room, in an athletic venue, or in an artist studio, measured through the concept of peak experiences. This was defined by Maslow as the moment a person experiences the world completely for what it is, accompanied by feelings of joy, wonder, and euphoria (Maslow, 1962). Maslow (1970) identified fifteen characteristics of a self-actualized person by studying 18 people he believed to be self-actualized, to include Albert Einstein and Abraham Lincoln (see Table 1).

Table 1

The Characters of Self-Actualization According to Maslow

Reality perception is efficient with uncertainty tolerated	An acceptance of who they are and who others are	Spontaneous in both action and thinking
Focused on problems, not self	Unusual sense of humor	Life seen objectively
Very creative	Not aligned with culture but not intentionally unconventional	Concerned with humanity
Deeply grateful for basic life experience	Possesses meaningful, satisfying interpersonal relationships with chosen few	Peak experiences that include joy and euphoria
A need for privacy	Democratic tendencies and attitude	Strong ethical and moral standards

Maslow (1970) stresses that those who are self-actualized are not perfect, and that not all individuals who are self-actualized will possess the listed behaviors or characteristics; instead, self-actualization occurs when achieving self-potential.

Maslow identified behaviors that lead to self-actualization (see Table 2):

Table 2

Behaviors that Lead to Self-Actualization According to Maslow (1970)

Experiencing life like a child with concentration and absorption	Avoiding the safe routes and embracing new experiences	Evaluating experiences according to self-beliefs, rather than through perspectives of majority, authority or tradition
Being honest without pretense and identifying personal defenses and dismantling them	Acknowledging and preparing for unpopularity if crossing the majority opinion	Working hard and accepting responsibility

Maslow's hierarchy of needs is used in all facets of life and embraced due to the interacting and cyclical nature of the hierarchy of needs (Valadez & Lund, 1993). Maslow's theory is no stranger to the educational system or classroom in schools because of its holistic approach, encompassing all parts of the individual and its impact on learning: physical, social, intellectual and emotional (McLeod, 2016). Kiel (1999) proposed that Maslow's hierarchy of needs, depicted as a pyramid, should be changed to an open-faced structure, acknowledging that self-actualization is never ending, with lifelong learning and change endless, with a particular application for the world of education and managerial settings. The levels of hierarchy are easily identified in the school setting. For example, a student who is unsafe at home will, at best, exhibit a lack of focus and concentration and, at worst, exhibit behaviors that can range from self-injurious to explosive. In order to progress in the curriculum, Maslow indicated that students must believe they are respected and valued, in a supportive environment (McLeod, 2016).

A study conducted by the Mental Health Services, Ministry of Health, Jerusalem, Israel and Ben Gurion University, Be'er Sheva, used Maslow's hierarchy of needs to research students with psychiatric disabilities who successfully completed high school courses, citing 45

parameters that were subsequently correlated to the hierarchy of needs (Mansbach-Kleinfeld, Sasson, Shvarts, and Grinshpoon, 2007). The study identified Maslow's needs for self-esteem as conditional to how individuals view achievements, confidence, strength, and competence, termed a high stable self-respect and self-evaluation (Mansback-Kleinfeld et al., 2007). A study conducted by Yadin (2015) sought to determine the effects of Maslow's motivational theory, or self-actualization, if Software Engineering degree-major students employed the practice of self-grade comparisons on projects and assignments. The researcher determined that by using Maslow's theory, put into practice by self-grading, students experienced a positive effect by increasing the average grades.

In Maslow's (1943) hierarchy of needs, belonging ranks after physiological and safety needs, imparting the importance of positive relationships. Cultivating and creating positive relationships is a key and peripheral event that coincides in the classroom, among classmates and with a student's teacher. A sense of belonging is closely connected to the belief of self-worth and that one is valued by others and able to make and contribute to relationships (Finnan, 2015). Since students with dyslexia can suffer from poor self-esteem as a result of poor performance in school, this theory is relevant to adults with dyslexia as persons due to potential loss of positive relationships. Belonging may have been hindered in a student with dyslexia, disrupting the hierarchy of needs to the adult with dyslexia.

The issue of well-being has come to the forefront as an indicator of the mental health of certain sects and follows Skinner's Behaviorism theory where positive reinforcement increases the likelihood that the behavior will repeat in some respects but does not follow the negative reinforcement concept (Braun, 2016). The instrument, the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS), was developed due to increasing international interest in mental well-

being and its contribution to all aspects of human life, in particular a demand for instruments to identify mental well-being at a population level (Tennant, Hiller, Fishwick, Platt, Joseph, Weich, Stewart-Brown, 2007). The WEMWBS was developed in 2007 and comprises 14 positively worded items relating only to positive attributes of mental health (Stewart-Brown, Platt, Tennant, Maheswaran, Parkinson, Weick & Clarke, 2011). This scale loosely follows Skinner's Behaviorism theory in which positive reinforcement increases the likelihood that the behavior will repeat in some respects but does not follow the negative reinforcement concept (Braun, 2016). So by concentrating on the positive elements of an adult with dyslexia, this scale can elicit the state of well-being.

Related Literature

Sixty-two percent of non-readers drop out of high school. Seventy to eighty percent of people with poor reading skills are likely dyslexic, making the dropout rates for students with dyslexia as high as 35%, twice the national average (Lamki, 2011). One in five students, or 15-20% of the general school-aged population, has a language-based learning disability, and the most prevalent language-based learning disability is dyslexia (Dyslexia Center of Utah, 2016). Illiteracy has a far-reaching effect on society. For example, the Ohio fourth grade reading proficiency scores predict the number of new prison beds within the next 10 years (Ohio Department of Education, 2016). Since 80% of diagnosed learning disabilities are dyslexia and 85% of juvenile offenders have reading disabilities, the impact of dyslexia transcends into a social concern as positing dyslexia a contributor to society's responsibilities for incarcerated individuals (Lamki, 2012).

Dyslexia is the most prevalent learning disability to date (Yale Center for Dyslexia & Creativity, 2016). Yet, interventions for dyslexic students are almost non-existent. In the United

States, only 14 states have legislation associated with dyslexia (Dyslexia.com, 2016). By contrast, even though there are substantially fewer affected individuals, with an approximate identification of one in 68 individuals, 36 states have established a task force or commission for autism (National Conference of State Legislatures, 2016).

According to the Dyslexia Center of Utah (2016), dyslexia is the most common of the language-based learning disabilities. Eighty percent of children with an Individual Education Program (IEP), qualifying for special education, demonstrate a weakness in reading. Eighty-five percent of IEP students with reading weaknesses are dyslexic. To compound the challenges, 30% of students with dyslexia are also diagnosed with at least a mild form of Attention Deficit Hyperactivity Disorder (ADHD) (Dyslexia Center of Utah, 2016). Kirkby, Blythe, Drieghe, and Liversedge (2011) acknowledge that individuals with dyslexia demonstrate reading impairment “despite being matched on IQ, socio-economic background, and educational opportunities” (p.1). Because students with dyslexia often have average to above-average intelligence, the impact of educational loss without awareness and timely intervention is catastrophic (Shaywitz, 2012). Youman and Mather (2012) conducted research to determine the dyslexia laws in the United States as they pertain to status, content, differences among and across states, and suggestions for strategies for initiating such laws. According to the research, as of July of 2012, only 22 states had statewide dyslexia laws, with only three of those that providing dyslexia handbooks to inform educators and parents about appropriate procedures for students in educational settings (Youman and Mather, 2012). Early screening is critical for students with disabilities, yet only seven states enacted laws that require pilot programs and allocation of funds for universal screening for early identification for dyslexia (Youman and Mather, 2012). Students with

dyslexia require specific intensive instruction, yet explicit intervention programs for students with dyslexia are only found in six states (Youman and Mather, 2012).

Since early screening is not the norm, students with dyslexia are not being provided appropriate interventions. Youman and Mather (2012) provided a summary of recommended instructional methodology for students with dyslexia (see Table 3).

Table 3

Recommended Instructional Methodology for Students with Dyslexia According to Youman and Mather (2012)

Direct instruction with student-teacher interaction	Simultaneous and multisensory instruction combining auditory, visual, kinesthetic, and tactile pathways	Synthetic to analytic phonics
Systematic-material that is organized in a logical way, natural to our language;	Sequential and Individualized	Cumulative and incremental
Based on previous skills	Reading fluency	Allowing for automacy of performance
Consisting of a minimum of 150 minutes per week	Recognition of the number of syllables in a word	Meaning-based to words and sentences

A possible explanation for the great divide in need versus assistance in the United States could be attributed to the changes in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) from the fourth edition (DSM-IV) to the fifth edition (DSM-V) (American Psychiatric Association, 1994, 2013). In the DSM-IV, dyslexia was specifically mentioned as one example of a “specific learning disability;” however, DSM-V removed the term dyslexia (American Psychiatric Association, 1994, 2013). The International Dyslexia Association (2016) called the omission “a step backward” with possible ramifications perpetuating the lack of identification and treatment for individuals with dyslexia. As a result, reading specialists may not be knowledgeable about interventions specific to students with dyslexia so that these students may just be given a general intervention applied to all struggling readers (Youman and Mather, 2012).

The Florida Center for Reading Research (FCRR) Dyslexia Report identified the need to separate interventions for individuals with dyslexia and struggling readers due to the unique strengths and educational needs of students with dyslexia, such as language comprehension, reasoning, and vocabulary abilities, and unique weaknesses of students with dyslexia, such as phonemic awareness, sight word development, fluency, and phonemic coding (Youman and Mather, 2012).

History of Dyslexia

The historical roots of the awareness of dyslexia can be traced to the late nineteenth century, during which time children in England and Scotland were recounted by physicians to be motivated, bright, with educated and concerned families, with dedicated teachers, but who could not read (Shaywitz, 2012). In 1896, Dr. W. Pringle Morgan of Seaford, England described an otherwise bright and intelligent 14-year-old boy in the *British Medical Journal* as “word blind,” meaning that written or printed words were meaningless to him (Shaywitz, 2012). The condition of dyslexia was originally coined as word-blindness until 1676, when German physician, Dr. Johann Schmidt, published his observations about a 65-year-old stroke victim who lost his ability to read (Shaywitz, 2012).

In 1925, American neurologist, Dr. Samuel T. Orton placed a great emphasis on the dominance of one side of the brain. Dr. Orton’s teaching strategies are still in use today, combined with the work of Dr. Gillingham for the Orton-Gillingham, multi-sensory method of instruction (Dyslexia Scotwest, 2016). In the 1950s, dyslexia was then considered to be an educational disorder, not a medical one (Dyslexia Awareness, 2016). A transition occurred from a medical perspective to an educational perspective as a result of psychological and educational research contributing to the theories of child development (Lawrence, 2009). During this time,

educational psychology was emerging as a separate entity of general psychology, causing the shift from considering dyslexia a medical condition to considering it a learning disability with educational implications.

In 1993, the American Psychiatric Association's (APA) *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V) enacted the controversial removal of the terms: dyslexia, dyscalculia, and disorder of written expression, and instead, specified the use of the term Specific Learning Disorder in the diagnosis (Landmark School, 2016). Some argue that removing the dyslexia-specific language has prevented the awareness and training necessary for students with dyslexia. The International Dyslexia Association views the removal "as a significant step backward and worry that this omission will (a) perpetuate lack of recognition and understanding of dyslexia and (b) contribute to delays in diagnosis and treatment" (International Dyslexia Association, 2016).

Causes of Dyslexia

Studies have shown dyslexia to run in families, but it is not entirely genetic (Shaywitz, 2012). According to Professor Smythe, dyslexia has a genetic basis with at least one of the parents at increased risk of being dyslexic (Smythe, 2011). Three main deficit theories comprise the causes of the characteristics of dyslexia: The magnocellular deficit theory, the cerebellar deficit theory, and the phonological deficit theory.

Table 4

Dyslexia Deficit Theories according to the New Zealand Ministry of Education (2010)

The magnocellular deficit theory	Problem due to auditory or visual weakness
The cerebellar deficit theory	Problem due to central processing area responsible for learning and automaticity
The phonological deficit theory	Problem due to linking sounds and symbols in language.

The most widely accepted theory with the most research and development is the Phonological Deficit Theory (New Zealand Ministry of Education, 2010). Growing research points to genetic factors for individuals with dyslexia. Four dyslexia genes have been discovered by genetic researchers, and the learning-to-read process has been identified as beginning in the right cerebral hemisphere of the brain and then changing to the left cerebral hemisphere gradually, as content and structure of language is controlled by the left hemisphere (Vanninen and Maatta, 2015).

Some individuals with dyslexia start the learning process by using the left cerebral hemisphere strategies too early and are termed L-type dyslexics, or linguistic dyslexics (Vanninen and Maatta, 2015). An individual with L-type dyslexia results from an underdeveloped functioning of the right hemisphere or an overdeveloped functioning of the left hemisphere; an individual with L-type attempts to determine text meaning from linguistic clues, instead of the visual form of texts. They present with fast reading but with many errors (Vanninen and Maatta, 2015).

Individuals with P-type dyslexia, or perceptual dyslexia, present with an overdeveloped functioning of the right hemisphere or underdeveloped functioning of the left cerebral hemisphere (Vanninen and Maatta, 2015). Characteristics of a reader with P-type dyslexia are labored and slow reading but without error; these individuals are heavily reliant upon the visual form of the text and perceive words as outer characters without comprehending and associating the symbolic meaning (Vanninen and Maatta, 2015). The types of dyslexia are identified by the type of errors committed during reading: P-type dyslexics commit *time-consuming errors*, like repetitions, corrections, and disintegrations; L-type dyslexics commit *substantive errors*, like replacements, additions, and omissions (Vanninen and Maatta, 2015). This research shows that

assessments exist to further distinguish dyslexia into administrable forms, and yet, the most common learning disability goes largely unnoticed in the educational world even still.

Effects of Dyslexia

One overarching effect of dyslexia on individuals is its emotional toll related to self-esteem and social difficulties. Students with disabilities are often retained a grade, defying research on the ineffectiveness of retention:

Although sometimes there is a short-term gain, students who are retained are typically achieving below grade level again within two to three years...and tend to show increased behavior problems as they get older and are more likely to drop out of school (Sellman, 2007, p. 57).

This demonstrates that a child's positive self-image is at significant risk. A follow-up study conducted by Anne Mari Undheim (2009) investigated the psychosocial factors of young Norwegian adults with a history of dyslexia in childhood. Her results indicated that the dyslexic group showed strong tendencies toward depression, supporting earlier findings in this area. Nalavany, Carawan, and Rennick (2010) examined the psychosocial experiences of dyslexics, and nine distinct cluster themes on a concept map emerged: Pain, Hurt, and Embarrassment from Past to Present; On Being Overwhelmed; Emotional Downside; Fear of Disclosure; A Good Support System Makes the Difference; Why Can't They See it?; and Moving Forward, clearly displaying the social-emotional effects of being dyslexic. Daderman, Nilvang, and Levander (2014) wanted to compare levels of self-esteem in individuals with dyslexia and individuals without dyslexia and determined that individuals with dyslexia had weaker self-esteem in all dimensions (talents and gifts, psychological health, physical characteristics) except relationships with family and parents.

Researchers studied academic motivation in children with dyslexia in an attempt to determine which form of therapeutic aid may influence academic approach and avoidance motivation (Lodygowska, Chec, & Samochowiec, 2017). Children with dyslexia experience failure from the very onset of their education, unable to meet typical developmental benchmarks. The researchers found that this can cause a ripple effect into social realms, as communication and expressive and receptive language often present difficulties to individuals with dyslexia, resulting in a reluctance to speak and participate in class and public speaking in general. Academic performance suffers and is apparent in reading and writing (Lodygowska, Chec, and Samochowiec, 2017). As the ball of failures continues to roll, it gathers momentum. Self-esteem in students with dyslexia begins to decline and a negative perception of self develops, perhaps resulting in negative behaviors.

A study of 389 second grade students in Germany determined the effects of poor reading and spelling abilities and phonological working memory (Steinbrink and Klatte, 2008). Participants were given four-item lists of common nouns for immediate serial recall with differentiations in word length, phonological similarity, presentation modality (auditory vs. visual), and type of recall (verbal vs. visual) to explore the use of the phonological loop in poor readers, that is the process of retaining information briefly for immediate retrieval (Steinbrink and Klatte, 2008). The research determined that the individuals with poor reading and spelling abilities utilized the phonological loop in the same way as students with good reading and spelling; however, the poor readers and spellers did not benefit from recall and phonological coding in the same way as their counterparts (Steinbrink and Klatte, 2008).

Bryson (2013) acknowledges that individuals with dyslexia also present with erratic behavior, frustration, low self-esteem, anxiety, fear of failure, and exhaustion. In his research,

Bryson (2013) studied the effects of dyslexia on musicians and its relation to learning challenges and teaching methods. Children with dyslexia more likely to use self-defensive strategies. Other studies also show that children with dyslexia use more self-handicapping strategies (Alesi, Rappo, & Pepi, 2012). Students with repeated failure are more likely to have symptoms of anxiety and to use avoidant behaviors (Alesi, Rappo, & Pepi, 2012).

Additionally, emerging research suggests that individuals with dyslexia may also have other health and learning challenges. A study conducted by Sexton, Gelhorn, Bell, and Classi (2012) looked at the co-occurrence of a reading disorder, or dyslexia, and Attention Deficit Hyperactivity Disorder (ADHD) to determine the epidemiology, psychosocial impact, treatment strategies and economic burden for children. The researchers presented background information that acknowledged the prevalence of dyslexia ranging from 4% to 10% and as high as 17.5% with rates of co-occurrence of Reading Disability (RD) and ADHD as higher in boys than girls (Sexton, Gelhorn, Bell, and Classi, 2012). ADHD and RD are considered co-occurring, rather than comorbid, which implies that underlying pathophysiologies are independent and not causally related (Sexton, Gelhorn, Bell, and Classi, 2012). The researchers determined that RD and ADHD commonly co-occur due to shared genetic risk factors, increasing the predisposition of both disorders with limited research that extends to both afflictions (Sexton, Gelhorn, Bell, and Classi, 2012). This, in turn, means that interventions specific to both ADHD and dyslexia are not being provided as a complementary, comprehensive intervention.

Individuals with dyslexia may also have challenges in visual perception processing. Meares-Irlen Syndrome Visual Stress (MISVIS), also known as Irlen Syndrome, is a learning disability that is commonly confused with and misdiagnosed as dyslexia; however, 46% of individuals with dyslexia also have MISVIS (Heine, Martin, and Shields, 2016). MISVIS is

termed a relatively common neurological dysfunction that results in visual perceptual distortions that can cause text to appear to change shape or color, or move (Heine, Martin, and Shields, 2016). It is considered a neural disorder that affects perceptual processing, not an optical condition, and requires a lifelong intervention of tinted glasses or colored filters (Heine, Martin, and Shields, 2016).

If dyslexia is not detected in the pre-primary and primary age, early and appropriate interventions for students with dyslexia are not in place. Early intervention is critical for students with dyslexia, with best practice set at identification in the first year of school, at age five or six. A study conducted at Middlesex University in London showed that age of acquisition indicates that reader status with non-dyslexic students was faster than reader status with dyslexic students, demonstrating the need for early identification (Raman, 2011). Snowling (2013) completed a study that compared dyslexia and reading comprehension impairment, early identification with teacher assessments, and evidence-based interventions. The research concluded that interventions should be a multi-sensory system with direct connections among letters, letter sounds, phoneme awareness and phonemes through reading and writing from texts (Snowling, 2013).

Lack of Dyslexia Awareness

Many educators are unaware of the identification, characteristics, or strategies for interventions for students with dyslexia because dyslexia curricula in post-secondary schools are not yet mainstream in the United States (Youman and Mather, 2012). As a result, students with dyslexia are mischaracterized and perceived as lazy, unmotivated, uncaring and unaware. Consequently, educators are not providing differentiated instruction and specially designed, targeted instruction, interventions, and accommodations to meet the needs of students with

dyslexia. Yet, 90% of children with dyslexia can be educated in the regular classroom with strategies that benefit all readers (Dyslexia International, 2018).

Teachers' attitudes can have a profound effect on student achievement. A research study conducted in Pakistan by Ahmad and Rehman (2014) studied the impact of attitudes of teachers on the achievement of students. Thirty students were examined in three different groups with category labels of Disciplined, Friendly, and Traditional depicting the characteristics of the teacher (Ahmad and Rehman, 2014). Each group was given a pre-test and a post-test with results of the pre-test equal to one another; however, significant differences emerged in the post-test results with the largest different existing between the disciplined and traditional group, thus proving if a teacher adopts a friendly or disciplined attitude, achievement is higher (Ahmad and Rehman (2014).

Peterson, Rubie-Davies, Osborne, and Sibley (2014) investigated whether teachers' implicit and explicit prejudiced attitudes underlie the ethnic achievement gap and determined that students achieved academically when teachers' implicit bias favored their own ethnic group. In a cross-case analysis of the connection between student achievement and teacher effectiveness, researchers examined effective versus less effective teachers based on student achievement gain scores in mathematics and reading (Strong, Ward, and Grant, 2011). This comprehensive study was conducted in three phases: Phase 1: First graders based on student learning gains; Phase II: In-depth cross-case analysis of classroom management and instructional practices of 32 teachers; and Phase III: Classroom observation findings comparison with teacher effectiveness data (Strong, Ward, and Grant, 2011). In addition to finding top-quartile teachers more organized and efficient, the researchers also determined that the personal qualities attributed to more effective teachers were fairness and respect, as well as having

positive relationships with students (Strong, Ward, and Grant, 2011). Teachers were determined to be instrumental in giving students emotional support throughout their education (Kutsyuruba, Klinger, and Hussain, 2015).

The absence of teacher training for dyslexia is a serious deficit in education. According to the Ohio Department of Education, less than 14% of teachers are confident that they can recognize a dyslexic child; less than nine percent of teachers feel confident that they could teach a dyslexic student to read; four of five teachers asked for extra training to teach dyslexic students (Ohio Department of Education, 2016). A study conducted by Gwernan-Jones and Burden (2010) demonstrated the vast divide between teacher enthusiasm to support students with dyslexia and teacher knowledge of dyslexia interventions. In response to a question posed by the study relating university teacher practice and its impact on understanding dyslexia, an overwhelming 80% indicated dyslexia understanding was not increased or even present. The study demonstrated the strong need for further training due to the discrepancy of positive attitudes and education and awareness of dyslexia and appropriate interventions. The need for specialized training was identified as early as 1994, by Louisa Cook Moats who published in the *Annals of Dyslexia*. In her study, Moats (1994) indicated that 73% of learning specialists identified reading as a basic problem in most students categorized as Learning Disabled, while only 22% attributed the core deficit to linguistic processing. A follow-up study by Moats and Foorman (2003) was conducted to determine the current knowledge of foundation literacy theories by educators in the field. The study showed that while research in reading disabilities and reading development has made significant progress in early identification and treatment of dyslexia, teachers lack the insight as to what causes variation in students reading acquisition, knowledge of language structure, language and reading development, and the dependence of

literacy on oral language proficiency. The study called for further research to address how regular classroom teachers can meet the needs of all students in the classroom and apply the practice.

Characteristics of Dyslexia

Early clues to dyslexia include delay in talking, difficulties in pronunciation, and insensitivity to rhyme (Shaywitz, 2012). The Yale Center for Dyslexia & Creativity (2016) identified the following reading deficit signs of dyslexia:

- Kindergarten/First Grade – reading errors show no connection to the sounds of the letters; no comprehension that words segment; avoids reading; cannot sound out simple consonant-vowel-consonant words, like cat; no association of letter sounds and letters.
- Second Grade and Up – slow to acquire reading skills; reading is awkward and slow; trouble reading unfamiliar words with wild guesses; avoids reading orally; no strategy for new words; difficulty speaking-using “stuff” or “thing” in place of appropriate vocabulary regularly; needs extra time to respond to questions; confuses words like volcano for tornado.

Further indicators of non-readers and predictors of dyslexia for children are listed in Tables 5, 6 and 7.

Table 5

Non-Reading Indicators for Students with Dyslexia according to Yale Center of Dyslexia and Creativity (2016) and Barton Reading (2016)

Trouble remembering dates, telephone numbers, and names.	Extreme difficulty learning a foreign language	Life-long spelling difficulties	Low self-esteem	Intense dislike for school
Messy and illegible handwriting	Confusion of right versus left and directionality	Difficulty learning to tie shoes	Trouble memorizing multiplication tables	Extremely messy bedroom and desk

Table 6

Predictors of Dyslexia for School-aged Children according to Bradley-Artis (New Zealand Ministry of Education, 2008)

A family history of difficulty reading/spelling	Reluctance to go to school or feeling like a failure	Omits words when reading and difficulty reading out loud	Difficulties with spelling
Skipping whole lines when reading	Letter confusion with some letters written backwards	Difficulty copying from the board	Confusion with following directions
Unable to count backwards from 100 to 0; unable to remember the order for months of the year	Difficulty retaining basic facts and multiplication tables	Difficulty organizing self	Noticeable difference between the pupil's ability and actual achievement

Table 7

Predictors of Dyslexia for Young Children according to Bradley-Artis (New Zealand Ministry of Education, 2008)

Walking first instead of crawling	Difficulty clapping simple rhythms	Shorter sentences	Smaller growth of vocabulary
Inability to remember the label for known objects	Clumsy or slow learning to ride a bike	Difficulty tying shoe laces	Difficulty with nursery rhymes

Interventions for Dyslexia

Dr. Samuel Orton determined that students with dyslexia are best taught by breaking down information into small units to address weak phonemic awareness in order to master the alphabetic code and to form memories (Bryson, 2013). Further, students with dyslexia require thorough and slow instruction with a concert of sounds, symbols, hands, voice, ears, and eyes for conscious organization and retention in learning. This is defined as a multisensory approach and is also identified as the most effective in learning any language, native or foreign (Bryson, 2013). A popular method of instruction for students with dyslexia is the Orton-Gillingham Approach that uses visual, kinesthetic, and auditory tools to teach language-learning skills, incorporating mirrors for the student to visualize sounds of written alphabetic code (Bryson, 2013).

McArthur, Castles, Kohnen, Larsen, Jones, Anandakumar, and Banales (2015) conducted a study of children with dyslexia to determine the effects of sight word training and phonics training and if the order of presentation had effects on learning. The study showed that 16 weeks of phonics and sight word training had large or very large effects on children with dyslexia, with phonics instruction before sight word instruction having a larger effect, supporting the idea that children with dyslexia benefit from both sight word and phonics instruction (McArthur et al., 2015). Peterson and Pennington (2012) concluded that interventions should be intensive, including explicit instruction with phonological awareness, word analysis, reading fluency and comprehension, and alphabetic principles. Youman and Mather (2012) identified common classroom accommodations for students with dyslexia as oral reading of questions during assessments, extended time for reading, not penalizing for spelling errors, and extended time for statewide assessments.

A research study conducted an investigation into the training expectations and needs of professional development for students with literacy difficulties/dyslexia in order to assess and support children with dyslexia (Bell, 2013). A series of research questions included:

- The participants profile (qualifications, employment, teaching experience)
- Prior knowledge of dyslexia
- Prior skill level/experience in assessing learners with dyslexia
- Motivation of course participants
- Expectations of course participants (Bell, 2013).

Through hard copies of questionnaires, the Bell (2013) study spanned four different areas in England over a period of two years with 73 of 75 responses received. The research showed that the majority of the participants had little to no knowledge about dyslexia or recent research of dyslexia, including elements of cognitive processing like working memory, speed of processing and phonological awareness as a core deficit. Worse yet, given that a high percentage of participants taught in primary school, a full 53% had little to no knowledge about the normal development of reading and 37% had little to no knowledge of phonics (Bell, 2013). The study identified similar categories in elementary teachers' lack of knowledge of dyslexia and phonic principles as are found with educators in the United States (Ohio Department of Education, 2016). Indeed, the author reports that her own university, Liberty University, does not offer courses specific to dyslexia or a dyslexia certificate/endorsement program. The Bell (2013) study determined that motivation to learn and assess dyslexia among educators is critical and needed. Hornstra, Denessen, Bakker, van den Bergh, and Voeten (2010) researched teacher attitudes toward dyslexia compared to students without learning disabilities. The research determined that teachers with a more negative implicit attitude toward dyslexia had students

with dyslexia displaying lower teacher ratings of writing achievement and spelling achievement; however, negative teacher attitudes regarding dyslexia did not affect math achievement of students with dyslexia, indicating that the effect of teachers' attitudes were restricted to the specific domains of a child's weakness (Hornstra et al., 2010).

Without teacher training and school leadership support in identifying students with dyslexia for early intervention, disastrous results can occur. Research was conducted by the University of Southern Mississippi's DuBard School for Language Disorders and the effectiveness of the DuBard Association Method, a research-based, phonetic, multisensory intervention for students, endorsed by the International Dyslexia Association and International Multisensory Structured Language Education Council (University of Southern Mississippi, 2017). The project was titled "Analysis of Pre- and Post-Intervention Retentions Rates and SPED Referral Rates," and it studied two kindergarten classrooms and two first grade classrooms as it related to grade retention rates and special education referrals pre-intervention and post-intervention of one hour daily of the DuBard Association Method (University of Southern Mississippi, 2017). The research determined that for the kindergarten class, the pre-intervention retention rate was eight to nine percent average, and the post-intervention retention rate was reduced to zero percent; the first-grade pre-intervention rate was eight to nine percent average, and the post-intervention retention rate was reduced to two percent (University of Southern Mississippi, 2017). The study also showed the decline in special education referrals in both categories. Kindergartener referrals for special education pre-intervention averaged nine percent and were reduced to four percent post-intervention; first grade referrals were reduced from 0.8% pre-intervention to zero percent post-intervention (University of Southern Mississippi, 2017).

The United States is not the only country replacing appropriate dyslexia intervention with grade retention action. Barbiero, Lonciari, Montico, Monasta, Penge, Vio, Tressoldi, Ferluga, Bigoni, Tullio, Carrozzi, and Ronfani (2012) published a study titled *The Submerged Dyslexia Iceberg: How Many School Children Are Not Diagnosed? Results from an Italian Study*. The abstract indicates that exact data regarding prevalence are unreliable, despite dyslexia being most common neurobehavioral disorder (Barbiero et al., 2012). The study concluded that dyslexia is largely under identified in Italy and called to fund necessary resources from Health Services and Schools (Barbiero et al., 2012).

Richardson (1997) published research that positively correlated the Montessori Method, a multisensory approach, with achievement for students with dyslexia, thus showing that Montessori's method of early language exercises innately prepares the student for writing and reading. Dr. Maria Montessori was a pioneer in the field of education and the first woman to receive a degree in medicine from the University of Rome (Richardson, 1997). The author attended the second-oldest Montessori school in North America, Ruffing Montessori, a preK-8th grade school. The Montessori Method views education holistically and comprehensively as an interspersed and interwoven process whereby the child is permitted exploration and multisensory approaches with educational materials that are often self-correcting, giving the student freedom and independence for learning, while guided by a teacher and not instructed. Dr. Montessori indicated that a barometer of success in the classroom is for a teacher to say, "The children are now working as if I didn't exist" (Montessori, 1995, p. 283). Indeed, the author did not utilize a text book until 7th grade to complete what was then 9th grade Algebra. The Montessori Method employs the use of precise nomenclature for sensory materials, words, and the names of objects.

This is a critical approach for students with dyslexia since it supports their weakness in rapid naming in early intervention periods (Richardson, 1997).

Educational Assessments for Dyslexia

Singleton (2001) indicates that dyslexia presents cognitive characteristics and deficiencies, such as significant inefficiency in working memory; difficulties in automatizing skills, like reading; inadequate phonological processing abilities; and problems with visual processing. The Wechsler Intelligence Scale for Children, Third Edition (WISC-III) indicates children with developmental dyslexia have significant deficits in their verbal abilities, working memory and processing speed indexes (Moura, Simoes, & Pereira, 2013). In addition, the Arithmetic, Coding, Information and Digit Span subtests (ACID), Symbol Search, Coding, Arithmetic and Digit Span subtests (SCAD), and Freedom from Distractibility Index demonstrated moderate accuracy in correctly discriminating dyslexics from normal readers (Moura, Simoes, & Pereira, 2013). In studying the working impairment in children with developmental dyslexia to determine if the root cause is limited to dysfunction of phonological components, Menghini, Finzi, Carlesimo, & Vicari (2010) found that children with dyslexia scored lower on tasks of verbal span and on tasks assessing short-term retention of sequences of spatial positions and abstract figures.

Dr. Patricia Hardman, Director of the Dyslexia Research Institute, indicates that dyslexia is a language disability, not a reading disability, affecting not only reading, spelling, and writing but also processing, perceptual concepts, and attention and concentration, noting that the majority of individuals with Attention Deficit Disorder are also dyslexic and offering an explanation as to why ADD and dyslexia can be connected (Dyslexia Research Institute, 2016). Dr. Hardman also identified other characteristics of dyslexics, such as difficulty with sequencing,

difficulty following oral directions and remembering instructions, problems with generalizing and applying information to new or different situations, problems prioritizing and completing tasks. Additional indicators of dyslexia are poor memory characterized as a quick learner and quick forgetter and levels of work production varying from day to day (Dyslexia Research Institute, 2016). It should be noted that individuals with dyslexia also possess talents and gifts in that dyslexic students often perform significantly better on analytic spatial tests (Duranovic, Dedeic, and Gavrie, 2014).

In studying the working impairment in children with developmental dyslexia to determine if the root cause is limited to dysfunction of phonological components, Menghini, Finzi, Carlesimo, & Vicari (2010) found that children with dyslexia scored lower on tasks of verbal span and on tasks assessing short-term retention of sequences of spatial positions and abstract figures. The study conducted investigated whether the working memory deficit in developmental dyslexia is exclusive to verbal material. Results showed that deficits for children with dyslexia include verbal, visual-object, and visual-spatial working memory, not just a phonological component dysfunction (Menghini et al., 2010). In China, familial risk and early language delay, along with morphological awareness and rapid automatized naming, are significantly strong indicators of developmental dyslexia (McBride-Chang, Lam, Lam, Chan, Fong, Wong, and Wong, 2011).

Being Dyslexic

Students with dyslexia are among the hardest working students in the classroom due to the difficulties and challenges faced (Shaywitz, 2012). A study conducted by Kannangara (2015) captured quotes from students with dyslexia that illustrate the toll the disorder takes on self-esteem:

...and yet I was the same child benumbed by fear, standing up in class, trying to maintain any shred of dignity through the humiliating experience of being laughed at my attempt to read aloud. I had mispronounced the word 'native' and my well-kept secret was out in Grade 3 (p.1).

Carly Hawkins, a clinical nurse specialist in an emergency department, remembered being labeled "not normal, a bit thick, stupid, and dim" (Hawkins, 2014).

The author, a special education teacher, suspected a student she was tutoring was dyslexic. The author asked the student if she had trouble recognizing her right from her left, a common symptom of individuals with dyslexia, to which the student immediately replied, "No." The student then took a pause and relayed, "The way I remember is a few years ago when I was at my sister's volleyball game, my mother was next to me and told me my sister's locker was to my left and pointed to it. That's how I remember." Students with dyslexia are basically on their own to deal with their challenges, creating sophisticated and elaborate systems in an effort to help themselves. A support system is vital to the success of the student. According to Shaywitz (2012), "A child with dyslexia is in need of a champion (p. 95)." A prevalent academic intervention for students with dyslexia is addressing the phonological weakness that is consistent among students with dyslexia, using systematic, intensive, consistent, and targeted instruction (Shaywitz, 2012). However, if educators and administrators are not providing appropriate interventions and students with dyslexia are falling behind, this could cause long-term effects that carry through into adulthood.

Adults with Dyslexia

Literature has addressed the mental status of youth and adolescents with dyslexia but not adults (Nalavany & Rennick, 2011). Nelson and Gregg (2012) report that "most researchers who

have investigated depression and anxiety among students with LD or ADHD have done so with child samples” (p.244). Despite myths to the contrary, children with dyslexia become adults with dyslexia (Nalavany, Caraway, & Rennick, 2010). Lavidor (2011) studied the whole-word shape effect in adults with dyslexia by generating two lists of lower-case words matched by length, frequency, and other lexical variables, differing only by the outline shape. The study was based upon a previous study of word shape effects on children conducted by Mayall and Humphreys (2002). Lavidor (2011) concluded that subtle word shape effects were significant in a group of adults with dyslexia, contributing to Mayall and Humphreys' (2002) study with children that predicted use of visual word outline occurred only in impaired but not normal reading.

However, interventions applied to individuals with dyslexia were proven effective, even if administered as an adult. Vanninen and Maatta (2015) studied the application of remedial training for adults with dyslexia. Upper secondary education students with dyslexia were administered 20 hours of remedial reading interventions and were compared with upper secondary education students with dyslexia who were not given remedial training (Vanninen and Maatta, 2015). The researchers determined that there were positive benefits evident in the students' reading for those given remedial training with a statistically significant decrease in the total number of reading errors and a statistically significant increase in reading speed (Vanninen and Maatta, 2015). Further, the study showed that the cerebral hemisphere was stimulated by the material as hypothesized, and that students with P-type dyslexia had less positive effects than those with L-type dyslexia (Vanninen and Maatta, 2015).

Research for adults with dyslexia seems to be focused on its existence and symptoms as an adult and assessments to determine dyslexia as an adult. The main finding of a study of perceptual processing at the core of developmental dyslexia determined a marked reduction of

processing speed in adults with dyslexia, demonstrated in high-achieving adults with above-average academic educational level (Stenneken, Egetemeir, Schulte-Koren, Muller, Schneider, and Finke, 2011). Hari, Valta, and Uutela (1999) determined that attention dwell time is prolonged in adults with dyslexia, indicating that a target captures attentional resources for considerably longer time for dyslexics due to slow processing in rapid sequences of stimuli in all sensory modes. A study conducted by Kwok and Ellis (2014) researched adults enrolled in university or college classes. The study aimed to investigate word learning with adults with a diagnosis of dyslexia compared with adults without a diagnosis of dyslexia through use of blocks of 4-letter and 7-letter nonwords (Kwok and Ellis, 2014). The researchers concluded that the adults with dyslexia were substantially slower than the control group at reading the nonwords, with a larger length effect, indicating less efficient decoding skills, and requiring more presentations of the nonwords (Kwok and Ellis, 2014). The researchers also included psychological test batteries that assessed spelling and reading, vocabulary, working memory, nonverbal ability, motor speed, and phonological awareness. The test concluded that the group with a diagnosis of dyslexia performed at a level commensurate with the control group on nonverbal ability only, but significantly less on all other measures. The research determined that adults with dyslexia maintain problems with pronouncing novel words and learning new written words (Kwok and Ellis, 2014). Kwok and Ellis (2014) show that the effects of dyslexia on the processes of language processing and reading persist into adulthood. Research titled *Evidence-Based Reading and Writing Assessment for Dyslexia in Adolescents and Young Adults* researched common assessment predictors of dyslexia and its effect on reading or writing outcome. Researchers noted with interest that only the group with dyslexia scored in the low average range on phonological coding, showing that adolescents and young adults demonstrated weakness, as

evidenced also with children. Warmington, Stothard, and Snowling (2013) acknowledged that assessments for dyslexia in adults are significantly less available than those for children and adolescents.

A study aimed to look at adults with dyslexia and anticipatory spoken language processing as it relates to individuals' word reading abilities, was conducted by Huettig and Brouwer (2015). The researchers proved that adults with dyslexia anticipated the target objects at a reduced rate of speed with word reading scores correlating positively with anticipatory eye movements. Current research shows that adults with dyslexia are slower in word and picture naming tasks (Raman, 2011). More research related to assessments for standardized diagnosis of dyslexia is current for adults. Tops, Callens, Lammertyn, Hees, and Brysbaert (2012) determined that adults suspected of being dyslexic do require a wide battery of tests to determine a diagnosis and that three tests were sufficient: word spelling, phonological awareness, and word reading.

Some implications for academic mental health have been determined for individuals with dyslexia. Jordan, McGladdery, and Dyer (2014) examined the implications for math anxiety of students with dyslexia in higher education. The study compared 28 undergraduate students with dyslexia and 71 undergraduate students without dyslexia and explored levels of anxiety. The study, conducted in the United Kingdom, reported that universities there offer a range of differentiated support through a Disability Services department for individuals with dyslexia and acknowledged noted accepted deficits in working memory, time perception, and reading weakness (Jordan, McGladdery, and Dyer, 2014). The researchers cited other research that reported that students with dyslexia use qualitatively different strategies than those without dyslexia at the university level and are more inclined to take a more in-depth approach to

learning for actual comprehension as opposed to fact-finding, also termed “surface learning” (Jordan, McGladdery, and Dyer, 2014).

The researchers connected the presence of math anxiety with decreased mathematics performance and math avoidance among adult students with dyslexia; however, this connection was not present in primary school children with dyslexia, suggesting that this correlation develops over time (Jordan, McGladdery, and Dyer, 2014). The researchers acknowledged that a lack of research exists in the academic mental health of university students with dyslexia, and the study determined that university students with dyslexia are at risk for high mathematics anxiety (Jordan, McGladdery, and Dyer, 2014).

Research on adults with dyslexia seems to be focused on symptoms and characteristics as it relates to academic performance and pursuits in adult life, such as career performance; however, research regarding emotional well-being and the ramifications of dyslexia as an adult has not been firmly established. Limited research suggests that the effects on self-esteem for individuals with dyslexia persist into adulthood, as evidenced by this quote used in the Kannangara (2015) study of an adult with dyslexia: “... nearing the end of fourth decade in my life. Still my childhood experiences can bring me to tears” (p. 2). Adults with dyslexia indicate that it is a greater challenge to deal with being stereotyped as being mentally incapacitated, cheating, lazy and stupid, than it is to deal with the actual difficulties of the disability itself (Nalavany and Carawan, 2012). Adults with dyslexia reported a lack of teacher support as an overall feeling in interviews conducted by Undheim (2009).

Much of the research on dyslexia has focused on pre-school and school-age children (Habib, Berget, Sandnes, Sanderson, Kahn, Fagernes & Olcay, 2012). The problem is that there is little awareness relative to the profound psychological and effects of dyslexia, the

hidden disability, to the adult, although researchers have determined a need, indicating “In this way, more sensitivity to provide informed practice for adults with dyslexia or LD can be realized” (Nalavany & Rennick, 2011, p.77). This study will add to the body of knowledge regarding the effects of dyslexia remaining into adulthood and to explore any gender differences.

Well-Being

The definition of well-being is complex and can be understood best by analyzing perspectives. Well-being is defined by three primary theories: “Needing” approaches, used by public policy and psychology; “Liking” approaches, used by psychologists; and “Wanting” approaches, used primarily by economists (Jayawickreme, Forgeard & Martin, 2012). The Need-based concept is based upon categorizing the objective list of goods required for well-being. Maslow’s hierarchy of needs are central to this theory as the separation of subsistence and flourishing as it distinguishes one set of needs before building to other higher-order needs. The five levels of Maslow’s hierarchy of needs are:

1. Physiological needs – needs critical to physical survival
2. Security needs – safety and security
3. Social needs – love and belonging
4. Esteem needs – accomplishment and self-esteem
5. Self-actualization needs – individualism and personal growth (Maslow, 1954)

However, an argument refutes Maslow’s theory as integral to well-being in that simply removing obstacles and dissatisfaction is not commensurate with well-being (Jayawickreme, Forgeard & Martin, 2012).

The liking theory incorporates Subjective Well Being (SWB), the basis of which is centered on subjective reports of life satisfaction, happiness, positive emotions and perceptions

of quality of life (Jayawickreme, Forgeard & Martin, 2012). SWB is the most commonly used construct in determining well-being and includes momentary mood and emotions, as well as intellectual evaluations of hedonic happiness. This is not to say that SWB is purely positive. In fact, SWB includes a range of emotions from euphoria to depression (Diener and Seligman, 2004). SWB has become an alternative to social and standard economic indicators to determine quality of life.

The Wanting Theory is primarily used in mainstream economics and psychology and indicates that an individual achieves well-being when non-subjective desires are fulfilled (Jayawickreme, Forgeard & Martin, 2012). This theory relies on well-being being connected to satisfying most of one's preferences in an economic sense. The foundation of the Wanting Theory is rooted in the positive reinforcement one receives and how little punishment choices entail, not necessarily because the choice satisfies a need or like. The flaw in this theory is the phenomenon whereby the focus becomes the ends and not the means of decision making (Hsee, u, Zhang, & Zhang, 2003). The Warwick Edinburgh Mental Well-Being Scale (WEMWBA) used in this study is defined as "A wide conception of well-being, including affective-emotional aspects, cognitive-evaluative dimensions and psychological functioning...by focusing wholly on the positive" (Tennant, Hiller, Fishwick, Platt, Joseph, Weich, and Stewart-Brown, 2007, p. 64)

Summary

Despite being the most prevalent disability, affecting one in five individuals, dyslexia is an overlooked disability, the effects of which last into adulthood (Yale Center for Dyslexia, 2016). Dyslexia transcends socio-economic barriers, gender, and cultural barriers. Most educators are unaware of the characteristics and interventions necessary for appropriate instruction for students with dyslexia, despite those methods being helpful to 90% of all students

(Ohio Department of Education, 2016). The problem is that there is little awareness relative to the profound psychological and resulting effects of dyslexia, the hidden disability, to the adult, despite the fact that researchers have determined a need. Chapter Two revealed that current research provides information on the well-being and self-esteem of youth and adolescents who are dyslexic, but a literature gap exists on the well-being as those individuals' progress into adulthood. Next, Chapter Three will provide information about the methods the researcher will use to determine if well-being among adults with dyslexia and without dyslexia is significant.

CHAPTER THREE: METHODS

Overview

The researcher studied the effects of dyslexia in terms of well-being as an adult. This section identifies the research design, the research question, the null hypothesis, the participants and setting, the instrument, the procedures, and the data analysis. This section also addresses the assumptions utilized.

Design

The research design used for the study was a quantitative, causal-comparative study. The causal-comparative study identifies correlations between the variables and is one “in which groups are matched on some participant characteristic” (Warner, 2013, p. 1079). The causal-comparative method identified trends and relationships, not cause and effect. For this study, the researcher compared adults given a diagnosis of dyslexia with adults not given a diagnosis of dyslexia for the measurement of well-being. An independent samples *t* test was used to evaluate the differences between adults who are diagnosed as dyslexic and those who are not dyslexic as it pertains to well-being, measured by the WEMWBS questionnaire for well-being. The *t* test is appropriate “when the groups that are compared are between-subjects...or independent groups (Warner, 2013, p.186).” The researcher used this design to determine if there is a significant difference in the well-being between adults who are diagnosed with dyslexia and adults not diagnosed as dyslexic. Since the population is assumed to be from a normal distribution, the parametric independent samples *t* test is appropriate.

Research Question

RQ1: Is there a difference between the *well-being* of adults who are diagnosed with dyslexia and adults who are not diagnosed with dyslexia as measured by the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)?

Null Hypotheses

H₀1: There is no significant difference between the *well-being* of adults who are diagnosed with dyslexia and adults who are not diagnosed with dyslexia as shown by Warwick-Edinburgh Mental Well-Being Scale (WEMWBS).

Participants and Setting

Participants for this study were a convenience sample, consisting of 219 adult males and females with and without a diagnosis of dyslexia. Because the sample size exceeded the minimum of 96 participants, the research resulted in a large effect size with statistical power of .7 at the .05 alpha level (Gall et al, 2007). The participants were drawn from members-only social media groups: Dyslexia Group: Increase Awareness and Understanding with 10,794 members and Dyspraxia, Dyslexia, Dyscalculia & Dysgraphia Support with 21,802 members.

Instrumentation

The researcher used the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) developed in 2007, due to increasing international interest for mental well-being at a population level (Tennant, Hiller, Fishwick, Platt, Joseph, Weich, Stewart-Brown, 2007). The purpose of this instrument is to measure the well-being of adults who are diagnosed as dyslexic and adults that are not dyslexic. This instrument was used in numerous studies (Powell, Hamboug, Stallard, Burls, McSorley, Bennett, Griffiths, & Christensen, 2013; Mitchell, 2013; Schrank, Bird, Tylee,

Coggins, Rashid, & Slade, 2013). The WEMWBS is a valid, reliable and acceptable measure with a Cronbach's alpha score of 0.89 (student sample) and 0.91 (population sample).

WEMWBS demonstrated high correlations with other well-being scales and mental health and lower correlations with scales measuring overall health. The distribution was near normal and the scale without ceiling effects in a population sample (Tennant, Hiller, Fishwick, Platt, Joseph, Weich, & Stewart-Brown, 2007)

A 14-item questionnaire for positive attributes of mental health was utilized, using a five-point Likert-scale that ranged from none of the time to all of the time. Responses were as follows: 1-None of the time, 2-Rarely, 3-Some of the time, 4-Often, 5-All of the time. The combined possible score on the survey ranged from 14 to 60 with 50.7 established as the population mean. A score of 14 points is the lowest score, meaning that the participant demonstrated the least positive well-being. A score of 60 points is the highest score, meaning the most positive well-being. The instrument requires approximately 15 minutes to complete. The instrument was scored by the web-based survey company.

Permission to use the instrument was granted on January 24, 2018. See Appendix B for approval. The researcher transposed the WEMWBS questions and answer choices into an online survey company (Survey Monkey) and provided links to both groups. The resulting data was compiled and analyzed by the researcher using SPSS statistical software.

Procedures

The researcher applied for and received Institute Review Board approval for the research on June 29, 2018. The participants were drawn from members-only social media groups: Dyslexia Group: Increase Awareness and Understanding with 10,794 members and Dyspraxia, Dyslexia, Dyscalculia & Dysgraphia Support with 21,802 members. The researcher gained

membership from each group. Once membership was secured, the researcher provided a link to the secure Survey Monkey link with a request for adults with and without dyslexia to take the survey. See Appendix A for approval. The researcher assessed potential for risk, like social, legal, or psychological harm to the participants of the study (Creswell, 2009). An informed consent form was created for the participants and contained the following:

Table 8

Informed Consent Form Elements according to Creswell (2009)

Researcher	Sponsoring Institution	How participants were selected	Purpose of the research	Benefits for participating
Level and type of involvement by participant	Risks to the participant	Confidentiality guarantee	Assurance of anytime withdrawal by participant	Contacts for questions

See Appendix C for Informed Consent Form.

The questionnaire was disseminated by a secure website survey company via closed dyslexia social media groups that required membership and contained populations of 10,000+ members. The informed consent was provided to the participant before completing the questionnaire. See Appendix D for webpage survey screenshots and instructions. For the website survey company, instructions were given throughout the questionnaire. Anonymous data was collected automatically from the survey website that contained answers to the questionnaire. The researcher accessed the data through password-protected sign in, then downloaded the data into SPSS format.

Data Analysis

Two hundred or more adults with a self-proclaimed diagnosis of dyslexia and without a diagnosis of dyslexia were investigated, and the statistics were analyzed using an independent samples *t* test, as measured by the WEMWBS questionnaire for well-being. The *t* test is

appropriate “when the groups that are compared are between-subjects...or independent groups (Warner, 2013, p.186). Data was obtained for the dependent variable well-being in adults who are diagnosed as dyslexic as well as adults not diagnosed as dyslexic. Data screening was conducted on the dependent variable (well-being) and independent variable (dyslexic). The researcher organized the data on each variable and searched for irregularities. A box and whiskers plot was used to identify any outliers on the dependent variable.

Assumptions of Normality was met using a Kolmogorov-Smirnov test. Kolmogorov-Smirnov was used because sample size was more than 50 participants. The assumptions of normality and homogeneity of variance were determined. The assumption of homogeneity of variance was examined using the Levene’s Test of Equality of Error Variances. An independent samples *t* test was used to determine the means for each group per WEMWBS group in a table, as well as plots provided.

Summary

The methods were reviewed in this chapter. The researcher compared adults with and without dyslexia for the measurement of well-being. An independent samples *t* was appropriate to measure the groups. The study used a convenience sample of 219 adults with or without dyslexia resulting in a large effect size. The participants were drawn from members-only social media group consisting of 10,794 members and 21,802 members. The researcher used the Wawick-Edinburgh Mental Well-Being Scale (WEMWBS) and an online survey company (Survey Monkey) to transpose the questions into an electronic survey. The survey data was examined by the researcher using SPSS statistical software. Procedures used by the researcher included Institute Review Board approval, Assumptions of Normality. Chapter Four will discuss the findings of the data.

CHAPTER FOUR: FINDINGS

Overview

Chapter 4 reviews the findings of the research as it pertains to the well-being of adults with and without dyslexia. Chapter 4 provides the research questions, hypothesis, descriptive statistics, and results according to hypothesis. The researcher performed an independent samples *t* test for adults with dyslexia and adults without dyslexia to compare means for well-being as measured by the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). The participants were drawn from members-only social media groups: Dyslexia Group: Increase Awareness and Understanding with 10,794 members and Dyspraxia, Dyslexia, Dyscalculia & Dysgraphia Support group with 21,802 members. The researcher transposed the WEMWBS questions and answer choices into an online survey tool (Survey Monkey) and provided links to both groups. The resulting data was compiled and analyzed by the researcher using SPSS statistical software.

Research Question

RQ1: Is there a difference between the *well-being* of adults who are diagnosed with dyslexia and adults who are not diagnosed with dyslexia as measured by the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)?

Null Hypothesis

H₀1: There is no significant difference between the *well-being* of adults who are diagnosed with dyslexia and adults who are not diagnosed with dyslexia as shown by the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS).

Descriptive Statistics

Two hundred and nineteen adults with and without dyslexia were surveyed using the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). There were 97 adults with dyslexia

and 122 adults without dyslexia. Eight respondents were not adults and were removed from the research data. See Table 9 for Group Average descriptives and Table 10 for Group tallies per WEMWBS question.

Table 9

Descriptive Statistics

Have you ever been diagnosed with dyslexia or reported to have dyslexia by your parent, education organization, doctor, etc.?		N	Mean	Std. Deviation	Std. Error Mean
Total Average	Yes	97	43.82	10.609	1.077
	No	122	49.31	8.857	.802

Table 10

Descriptive Statistics per Question

Dependent Variable: With/Without Dyslexia

	Dyslexic	N	Mean	Std. Deviation
I've been feeling optimistic about the future.	Yes	97	3.3854	.95554
	No	122	3.8115	.80630
	Total	218	3.6239	.89843
I've been feeling useful.	Yes	97	3.2500	.99472
	No	122	3.8361	.75362
	Total	218	3.5780	.91373
I've been feeling relaxed.	Yes	97	2.9167	.82929
	No	122	3.0984	.75416
	Total	218	3.0183	.79145
I've been feeling interested in other people.	Yes	96	3.3263	.91608

	No	122	3.6803	.88389
	Total	217	3.5253	.91315
I've had energy to spare.	Yes	97	2.6875	.89810
	No	121	2.8182	.89443
	Total	217	2.7604	.89634
I've been dealing with problems well.	Yes	97	3.1354	.80289
	No	121	3.5537	.74106
	Total	217	3.3687	.79497
I've been thinking clearly.	Yes	97	3.2188	.91999
	No	121	3.6281	.67246
	Total	217	3.4470	.81548
I've been feeling good about myself.	Yes	96	2.9053	1.00078
	No	121	3.4628	.86642
	Total	216	3.2176	.96635
I've been feeling close to other people.	Yes	97	3.0208	.97310
	No	121	3.5372	.86642
	Total	217	3.3088	.94847
I've been feeling confident.	Yes	97	2.9479	1.03994
	No	121	3.3719	.86730
	Total	217	3.1843	.96855
I've been able to make up my own mind about things.	Yes	97	3.4583	1.03534
	No	120	3.8667	.79846
	Total	216	3.6852	.93160

I've been feeling loved.	Yes	97	3.4271	1.06371
	No	121	3.8760	.90894
	Total	217	3.6774	1.00328
I've been interested in new things.	Yes	97	3.4896	.99467
	No	121	3.6033	.81117
	Total	217	3.5530	.89660
I've been feeling cheerful.	Yes	96	3.2105	.95533
	No	121	3.4876	.76502
	Total	216	3.3657	.86295

Results

Data screening

Screening was conducted on each group's dependent variables data (adults with or without dyslexia) and independent variable (total average of WEMWBS questionnaire responses regarding data discrepancies, outliers, and normality.) The researcher organized the data on each variable and searched for irregularities. A box and whiskers plot was used to identify any outliers on each dependent variable. A total of four outliers were identified and removed. See Figure 1 for box and whisker plot.

Figure 1. Box and Whiskers Plot for Adults with Dyslexia and Adults without Dyslexia

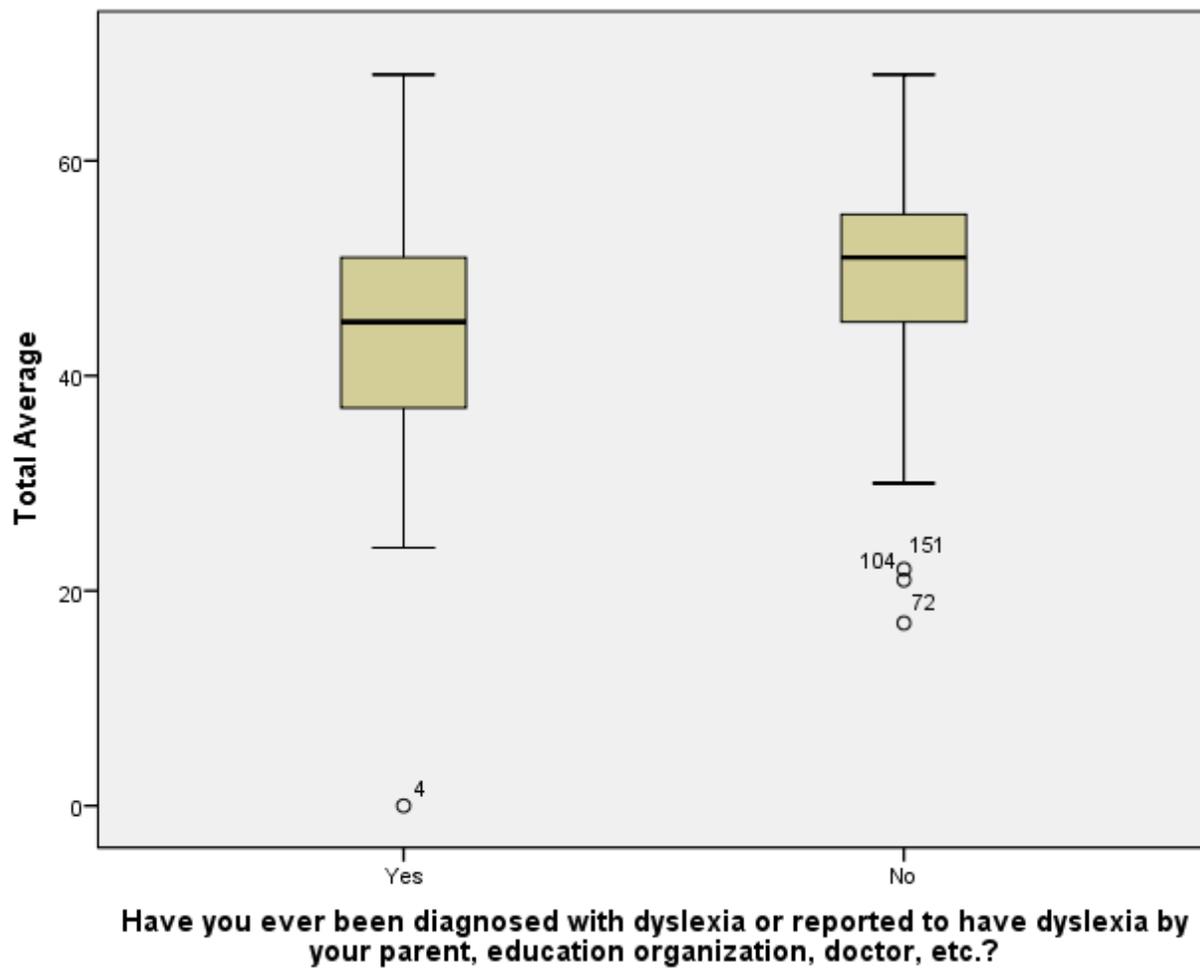


Figure 1. Box and Whiskers Plot for Adults with Dyslexia and Adults without Dyslexia

An updated Group Statistics and Table for Group tallies per WEMWBS question

reflecting the removal of the outliers are provided (see Table 11 and Table 12).

Table 11
Group Statistics with Outliers Removed

Have you ever been diagnosed with dyslexia or reported to have dyslexia by your parent, education organization, doctor, etc.?		N	Mean	Std. Deviation	Std. Error Mean
Total Average	Yes	96	44.28	9.659	.986
	No	118	50.22	7.413	.682

Table 12
Descriptive Statistics per Question with Outliers Removed
 Dependent Variable: With/Without Dyslexia

		N	Mean	Std. Deviation
I've been feeling optimistic about the future.	Yes	96	3.3854	.95554
	No	118	3.8475	.74681
	Total	214	3.6402	.87558
I've been feeling useful.	Yes	96	3.2500	.99472
	No	118	3.8983	.67165
	Total	214	3.6075	.89082
I've been feeling relaxed.	Yes	96	2.9167	.82929
	No	118	3.1356	.70305
	Total	214	3.0374	.76821
I've been feeling interested in other people.	Yes	95	3.3263	.91608
	No	118	3.7119	.83821

	Total	213	3.5399	.89261
I've had energy to spare.	Yes	96	2.6875	.89810
	No	118	2.8559	.86997
	Total	214	2.7804	.88460
I've been dealing with problems well.	Yes	96	3.1354	.80289
	No	118	3.6017	.68112
	Total	214	3.3925	.77225
I've been thinking clearly.	Yes	96	3.2188	.91999
	No	118	3.6610	.64345
	Total	214	3.4626	.80841
I've been feeling good about myself.	Yes	95	2.9053	1.00078
	No	118	3.5169	.80312
	Total	213	3.2441	.94496
I've been feeling close to other people.	Yes	96	3.0208	.97310
	No	118	3.5932	.79783
	Total	214	3.3364	.92380
I've been feeling confident.	Yes	96	2.9479	1.03994
	No	118	3.4153	.83026
	Total	214	3.2056	.95670
I've been able to make up my own mind about things.	Yes	96	3.4583	1.03534
	No	117	3.9145	.74940
	Total	213	3.7089	.91619
I've been feeling loved.	Yes	96	3.4271	1.06371

	No	118	3.9237	.83877
	Total	214	3.7009	.97591
I've been interested in new things.	Yes	96	3.4896	.99467
	No	118	3.6441	.76823
	Total	214	3.5748	.87828
I've been feeling cheerful.	Yes	95	3.2105	.95533
	No	118	3.5339	.71231
	Total	213	3.3897	.84300

Assumption Tests

Assumptions of Normality were met using a Kolmogorov-Smirnov test (see Table 14).

Kolmogorov-Smirnov was used because the sample size was more than 50 participants.

Table 13

Tests of Normality

Have you ever been diagnosed with dyslexia or reported to have dyslexia by your parent, education organization, doctor, etc.?		Kolmogorov-Smirnov ^a		
		Statistic	df	Sig.
Total Average	Yes	.080	96	.155
	No	.135	118	.000

a. Lilliefors Significance Correction

An independent samples *t* test was used to test the null hypothesis that looked at the means of two independent groups of adults with dyslexia and adults without dyslexia and the averages of the WEMWBS Likert questionnaire responses. The *t* test required that the assumptions of normality and equality of variance be met. The data above showed that no

violation of normality was found. The assumption of equality of variance was determined using the Levene's test with a significance of .008 shown below (see Table 15).

Table 14

Levene's Test for Equality of Variances

Dependent Variable: With/Without Dyslexia		F	Sig.
Total Average	Equal variances assumed	7.228	.008
	Equal variances not assumed		

Hypothesis

The null hypothesis is that there is no significant difference between the *well-being* of adults who are diagnosed with dyslexia and adults who not are diagnosed with dyslexia as measured by Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). An independent *t* test was used to test the null hypothesis. The null hypothesis was rejected at a 95% confidence level were $t(212) = 5.09$, $p < .001$, $\eta^2 = .11$ ETA squared, causing the effective size to be large (Warner, 2013). Each of the 14 statements in WEMWBS are scored from 1 (none of the time) to 5 (all of the time) with a total scale score that is determined by summing the 14 individual item scores (Stewart-Brown and Janmohamed, 2008). The minimum score is 14, and the maximum score is 70. There was a significant difference in the average scores of the Likert-scaled questions on the WEMWBS questionnaire between adults with dyslexia (M=44.28, SD 9.66) and adults without dyslexia (M=50.22, SD=7.413). The well-being population mean score as indicated by the WEMWBS User-Guide is 50.7 (Stewart-Brown and Janmohamed, 2008). Thus, the null hypothesis was rejected. The findings suggest that adults without dyslexia have a greater sense of well-being than adults with dyslexia. See Table 15 Independent Samples test.

Table 15
Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2- tailed)	Mean Differen ce	Std. Error Differ ence	95% Confidence Interval of the Difference Lower Upper	
Total Average of questions	Equal variances assumed	7.228	.008	-5.087	212	.000	-5.939	1.167	-8.240	-3.638
	Equal variances not assumed			-4.953	175.202	.000	-5.939	1.199	-8.305	-3.573

CHAPTER FIVE: CONCLUSIONS

Overview

Chapter Five will review the findings of the research as it pertains to the well-being of adults with and without dyslexia. Chapter Five provides the research questions, hypothesis, descriptive statistics, and results according to the hypothesis. The purpose of Chapter Five is to further analyze the outcomes of the research, discuss its implications and limitations and provide further recommendations for research. It is divided into four sections.

Discussion

The purpose of this study was to determine if a difference exists in the well-being of adults who are diagnosed with dyslexia and the well-being of adults who are not diagnosed with dyslexia. The research asked the question: Is there a difference between the *well-being* of adults who are diagnosed with dyslexia and adults who not are diagnosed with dyslexia as measured by the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)? The null hypothesis indicated that there is no significant difference between the *well-being* of adults who are diagnosed with dyslexia and adults who not are diagnosed with dyslexia as measured by the WEMWBS. An independent samples *t* test was conducted, and significant results were determined. Therefore, the researcher rejected the null hypothesis. The researcher determined a significant difference ($p < .001$) in the average scores on the WEMWBS questionnaire between adults with dyslexia ($M=44.28$, $SD 9.66$) and adults without dyslexia ($M=50.22$, $SD=7.413$). The mean population for the WEMWBS for well-being is 50.7. The results of the study suggest that adults without dyslexia have a greater sense of well-being than adults with dyslexia. The primary conclusion of this research is that there is a significant difference in well-being between adults with dyslexia and adults without dyslexia. Adults with dyslexia scored lower on the WEMWBS well-being

questionnaire as an average of all 14 responses (See Figure 2). Additionally, adults with dyslexia scored lower than adults without dyslexia on each of the 14 questions of the WEMWBS well-being questionnaire.

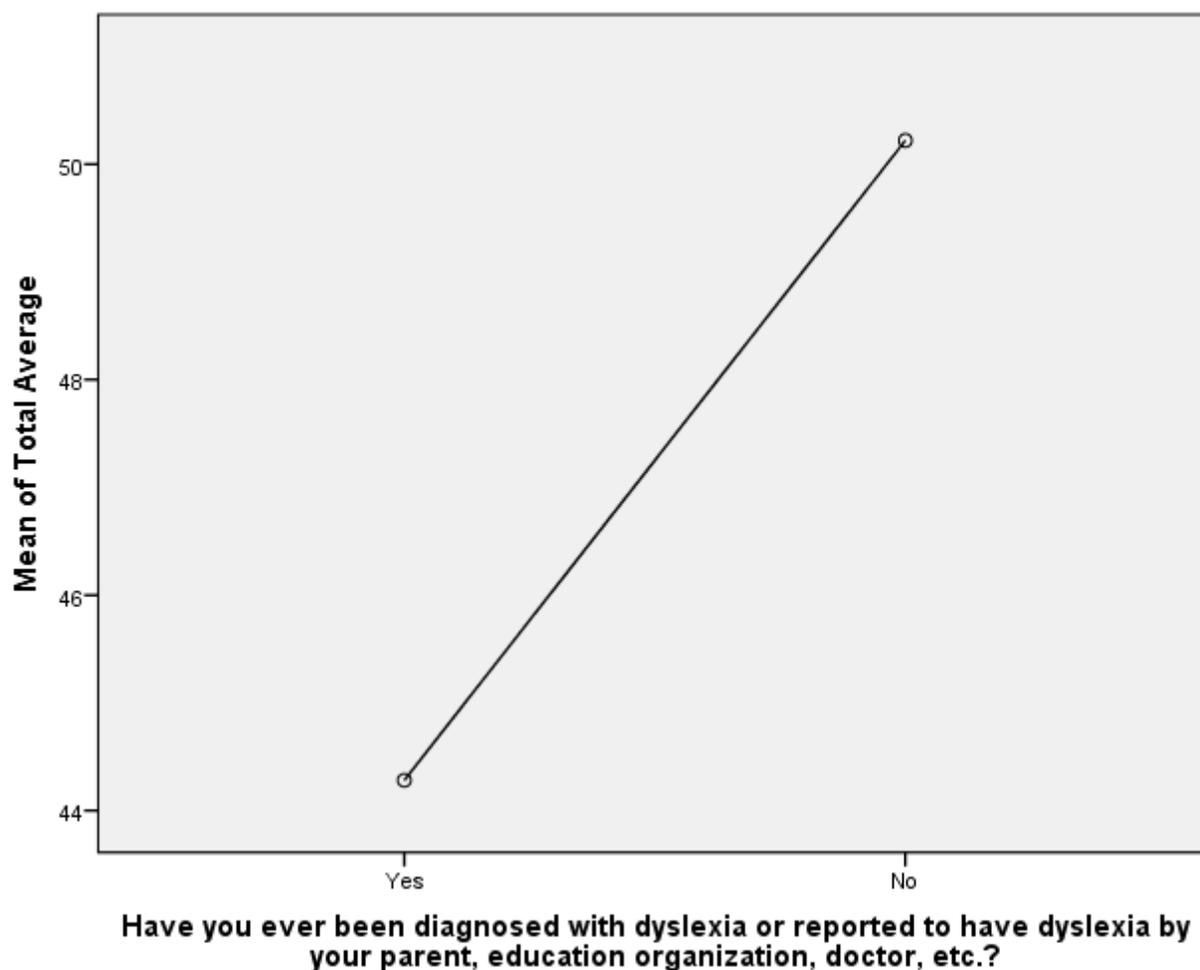


Figure 2. WEMWBS Total Average for Adults with Dyslexia and Adults without Dyslexia

Carawan, Nalvany and Jekins (2016) indicated that there exists a scarcity of research that determines the complex factor of dyslexia in late adulthood, despite the growing body of research that indicates dyslexia persists into adulthood. Daderman, Nilvang, and Levander (2014) determined that most of the dyslexia research focuses on elementary students. A connection has been found between dyslexia and poor self-esteem in children and adolescents

through research but no such study has been conducted on adults (Nalavany and Rennick, 2011). Additionally, studies for adults with dyslexia seem to be centered on characteristics and symptoms as they relate to academic performance and pursuits in adult life, such as career performance; however, studies for emotional well-being and the implications of dyslexia as an adult have not been firmly concluded. A compelling quote captured in the Kannangara (2015) study of an adult with dyslexia demonstrates the toll the disorder can continue to take on self-esteem for adults with dyslexia: "... nearing the end of fourth decade in my life. Still my childhood experiences can bring me to tears" (p. 2). Nalavany and Carawan (2012) show the stereotypes adults with dyslexia endured during childhood as being mentally incapacitated, cheating, lazy and stupid, indicating that the stereotypes were more difficult than the actual disability itself.

Anne Mari Undheim (2009) researched the psychosocial factors of young Norwegian adults with dyslexia and determined that the dyslexic group showed strong tendencies toward depression. The Undheim (2009) study has indirect ties to this study since the WEMWBS contains statements related to well-being with such statements as: I've been feeling optimistic about the future; I've been feeling useful; I've been feeling confident; I've been feeling loved; and I've been feeling cheerful. Additionally, a lack of teacher support was identified by the adults with dyslexia as an overall feeling in interviews conducted by Undheim, leading to educational implications. The psychosocial experiences of dyslexics were studied by Nalavany, Carawan, and Rennick (2010), and nine distinct cluster themes occurred that demonstrated the social-emotional effects of dyslexia: *Emotional Downside; Pain, Hurt, and Embarrassment from Past to Present; Why Can't They See It; On Being Overwhelmed; Fear of Disclosure; A Good Support System Makes the Difference; and Moving Forward*. Many of these clusters echo

the statements on the WEMWBS, like: I've been feeling loved; I've been feeling good about myself; I've been feeling confident; I've been dealing with problems well; and I've been thinking clearly. Levels of self-esteem for adults with dyslexia and adults without dyslexia found that individuals with dyslexia had weaker self-esteem in all dimensions, talents and gifts, psychological health, and physical characteristics, except relationships with family and parents (Daderman, Nilvang, and Levander, 2014). This has a direct tie to this research in that the WEMWBS measures well-being, closely tied to self-esteem.

Mathematics anxiety for university students with dyslexia was researched and although students with dyslexia are more inclined to take a deeper approach to learning for actual comprehension as opposed to fact-finding, also known as surface learning, the researchers connected the presence of decreased mathematics performance, math anxiety and math avoidance with adult students with dyslexia (Jordan, McGladdery, and Dyer, 2014). In addition, the study indicated that a lack of research exists in the academic mental health of university students with dyslexia, who are at risk for high mathematics anxiety (Jordan, McGladdery, and Dyer, 2014). The researchers further determined that correlation was not present in primary school children with dyslexia, indicating that this anxiety develops over time. This conclusion supports the theory that well-being is affected over time for adults with dyslexia and that dyslexia poses long-term effects related to emotional well-being.

Implications

Children and adolescents with dyslexia become adults with dyslexia and do not outgrow dyslexia as is sometimes believed (Nalavany, Caraway and Rennick, 2010). This study indicates the ramifications of the lack of dyslexia awareness and appropriate interventions and its tendency to affect adults' well-being. Because children and adolescents with dyslexia are not receiving

appropriate academic interventions specific to dyslexia, academic progress is stymied, and emotional effects are often taking shape. As the research shows, these emotional effects have been proven to progress into adulthood for individuals with dyslexia. The most unfortunate travesty is that the individual with dyslexia is often and incorrectly thought to be educationally incapable, incompetent, intentionally disorganized with a lack of work ethic by educators and then themselves.

The Ohio Department of Education launched a Three-Year Dyslexia Pilot Program for school years 2012-13, 2013-14, and 2014-15 with compelling results (Morrison, Collins, and Hawkins, 2015). The state provided funds to implement a multi-sensory language program, an appropriate and effective intervention for students with dyslexia, beginning in kindergarten. The cohort that was able to receive the specialized instruction in kindergarten, first and second grade netted the greatest results. The percentage of students “At or Above” benchmark increased from 22.2% to 61.4%. The percentage of students “Well Below” benchmark decreased from 49.9% to 21.4%. Since a multi-sensory method of instruction is effective for 90% of learners, educators and curriculum builders should consider replacing current practices (Shaywitz, 2012). It is time that educators and curriculum builders resist the implication that dyslexia is a special form of education when it is not. Dyslexia is a different form of education from which the majority of students benefit.

Limitations

Several limitations were identified in this study. The first limitation was the participant’s self-indicated claim of dyslexia. Since the study does not know if the participant was evaluated by an educational or medical professional familiar with the battery of tests necessary to identify dyslexia, there could be false positives in the data set. Accordingly, because dyslexia does not

have a specified test that is specific to dyslexia, false negatives could exist in the data set. Another limitation to the study was the inability to control multiple survey responses. A participant could submit multiple surveys without recourse. A final limitation to the study was the inability to have a read-aloud option for the survey taker since individuals with dyslexia can benefit from this assisted technology. Therefore, an individual with dyslexia may have committed errors in reading and responding to the survey.

Recommendations for Future Research

While this study found a significant difference in well-being between adults with dyslexia and adults without dyslexia, the study is still limited in scope. Causal comparisons could be determined with greater participant information. Future research could include a participant break-down according to age ranges, gender, income, country of residence, and marital status. Future research could also study the well-being of individuals with dyslexia who were given appropriate multi-sensory interventions, a research-based intervention for students with dyslexia, to determine if adults with dyslexia have a greater sense of well-being than their counterparts without appropriate interventions. A qualitative phenomenological study could be performed to reveal the experiences and perceptions for adults with dyslexia.

Summary

The purpose of the research was to determine if a significant difference exists between adults with dyslexia and adults without dyslexia for well-being as measured by the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). The null hypothesis stated that there was no significant difference between adults with dyslexia and adults without dyslexia for well-being. The study determined that a significant difference does exist between the groups; therefore, the null hypotheses was rejected as measured by the means of the questions on the WEMWBS for

well-being. More compelling, however, is that for each of the 14 questions, adults with dyslexia performed lower than adults without dyslexia.

Dyslexia is not a recent phenomenon. There are records of word blindness as far back as 1676 (Shaywitz, 2012). It is not a rare disability. Twenty percent of classroom students are afflicted by dyslexia. Yet, the disability continues to go largely undetected and under-identified by educational entities. Teaching colleges are not teaching dyslexia-specific learning interventions or how to evaluate a student with dyslexia. Only nine percent of teachers had prior training in dyslexia as compared with 21% of teachers with prior training in autism, despite the occurrence of 1 in 5 for dyslexia and 1 in 54 for autism (Belgaumkar, 2014.) This is causing immense and long-lasting effects. Since dyslexia is not outgrown, children with dyslexia become adults with dyslexia.

There is a cost to this monumental oversight. Sixty-five percent of the prison population are illiterate (Ohio Department of Education, 2016). Fourth grade high-stakes testing scores are being used to predict the number of future prison beds (Ohio Department of Education, 2016). The dropout rate for students with dyslexia is an astounding 35%, twice the national average (Lamki, 2012).

Why is this happening? Why are autism awareness and resources so much greater than dyslexia despite the greater prevalence of the latter? The squeaky wheel gets the grease. Dyslexics are suffering in silence. Well-meaning teachers and parents are overlooking the specific needs required by dyslexics to succeed, despite the fact that interventions for dyslexics are effective with 90% of all students. Parents believe teachers who may say their child needs more discipline, motivation and organization...that if he/she only paid attention, success would be given. Some states, like Ohio, are instituting programs for early identification and

intervention for dyslexia with excellent results. For students given multi-sensory dyslexia interventions at kindergarten, 1st and 2nd grade, the percentage of students “At or Above” reading benchmark increased from 22.2% to 61.4%, while the percentage of students “Well Below” benchmark decreased from 49.9% to 21.4%. (Ohio Department of Education, 2016).

Educational institutions, like Liberty University, must begin incorporating dyslexia awareness, assessment and interventions into their teaching college curriculums. Dyslexia research must continue. The silent suffering needs to end.

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APPENDIX

APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

March 21, 2018

Ashleigh Anderson

IRB Exemption 3172.032118: The Relationship of the Well-Being of Adults With and Without Dyslexia: A Casual-Comparative Study

Dear Ashleigh Anderson,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
- (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
 - (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,



Administrative Chair of Institutional Research
The Graduate School

LIBERTY
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APPENDIX B: PERMISSION TO USE WEMWBS

Submission (ID: 441107337) receipt for the submission of
</fac/med/research/platform/wemwbs/researchers/register>

no-reply@warwick.ac.uk

Wed 1/24/2018 2:44 PM

Inbox

To: Anderson, Ashleigh L <alanderson6@liberty.edu>

Thank you for completing this registration. You now have permission to use WEMWBS in the manner detailed in your submission.

APPENDIX C: INFORMED CONSENT

The Liberty University Institutional
Review Board has approved
this document for use from
3/21/2018 to –
Protocol # 3172.032118

CONSENT FORM

THE RELATIONSHIP OF THE WELL-BEING OF ADULTS WITH AND WITHOUT DYSLEXIA: A CASUAL-COMPARATIVE STUDY

Ashleigh L. Anderson
Liberty University
School of Education

You are invited to be in a research study on dyslexia. You were selected as a possible participant because you were identified by a dyslexia association to be an adult that is dyslexic OR you are an adult that is not dyslexic. Please read this form and ask any questions you may have before agreeing to be in the study.

Ashleigh Anderson, a student in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of this study is to determine if a difference exists in the well-being of adults who are diagnosed with dyslexia and the well-being of adults who not are diagnosed with dyslexia. Currently, the well-being of children and adolescents with dyslexia is known. However, there is little information relative to the well-being of adults who are diagnosed with dyslexia. This study will address the gap that exists in the literature by using a valid instrument to gauge the well-being of adults who are diagnosed with dyslexia.

Procedures: If you agree to be in this study, I would ask you to do the following things:

1. In an anonymous survey, answer three questions to determine your eligibility for the study and 14 questions based on a scale indicating your choice from A-D (15-20 MIN).

Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Benefits: Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include greater awareness of dyslexia and its potential effects, and the need for interventions specific to dyslexia.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. The researcher will not ask for any Personally Identifiable Information (PII). Data will be stored on a password locked computer and may be used in future presentations. After three years, all electronic records will be deleted. Data housed in the survey website database will be deleted after three years.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you

APPENDIX D: SURVEY MONKEY WEBPAGE SURVEY SCREENSHOTS

Risks: The risks involved in this study are minimal.

Benefits: Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include greater awareness of dyslexia's and its potential effects and the need for interventions specific to dyslexia.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. The research will not ask any Personally Identifiable Information (PII). Data will be stored on a password locked computer and may be used in future presentations. After three years, all electronic records will be deleted. Data housed in the survey website database will be deleted after three years.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

How to Withdraw from the Study: [

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Contacts and Questions: The researcher conducting this study is Ashleigh Anderson. You may ask any questions you have now. If you have questions later, you are encouraged to contact her at alanderson6@liberty.edu. You may also contact the researcher's faculty advisor, Dr. Meredith Park at

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

* 1. Have you ever been diagnosed with dyslexia or reported to have dyslexia by your parent, education organization, doctor, etc.?

Yes

No

* 2. Are you 18 years of age or older?

Yes

No

3. I've been feeling optimistic about the future

- None of the time
- Rarely
- Some of the time
- Often
- All of the time