THE IMPACT OF MENTAL HEALTH DIAGNOSES IN COMBINATION WITH LEARNING

DISORDERS

by

Tanya S. Gulledge

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Liberty University

2022

THE IMPACT OF MENTAL HEALTH DIAGNOSES IN COMBINATION WITH LEARNING

DISORDERS

by Tanya S. Gulledge

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Liberty University, Lynchburg, VA

2022

APPROVED BY:

Treg Hopkins, Ed.D., Committee Chair

Alexandra Barnett, Ed.D., Committee Member

ABSTRACT

The purpose of this research is to build on previous research that showed a significant relationship between students with socially devalued identities, poor mental health, and lower academic achievement and suggested tailored and targeted treatments as a possible protective factor. To develop programs to assist students in achieving higher scores, one must first determine the impact of comorbid mental health diagnosis and specific learning disorder on academic achievement. A quantitative causal-comparative study was used to determine if there is an impact of mental health diagnoses in combination with specific learning disorders for students with an Individualized Education Plan (IEP) or 504 plans on standardized test scores. The study participants were drawn from a convenience sample of 3rd, 8th, and 10th-grade students located in a rural area of northeast Florida during the 2018-2019 school year diagnosed with a specific learning disorder. Academic achievement was measured by student score on the Florida Standard Assessment (FSA). The sample size was 195 to 198 students from each grade level, divided into two groups depending on the presence or absence of a comorbid mental health diagnosis. The data was analyzed using three independent sample t tests. The results of the study indicated no significant difference between the two subgroups on academic achievement as measured by the FSA scores. The findings of this study showed a need for future studies to include replication of the study in additional populations and areas using a different scale of measurement and to compare students with a mental health disorder to mainstream students with no mental health disorder or specific learning disorder.

Keywords: specific learning disorder, mental health, comorbid, academic achievement

Dedication

I dedicate my dissertation work to my family. A special feeling of gratitude to my loving husband who supported and encouraged me through my educational journey. I would never have made it through this process without you. To my two children, Jordan and Kade, there were many sacrifices that had to take place in order that I complete this journey. I thank you both for understanding the work it required to reach this point. To my parents, I thank you for the encouragement you have shown and the support for my dreams. To my sisters, Deana, Cindy, and Janna, thank you for listening when I needed a shoulder to lean on. Thank you all for being the best support system a person could ask for.

Acknowledgments

I would like to take a moment to thank Dr. Hopkins for his support and guidance throughout this entire endeavor. Dr. Hopkins exhibited patience through each stage of the process. I will be ever grateful for his guidance.

I also would like to take time to thank Dr. Barnett; her instruction and teaching have helped to guide me through this process. In addition, her feedback was of such great use to me as I built my study and continued to add to my research.

To my family, I cannot thank you enough for your help, patience, support, and encouragement. Jason, Jordan, Kade, Dad, Mom, and my wonderful sisters, Deana, Cindy, and Janna, not only have you inspired me through your hard work and endurance, but you have always been a support system for me in a way I could never explain. To my grandchildren Greyson, Ella Grace, and Sawyer, you all are an inspiration and have been since the day you were born. I love each of you.

Finally, to the teachers and parents of children with special needs. Working with teachers and parents to assist with navigating the challenges and barriers is what inspired me to choose my dissertation topic. As a professional and a parent, I understand the struggles of navigating through a difficult system to find the right fit for your children. There are many sleepless nights, tears, and emotions that come with teaching or parenting a child with SLD and mental health disorders. I applaud each of you for the work that you do daily for the children in your care.

I also acknowledge that I would not be where I am today without my faith in God and His guidance, love, grace, and mercy. By His grace, I have learned to trust, love, and care for others in which He has put in my path.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)

Florida Standards Assessments (FSA)

Individuals with Disabilities Education Act (IDEA)

Individualized Education Plan (IEP)

Specific Learning Disorder (SLD)

CHAPTER ONE: INTRODUCTION

Overview

The purpose of this quantitative causal-comparative study was to determine if there was a difference in academic achievement in students with a specific learning disorder and students with a comorbid diagnosis of specific learning disorder and a mental health disorder. Chapter One provides a background for the topics of learning disorders and mental health disorders. Included in the background is an overview of the theoretical framework for this study. The problem statement examines the scope of the recent literature on this topic. The purpose of this study is followed by a discussion of its significance. Finally, the research questions are introduced, and definitions pertinent to this study provided.

Background

Altay and Görker (2017) reported that 92.5% of students with a specific learning disorder have a comorbid mental health diagnosis. In contrast, only 20% of children without a specific learning disorder are diagnosed with a mental health disorder, as described in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) (Ball et al., 2016). These disorders include attention deficit hyperactivity disorder (ADHD), specific phobia, oppositional defiant disorder, enuresis, tic disorders, and over 10 other disorders (Altay & Görker, 2017). The percentage of students with specific learning disorders, that also present with a comorbid mental health disorder, creates a need for additional research on how mental health diagnoses affect academic achievement in students with specific learning disorder.

Today's educational classroom and curriculum looks and feels much different than classrooms from years ago. Classrooms have become more diverse in racial and ethnic groups (Mvududu, 2019). In addition, the introduction of electronic learning in the classroom has

increased and has affected students with behavioral and mental health needs in both a negative and positive manner (Tomaino et al., 2021). As classrooms continue to change, researchers can follow the outcomes of students using electronic learning methods and track any effects these changes have on a vulnerable population (Williams, 2017). Students faced with multiple risk factors, such as learning disabilities and mental health disorders, require special accommodations to succeed in the classroom (Esmaili et al., 2016). Even with these accommodations, academic achievement on standardized testing and other academic performance measures can be affected by mental health disorders. In addition, lower scores on standardized testing affect the student's ability to attend college at their preferred location or program (Deighton et al., 2018).

For the purpose of this research, it is important to understand the difference between intellectual disability and specific learning disability. The two are separate disorders and have individual diagnostic criteria and definitions. A person with an intellectual disability was previously known as a person with mental retardation (Tassé, 2016). According to Tassé (2016), intellectual disability results from several different known or unknown genetic causes, neurophysiological or environmental reasons, trauma, or a combination of these factors. The prevalence of intellectual disability in children and adolescents range between 1 to 2% (Mariano et al., 2020). Individuals diagnosed with an intellectual disability experience impairment in adaptive behavior, motor skills, conceptual skills, and daily life self-care skills, with an intellectual quotient score under 70. According to the U.S. Department of Education (2019), the number of students being served under the Individuals with Disabilities Education Act (IDEA) has risen and reached 9.2%.

For the purpose of this research, the concentration was centered on specific learning disorder. The DSM-IV separated the distinct categories of specific learning disorders. These

categories were reading disorder, mathematics disorder, disorder of written expression, and learning disorder not otherwise specified (Hendren et al., 2018). The DSM-5 moved away from these categories by using the label of *specific learning disorder* with specifiers of the area of impairment. Specific learning disorders include deficits in learning in areas of reading, writing, mathematics, listening, speaking, and reasoning skills (Altay & Görker, 2017). In addition, specific learning disorders are based on both genetic and environmental factors, which play a role in the development of the disorder. Often, specific learning disorders are determined or diagnosed by a team of professionals, including psychologists, mental health workers, teachers, and guidance counselors (Fletcher & Miciak, 2017; Hendren et al., 2018; Kern et al., 2019).

According to Ball et al. (2016), one in five children are diagnosed with a mental health disorder. Rosvall (2019) reported that educational achievements are negatively correlated with mental health disorders, resulting in increased absences and physical illness. While ADHD has been commonly associated with learning disabilities (Hendren et al., 2018), anxiety has also been found to be exacerbated in students with a specific learning disorder (Nelson & Harwood, 2011). Individuals with mental health disorders display both internal (depression, anxiety) and external (hyperactivity, conduct problems) symptoms (Jordan et al., 2020; Suldo et al., 2016; Visser et al., 2020a). According to Lane et al. (2017), symptoms of internalizing behaviors include being emotionally flat, shy, withdrawn, sad, depressed, anxious, obsessive-compulsive, lonely, and self-inflicting pain. Symptoms related to external behaviors include stealing, aggressive behavior, disruptive behaviors, lying, impulsivity, and cheating (Jordan et al., 2020; Lane et al., 2017).

Comorbidity is defined as having two or more risk factors within one individual (Valderas et al., 2009). Psychiatric comorbidity occurs when one of these factors is related to a

mental health diagnosis (Hendren et al., 2018). Research conducted by Altay and Görker (2017) showed that 92.5% of students with a specific learning disorder had a comorbid mental health diagnosis. Other research conducted estimated the prevalence of specific learning disorders and ADHD range from 39% for reading (Sexton et al., 2012) to 65% (Mayes et al., 2000) for reading. In addition, other research reported that the comorbidity for ADHD and specific learning disorders ranges from 15% to 51% for reading (Silva et al., 2020; Yoshimasu et al., 2010). Though research has shown that the percentages can differ depending on the study, the numbers are high enough that finding out more about serving the population well is imperative. Academic skills and behavioral engagement appear most tied to mental health problems (Kovess-Masfety et al., 2020; Suldo et al., 2016). According to Kern et al. (2019), teachers are challenged with selecting proper accommodations to meet the individual student's needs. Poor academic achievement has long-term effects for individuals with learning disorders and mental health diagnoses (Deighton et al., 2018). These effects include difficulties with physical health, mortality, economic instability, poor social functioning, alcoholism, and violent behavior.

Bronfenbrenner's ecological systems theory (1978) stated that each person develops within a multilayered system that moves from inward to outward across time and expectations. A change in one level changes responses in other levels in what Bronfenbrenner calls childhood ecology. According to Rosa and Tudge (2013), the bioecological systems theory "constitutes the mature form of the theory, in which proximal processes are considered the primary driving force of development and the role of personal characteristics is given far more weight as one of the two main factors (the other being the environment) that influence the functioning of proximal processes" (p.12). Bronfenbrenner's bioecological systems theory emphasizes the importance of evaluating the effects of mental health on academic achievement due to the educational system's

changes, which affect student development (Kamenopoulou, 2016).

Albert Bandura's theory of self-efficacy (1977) presents the view that changes accomplished by different methods derive from a common cognitive process. The theory of self-efficacy and behavior change stated that psychological processes alter one's level and strength of self-efficacy. Students with comorbid mental health and learning disorders are likely to experience a range of emotional arousal, and their physiological state is often elevated (De Feyter et al., 2012). Based on the self-efficacy theory, increased emotional arousal leads to decreased ability to utilize coping skills, including reduced dedication and endurance to task completion (De Feyter et al., 2012).

Both learning and mental health disorders are negatively correlated with academic achievement (Altay & Görker, 2017; Rosvall, 2019). Through the theoretical framework of Bronfenbrenner's Ecological Systems (1978) and Bandura's Self-Efficacy theory (1977), mental health diagnoses have been shown to affect students' academic performance in students with a learning disorder. Reduced academic achievement is known to have both short- and long-term adverse effects (Deighton et al., 2018). More research is necessary to assess and understand the effects of comorbid learning disorders and mental health diagnoses.

Problem Statement

Previous research has shown that individuals diagnosed with a specific learning disorder often experience additional difficulties exacerbated by a psychiatric comorbidity (Esmaili et al., 2016; Gujare & Tiwari, 2016; Poppen et al., 2016; Sahu et al., 2019; U.S. Department of Education, 2019; Visser et al., 2020a). These difficulties create both short-term and long-term risk factors. Short-term risk factors include school absences, physical illness, and poor academic skills and outcomes (Esmaili et al., 2016; Rosvall, 2019). According to Deighton et al. (2018),

left untreated, long-term effects are seen in physical health, mortality, economic instability, poor social functioning, alcoholism, and violent behavior.

According to Curtin and Heron (2019), in 2017, suicide was the second leading cause of death for individuals aged 15 to 24. According to Boak et al. (2018), from 1983 to 2014 the prevalence of perceived need for professional help for mental health disorders increased from 6.8% to 18.9% among 4- to 16-year-olds. With rising mental health concerns, researchers must remain vigilant in assessing the effects of an ever-changing classroom curriculum on students at high risk of academic failure. However, with standards in place to increase inclusion in the standard classroom, teachers are not trained to recognize a psychiatric comorbidity. In 2017, the number of children with specific learning disorders serviced in the standard classroom for at least 80 percent of the day increased from 63.5 percent (U.S. Department of Education, 2019). According to Kern et al. (2019), teachers without proper training for working with children with mental health disorders and children with specific learning disorders become overwhelmed, and educational instruction becomes less effective. Again, this can lead to a negative effect on the academic achievement and self-esteem of the children. Increased inclusion into standard classrooms creates new educational concerns for students with learning and mental health disorders. According to research conducted by Gidlund and Boström (2017), there is a need for additional research to be conducted in order to assist teachers and educators in understanding the effects of students with emotional and behavioral diagnoses. This research should include how students with specific learning disorders and mental health disorders differ from other students. The research will assist in developing new methods that will be effective for these students and manageable for teachers and schools. The problem is that the research has not fully addressed the

effects of learning disorders with a comorbid mental health disorder on academic achievement

(Arnold et al., 2020; Hendren et al., 2018).

Purpose Statement

The purpose of this quantitative causal-comparative study was to determine if there is an

impact of mental health diagnoses in combination with specific learning disorders for students

with an Individualized Education Plan (IEP) or 504 plans on standardized test scores.

Individualized Education Plans are a set of modifications and accommodations based on a

child's needs to allow for students with disabilities to participate in educational services in the

least restrictive environment (MacLeod et al., 2017). A 504 plan is designed for children with

disabilities that need accommodations but do not need modifications to learn in the standard

classroom (Stanberry, 2017). There are two independent variables. The first independent variable

includes students with specific learning disorders and a comorbid mental health diagnosis, and

the second independent variable was derived from students with a specific learning disorder but

do not have a comorbid diagnosis. The Diagnostic and Statistical Manual of Mental Disorders,

5th Edition (DSM-5) defined a mental health disorder as a behavioral or psychological condition

that creates a significant impairment in one or more areas of functioning (American Psychiatric

Association, 2013). Specific learning disorders are a neurodevelopmental condition that refers to

a diverse group of disorders displayed by significant difficulties in an individual's ability to

perform necessary academic skills during school years (Altay & Görker, 2017; American

Psychiatric Association [APA], 2013; Sahu et al., 2019). The dependent variable, academic

achievement, was measured using standardized test scores. For this study, archival data was

gathered from the 2018/2019 school year on students enrolled in public education grades 3rd,

8th, and 10th with an IEP or 504 plan in rural counties in northwest Florida. Test scores on the

Florida Standards Assessments (FSA) were analyzed using a three independent sample t tests to determine if there was a significant statistical difference between students who have a specific learning disorder and students with a comorbid mental health diagnosis.

<div style="text-align:center">**Significance of the Study**</div>

Research that identifies the current level of the effect of a comorbid mental health diagnosis on academic achievement provided the needed data to increase awareness and possible funding for these at-risk students. Kelchner et al. (2019) recognized a need for therapeutic interventions for children with an IEP that focuses on their strengths in addition to being tailored to support their academic, career, and personal development. Though one can find many research discoveries regarding academic achievement, there is little research on the effects of a comorbid mental health diagnoses and specific learning disorders, discovering how together they affect students' ability to achieve higher academic scores on standardized testing evaluations. The DSM-5 indicated that specific learning disorders often co-occur with anxiety disorders, depressive disorders, and bipolar disorders (APA, 2013).

According to Passarotti et al. (2019), children diagnosed with ADHD and pediatric bipolar disorder experience chronic attention problems, emotional dysregulation, and a reduction in working memory. In addition, the academic performance gap between students with ADHD or pediatric bipolar disorder, and those without the mental health diagnosis, increases with age and grade level. Pediatric bipolar disorder most common symptoms include increased energy, irritability, mood lability, distractibility, goal-directed activity, euphoria/elated mood, pressured speech, hyperactivity, racing thoughts, poor judgement, grandiosity, inappropriate laughter, decreased need for sleep, flight of ideas, and depression (Findling et al., 2018). Students with ADHD often struggle with proper peer and teacher relations resulting in increased frustration,

hopelessness, and emotional dysregulation. The reduction in working memory is a primary factor in these deficits (Passarotti et al., 2019).

In 2014, a meta-analysis showed a correlation between self-regulation and academic achievement (Allan et al., 2014). However, this was performed on an age group of five and six-year-old students in preschool and kindergarten classes, which had not been diagnosed with a mental health disorder. The tendencies discussed, like the inability to self-regulate, insufficient attention, and high oppositional behaviors, are often early signs of mental health concerns. According to Leyland et al. (2019), difficulties with self-regulation resulting in maladaptive coping strategies is symptomatic of many clinical conditions, such as impulsivity in ADHD and rumination in depression. These maladaptive coping strategies have been shown to cause difficulty in academic achievement (Schäfer et al., 2017). Researched conducted by Gujare and Tiwari (2016) revealed that emotional problems, conduct problems, hyperactivity, and peer problems, all common symptoms of mental health disorders, have a negative correlation with academic achievement. In addition, the prosocial behavior component of mental health symptoms of students exhibit a positive correlation with academic achievement. The current study will add to this literature by providing data on how the comorbid disorders of mental health diagnosis and specific learning disorder effect students' academic achievement across three separate age groups.

The research was designed to build on research conducted by Price et al. (2019), which showed a significant relationship between students with socially devalued identities, poor mental health, and lower academic achievement, suggesting tailored and targeted treatments as a possible protective factor. In order to develop programs to assist students in achieving higher scores, one must first determine the impact of comorbid mental health diagnosis and specific

learning disorder on academic achievement. Once this is achieved, advocacy for additional supports can be developed to increase protective factors while reducing risk factors for high-risk students in areas with limited resources.

Research Questions

RQ1: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 3rd-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

RQ2: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 8th-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

RQ3: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 10th-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

Definitions

1. *Comorbidity* - Comorbidity is defined as having two or more risk factors within one individual (Valderas et al., 2009).

2. *Mental Health Disorder* - A mental health disorder is defined by the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) as a behavioral or psychological condition that creates a significant impairment in one or more areas of functioning (American Psychiatric Association, 2013).

3. *Psychiatric Comorbidity* - Psychiatric comorbidity is when one of the disabling factors is related to a mental health diagnosis (Hendren et al., 2018).

4. *Self-regulation* – Self-regulation is the ability for an individual to manage energy states, emotions, thoughts, and behaviors in ways to produce positive results, such as well-being and learning (Aldao et al., 2010; Leyland et al., 2019).

5. *Specific Learning Disorder* - Specific learning disorder is a neurodevelopmental condition that refers to a diverse group of disorders displayed by significant difficulties in the ability of an individual to perform necessary academic skills during school years (APA, 2013; Altay & Görker, 2017; Sahu et al., 2019).

CHAPTER TWO: LITERATURE REVIEW

Overview

A systematic review of the literature was conducted to investigate the impact of mental health diagnoses in combination with learning disorders for students with an Individual Education Plan (IEP) on standardized test scores. This chapter presents a review of the current literature related to the topic of study. In the first section, the theories relevant to students diagnosed with a specific learning disorder with an IEP, mental health diagnoses, and academic achievement are discussed. The theories are Bronfenbrenner's ecological systems theory (1978) and Bandura's theory of self-efficacy (1977). Next, a synthesis of recent literature regarding the impact of mental health diagnoses on students with IEPs and their academic performance is presented. The review of the literature was organized around 5 themes. These themes are Student Learning Disorders, Mental Health Diagnoses, Psychiatric Comorbidity, Mental Health Diagnosis, and Student Academic Achievement. In the end, a gap in the literature was identified, showing a viable need for the current study.

Theoretical Framework

Theory of Bronfenbrenner's Ecological Systems

Bronfenbrenner's ecological systems theory (1978) stated that each person develops within a multilayered system that moves from inward to outward across time and expectations. As systems change, the effects are felt through each layer. As a child develops, there is influence from the combination of all levels: the microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Bronfenbrenner described a child's social role within the context of this model to be one where the expectation of behavior shapes the child, describing how children act and react based upon the system in which they are living. A change in one level changes responses in other

levels in what Bronfenbrenner calls the ecology of childhood.

The constructs of Bronfenbrenner's ecological systems theory (1978) included the individual in the microsystem, mesosystem, exosystem, macrosystem, and chronosystem. According to Bronfenbrenner, microsystems include family, school, peers, and are directly related systems and mesosystems, which are the link between the microsystems. For the purpose of this research, a close look at the school and health services that include diagnosis of disorders was discussed. The exosystem is comprised of informal and formal networks that are structured but also evolving (Bronfenbrenner, 1978). The exosystem of interest is the legal services of persons with disabilities and their IEP. In addition, Bronfenbrenner stated that the macrosystem is the all-encompassing culture that includes economic, social, educational, legal, and political systems. Finally, the chronosystem consists of time and historic influences. As time passes, the culture and types of instruction within a classroom also changes. Therefore, a current analysis of academic achievement for students with higher risk factors was necessary.

The ecological systems theory by Urie Bronfenbrenner (1978) is often referred to as bioecological systems theory to include the importance of the biological contributions of individual characteristics (Rosa & Tudge, 2013). Bioecological systems theory encompassed the broadening of the concept of time to include events and occurrences over the course of both ontogenetic and historical time (Kamenopoulou, 2016; Rosa & Tudge, 2013). In addition, proximal processes were included, and these variables expanded and clarified the development process (Rosa & Tudge, 2013). The bioecological systems theory

"constitutes the mature form of the theory, in which proximal processes are considered

the primary driving force of development and the role of personal characteristics is given

far more weight as one of the two main factors (the other being the environment) that

influence the functioning of proximal processes" (Rosa & Tudge, 2013, p.12).

According to Sung-Man (2020), Bronfenbrenner's Ecological System supports the theory that researchers should consider community and macro-level factors, as well as individual and micro level variables, to understand adolescent mental health disorders.

Bronfenbrenner's bioecological systems theory emphasized the importance of evaluating the effects of mental health on academic achievement due to the changes within the educational system, which affect student development (Kamenopoulou, 2016). Such changes include the increase in comorbid mental health and specific learning disorders in children, including an increase in online learning and technology within the classroom. In addition, more resources for mental health have been introduced to include therapeutic interventions within the school system (Fazel et al., 2014). The correlation between mental health, specific learning disorders, and academic achievement needs additional research to determine if the changes are increasing or decreasing performance in students with a comorbid diagnosis.

Theory of Self-Efficacy

Albert Bandura's theory of self-efficacy (1977) presents the view that changes accomplished by different methods derive from a common cognitive process. The theory of self-efficacy and behavior change stated that psychological processes alter one's level and strength of self-efficacy. The expectation of personal efficacy determines whether coping behavior is initiated, how much effort is expended, and how long it is sustained in the face of obstacles and negative experiences. According to Bandura, personal efficacy expectations are drawn from four primary sources: performance accomplishments, vicarious experience, verbal persuasion, and physiological states. Self-efficacy theory is based on the primary assumption that psychological processes serve as a means of creating and strengthening personal efficacy expectations. Self-

efficacy theory stated that people process, weigh, and integrate different sources of information concerning their ability, and as a result, they adjust their behavior and effort. Therefore, the strength of a student's beliefs in their capacity is likely to affect whether they will try to overcome difficult situations (Bandura, 1977; De Feyter et al., 2012).

Many mental health diagnoses, such as ADHD, bipolar disorder, autism, and schizophrenia, are known to be physiological based (Marshall, 2020; Woolfson, 2019). Students with comorbid mental health and learning disorders are likely to experience a range of emotional arousal, and their physiological state is often elevated (De Feyter et al., 2012). Based on self-efficacy theory increased emotional arousal leads to decreased ability to utilize coping skills and reduced dedication and endurance to task completion. Therefore, this theory supports the possibility of risk factors, such as a learning disorder combined with a mental health disorder having an effect on academic achievement as measured by standardized testing.

<div align="center">

Related Literature

</div>

Student Learning Disorders

Children with learning disorders are often characterized as either an intellectual disability or with the diagnosis of specific learning disorder. The two are separate disorders and have individual diagnostic criteria and definitions. Currently, an intellectual disorder is defined as an individual who has a significantly below average general intellectual functioning and difficulties in adaptive behavior before age 18 (APA, 2013; Tassé et al., 2016). Specific learning disorder is a neurodevelopmental condition that refers to a diverse group of disorders displayed by significant difficulties in the ability of an individual to perform necessary academic skills during school years (APA, 2013; Altay & Görker, 2017; Sahu et al., 2019). According to the U.S. Department of Education (2019), the number of students, being served under the IDEA has risen

from 8.4 percent in 2010 to 9.2% in 2107. According to Hussar et al. (2020), 14 percent of students aged three to 21 attending public schools receive special education services under the IDEA. Among these students, 33 percent had specific learning disorders (Hussar et al., 2020).

Intellectual Disability Learning Disorder

An intellectual disability was previously known as mental retardation (Tassé, 2016). According to Tassé (2016), intellectual disability is the result of several different known or unknown genetic causes, neurophysiological or environmental reasons, trauma, or a combination of these factors. In 2017, an intellectual disability accounted for 6.8% of students being served under IDEA in the United States (U.S. Department of Education, 2019). According to Platt et al. (2019), it is crucial for both legal rights and research that the separation of intellectual disabilities and specific learning disorders is made when working with individuals classified as having a learning disorder. Though research has shown an increase in mental health disorders in individuals who have the diagnosis of an intellectual disability, for this research the focus was placed on students with a specific learning disorder.

Specific Learning Disorder

Specific learning disorders include deficits in learning in areas of reading, writing, mathematics, listening, speaking, and reasoning skills (Altay & Görker, 2017; McDonough et al., 2017). In addition, a specific learning disorder is biologically based with genetic and environmental factors playing a role in the development of the disorder (Altay & Görker, 2017). Often specific learning disorder is determined or diagnosed by a team of professionals to include psychologists, mental health workers, teachers, and guidance counselors (Fletcher & Miciak, 2017; Kern et al., 2019). The U.S. Department of Education (2019) reported 38.2% of students served under IDEA fall under specific learning disorder, which is the most prevalent disability

category. Compared to the overall population, it is estimated that the global prevalence is

between 5 and 15% (Sahu et al., 2019). Though cognitive testing is a major contributing factor to

the diagnosis, it is not a requirement (Fletcher & Miciak, 2017).

According to the DSM-5, specific learning disorder is a type of neurodevelopmental

disorder that hinders the ability to learn or use specific academic skills, such as reading, writing,

or arithmetic (American Psychiatric Association, 2013). Reading, writing, and arithmetic are

considered the foundation for other academic learning (Salihu, et al., 2018). Criterion A of the

DSM-5 description of specific learning disorder is "difficulties learning and using academic

skills as indicated by the presence of at least one of the following symptoms that have persisted

for at least 6 months, despite the provision of interventions that target those difficulties" (APA,

2013, p. 66). Symptoms of specific learning disorder include the following: inaccurate or slow

and difficult word reading; difficulty comprehending the meaning of what is being read; spelling

difficulties; difficulties with written articulation; difficulties understanding number sense, facts,

calculation, or mathematical reasoning (McDonough et al., 2017). Criterion B stated a

requirement that academic skills be substantially and quantifiably (McDonough et al., 2017)

below the chronological age expectation and interfere with academic, occupational, or daily

living performance. In addition, McDonough et al. stated that Criterion B requires the academic

skills level is based on individually administered standardized achievement measures and a

comprehensive assessment by a clinician. Criterion C stated that "the learning difficulties begin

during school-age years but may not become fully manifest until the demands for those affected

academic skills exceed the individuals limited capacities" (APA, 2013, p. 67). This allows

students who show manifested symptoms later in life to receive assistance as needed. Finally,

Criterion D pronounced that the difficulties in academic achievement are not better explained by

any other disability, such as intellectual disabilities, visual or auditory deficits, other mental or neurological disorders, psychosocial adversity, lack of proficiency in language, or inadequate educational instruction (APA, 2013; McDonough et al., 2017).

The DSM-5 combined three separate learning disorders into one diagnostic category, which created the need for specifiers in order to identify the area, or areas, of academic weakness (McDonough et al., 2017). There are three specifiers that are used to clarify the individual area of deficits (APA, 2013; McDonough et al., 2017). The first is with impairment in reading, which is often referred to as dyslexia and is used when the individual demonstrates a significant impairment in one or more of the following subskills: word reading accuracy, reading rate or fluency, or reading comprehension. The second specifier relates to an impairment in written expression. The specifier regarding written expression is used when there is impaired spelling accuracy, grammar and punctuation accuracy or clarity, or organization of written communication. The third and last specifier is with impairment in mathematics. The specifier with impairment in mathematics, is often referred to as dyscalculia, and is used when there is a deficit in an individual's ability to process numerical information, learn and memorize arithmetic facts, perform accurate or fluent calculations, or utilize mathematic reasoning skills. Below is a discussion of the two primary specifiers, dyslexia and dyscalculia, and the research that has been reported within the last few years.

Previous Research Regarding Dyslexia

The main goal of Toffalini et al. (2017) was to test the hypothesis that children in different specific learning disorder categories would differ in terms of their academic difficulties and also at the underlying level of intellectual skills. According to Toffalini et al., a similar general ability index and cognitive proficiency index discrepancy was noticed across all

subgroups. This indicated working memory and processing speed are crucial for the successful acquisition of skills in different areas of academic learning. However, dyslexia is specifically marked by deficits in assignments requiring phonological processing. In order to test the hypothesis, Toffalini et al., obtained intellectual profiles for 1049 children between the ages of seven and 16 years of age, diagnosed with specific learning disorder. The 1049 cases fell into the four diagnostic categories as follows: 308 children (29% of the sample) with reading disorder; 147 children (14%) with spelling disorder; 93 children (9%) with specific disorder of mathematical skills; and 501 children (48%) with mixed disorder of the scholastic skills. A series of mixed-effects models were run, and the results indicated that mixed disorder was the single most frequently used category for specific learning disorders. In addition, Toffalini et al. reported that the most frequent isolated diagnosis was reading disorder, followed by spelling disorder. Arithmetic disorder was the smallest subgroup, indicating that dyscalculia is somewhat infrequent as a standalone diagnosis and often cooccurring with another specific learning disorder specifier.

Previous Research Regarding Dyscalculia

According to Peters et al. (2020), previous research has indicated that the core cognitive deficit in dyscalculia is an impairment in numerical magnitude processing. However, this was not the findings in the research performed by Peters. Peters et al. investigated the effects of spatial skills, verbal skills, numerical magnitude processing, and phonological processing in 62 children (34 male) between the ages of nine and 12 to investigate the factors that are associated with specific learning disorders and their role in the comorbidity between dyslexia and dyscalculia. The children were classified into three groups: children with dyslexia (19), children with dyscalculia (11), and children with comorbid dyslexia and dyscalculia (9). The remaining

typically developing children (23) had not received a formal diagnosis of a learning disorder. Peters and associates used a 2×2 ANOVA with the presence of dyscalculia and the presence of dyslexia as between-subject factors. Results for analysis was obtained through the use of standardized tests of arithmetic fluency and reading ability. Findings indicated that children with dyscalculia had significantly lower spatial skills compared to children without dyscalculia. The strongest unique predictor of isolated dyscalculia and comorbid dyslexia and dyscalculia was spatial skills. In addition, the strongest unique predictor of isolated dyslexia was phonological awareness.

According to Haberstroh and Schulte-Körne (2019), three to seven percent of individuals suffer from dyscalculia. Individuals with dyscalculia present with severe and persistent difficulty in mathematical calculations, which leads to significant impairments in school, work, and everyday life activities, and elevates the risk of a comorbid mental health disorder. Haberstroh and Schulte-Körne conducted a meta-analysis of literature published between 2015 and 2016 regarding individuals diagnosed with dyscalculia. Findings of the meta-analysis revealed that individuals with dyscalculia are at elevated risk of being diagnosed with dyslexia, ADHD, anxiety, depression, and externalizing disorders characterized by aggression and rule-breaking. Additional findings from the meta-analysis indicated that there has been a lack of research regarding dyscalculia, resulting in a need for symptom-specific interventions involving the training of specific mathematical content. In addition, Haberstroh and Schulte-Körne determined that there is a need for high-quality intervention trials and for suitable tests and learning programs for older adolescents and adults. Also, Haberstroh and Schulte-Körne postulated that treatment should be started early in the primary-school years and implemented or monitored by trained specialists in an individual setting with comorbid symptoms and disorders receiving

additional attention. Finally, untreated dyscalculia will result in negative school experiences and generate fears of failure, which creates a diminished self-esteem.

Mental Health Diagnoses

Individuals diagnosed with a specific learning disorder often experience additional difficulties exacerbated by the comorbidity of mental health disorders (Esmaili et al., 2016; Gujare & Tiwari, 2016; Poppen et al., 2016; Sahu et al., 2019; U.S. Department of Education, 2019; Visser et al., 2020a). According to Ball et al. (2016), one in five children are diagnosed with a mental health disorder. Rosvall (2019) reported that educational achievements are negatively correlated with mental health disorders resulting in increased absences and physical illness. Additional research by Esmaili et al. (2016) expressed that the most common mental health diagnoses to appear in students with specific learning disorders include ADHD, oppositional defiant disorder, and generalized anxiety disorder. Individuals with mental health disorders display both internal (depression, anxiety) and external (hyperactivity, conduct problems) symptoms (Jordan et al., 2020; Suldo et al., 2016; Visser et al., 2020a). According to Passarotti et al. (2019), children diagnosed with ADHD and pediatric bipolar disorder experience chronic attention problems, emotional dysregulation, and a reduction in working memory. In addition, the academic performance gap between students with ADHD or pediatric bipolar disorder, and those without the mental health diagnosis, increases with age and grade level.

According to Vasileva et al. (2021), the epidemiology of mental health disorders in children younger than seven years is still an area of research that is lacking. In addition, research indicates that there are a significant number of young children suffering from mental health disorders are not receiving age-appropriate treatment due to the lack of research with this age group (Vasileva et al., 2021). Without proper screenings and diagnosis, many mental health

disorders will go untreated (Linkenheil et al., 2021). Left untreated, mental health disorders can continue and intensify over time, often predicting poor academic attainment, increased risk of future mental health problems, and significant financial problems to families and communities with an estimated total annual cost of $247 billion (Linkenheil et al., 2021).

Mental Health Disorders Related to Age Groups

The prevalence and type of mental health disorders varies by age. The most common symptoms for school-aged children include disruptive behavior and anxiety (Ogundele, 2018). ADHD, separation anxiety, and oppositional defiant disorder are most common in primary school children (aged 4–10 years), with generalized anxiety, conduct disorder, and depression are more common in secondary school students (aged 11–18 years) (Ogundele, 2018). Although, current research is showing an increase in onset of anorexia nervosa during this age range (Seitz et al., 2018). According to Arango et al. (2018), 50% of mental disorders start before age 14, and 75% start before the age of 24. A common thought is that social media has increased mental health diagnoses of depression and anxiety. However, Coyne et al. (2020), conducted research which included 500 adolescents who completed once-yearly questionnaires between the ages of 13 and 20. The results of this research showed that increased time spent on social media was not associated with increased mental health issues across development when examined at the individual level (Coyne et al., 2020). Therefore, each age group faces different challenges throughout their public-school education years and often it is difficult to determine the exact cause. Mental health and support through school-based services are important for at risk children (Rajabi, 2020). Rajabi expressed that a wide range of mental disorders start in childhood and can be diagnosed at an early age through teacher, administration, and parental feedback and observation. If childhood mental health disorders are left untreated, or undiagnosed, the

symptoms of the mental health disorder can result in many detrimental health, social, and learning consequences.

Attention Deficit Hyperactivity Disorder (ADHD)

Attention Deficit Hyperactivity Disorder (ADHD) is often diagnosed as early as age four, with an etiology that is multifactorial and highly genetic (Tandon & Pergjika, 2017). According to Toye et al. (2019), children diagnosed with ADHD present with complex comorbid difficulties, which create challenges in academic and social settings. Therefore, Toye et al. revealed that school is one of the most challenging and problematic places for children with the diagnosis of ADHD. ADHD is known to be one of the most common diagnoses in children with few studies to discuss the effects of ADHD and inclusion learning.

Research conducted by Visser et al. (2020b), which consisted of 3014 children in grades third and fourth residing in Germany, revealed that ADHD symptoms appeared to be more strongly related to psychopathological problems than scholastic achievement. Instruments used in this research was four academic achievement tests assessing reading, writing, and arithmetic abilities answered by the children, and the parents answered four questionnaires assessing psychopathological symptoms. Findings indicated that ADHD influences academic achievement and significantly predict depression, anxiety, and conduct disorder. According to Visser et al., much is known about psychopathological comorbidities in specific learning disorder and ADHD individually. However, there is less information about how these comorbidities relate.

According to research conducted by Arnold et al. (2020), ADHD adversely affects long-term academic achievement. Arnold et al. conducted a systematic review of methodology to identify 176 peer reviewed research articles for reporting long-term academic outcomes of treated and untreated ADHD. The articles were grouped into the two main categories for

achievement test and academic performance outcomes. Achievement test outcomes included

results on standardized tests and academic performance, measured on indicators of grades, grade

retention, high school completion, and college attendance. Achievement test outcomes and

academic performance outcomes were worse in individuals with untreated ADHD compared

with non-ADHD controls. The overall findings were that, with treatment, 79% of individuals

with ADHD showed increased achievement in test scores and 42% showed an increase in

academic performance. However, Arnold et al. stated that there is a need for further research on

the impact of coexisting conditions on academic outcomes, especially concerning disruptive

behavior disorders and specific learning disorders.

Separation Anxiety

According to Vaughan et al. (2017), separation anxiety is the most common and earliest

forms of anxiety found in children. Symptoms of separation anxiety found in children occur

around age 7, or before, and include excessive worry, sleep problems, distress in social and

academic settings, and a variety of physical symptoms that, left untreated, can cause social and

academic decline. Previous research had shown an estimated 1.09% and 4.1% of children ages 5

through 11 years old present with separation anxiety (Lavallee et al., 2011) with other research

showing percentages as high as 2% to 13 % of children meet the diagnosis criteria (Scaini et al.,

2012) set by the DSM-5. According to criteria set in the DSM-5, separation anxiety typically

lasts at least 4 weeks and causes clinically significant distress or impairment in social, academic,

or other important areas of functioning (American Psychiatric Association, 2013).

Research conducted by Battaglia et al. (2017) measured academic achievement at ages 8,

10, and 12 years old in children diagnosed with separation anxiety. The research included 2,120

participants who participated in a longitudinal study conducted in Quebec, Canada. Participants

were measured and separated into one of four categories: 1, low-persistent; 2, low-increasing; 3, high-decreasing, and the less common: 4, high-increasing by growth mixture modeling. Participants in the high-increasing category were compared to participants in the other three categories for: (a) child's internalizing and externalizing problem behavior; (b) physical health; (c) academic achievement; (d)maternal anxiety. Results from this research indicated that children diagnosed with separation anxiety disorder between ages 1.5 and 6 years continued throughout middle school, at least until preadolescence. Children diagnosed with separation anxiety disorder had more internalizing symptoms, mostly anxious, but not externalizing symptoms and, worse overall, academic achievement. According to Battaglia et al., separation anxiety disorder could possibly be a gateway towards multiple academic issues. Feriante & Bernstein (2020) postulated that separation anxiety disorder includes symptoms of excessive worry, sleep issues, somatic complaints, increased problems in social settings, and poor academic performance in the school setting.

Oppositional Defiant Disorder

According to Burke and Romano-Verthelyi (2018), oppositional defiant disorder typically develops early in life, prior to a child starting school. Oppositional defiant disorder is characterized by high levels of anger, defiance, and vindictive behaviors that have widespread impairment in daily functioning. The DSM-5 defined oppositional defiant disorder as a pattern of angry or irritable mood, argumentative or defiant behavior, or vindictiveness, lasting at least six months and demonstrated during interaction with at least one individual who is not a sibling (APA, 2013). In addition, the child must present with at least four of the following symptoms:

- Often loses their temper.

- Easily annoyed or touchy.

- Often angry or resentful.

- Argues with authority figures or adults.

- Actively defies or refuses to comply with requests from authority figures or with rules.

- Deliberately annoys others.

- Blames others for their mistakes or misbehavior.

- Has shown malicious or vindictive behaviors at least twice within the past six months.

Oppositional defiant disorder can be specified as mild, moderate, or severe, depending on where the symptoms are present, such as at home, at school, at work, or with peers. Mild is typically diagnosed if the symptoms are present in only one setting, moderate is when symptoms are displayed in at least two settings, and severe is when symptoms are present in three or more settings.

According to Liu et al. (2017), oppositional defiant disorder and conduct disorder are among the most common comorbidities of ADHD, at a rate of 20–70% comorbidity. Recent studies conducted by Vasileva et al. (2021) showed a higher rate of oppositional defiance disorder at 4.9% as compared to 4.3% of ADHD. Research conducted by Leadbeater and Ames (2017) looked at the longitudinal effects of oppositional defiant disorder symptoms on academic functioning in 662 students ages 12 to 18 and 478 young adults ages 22 to 29. Leadbetter's and Ames' hypothesis was that adolescents with levels of and increases in symptoms of oppositional defiance disorder across young adulthood would be related with lower educational and work achievement, more jobs, lower income, and higher levels of financial and workplace stress. The research revealed that both adolescent levels of and increases in symptoms of oppositional defiance disorder influenced academic and occupational functioning in young adulthood. Furthermore, there was a difference in gender, where males showed a declining academic and

economic capital, and females showed the effects of increasing debt and perceived workplace conflict.

Conduct Disorder

Conduct disorder is defined by the DSM-5 as a disorder that presents with a repetitive and persistent pattern of behavior that violates the basic rights of others or a major societal norm or rule related to appropriate age recognition. It presents with at least three of the 15 criteria in a 12-month period with at least one criterion being present within the last 180 days. The criteria include the following (APA, 2013):

- Aggressive behavior toward animals and people;

- Often threatens, bullies, or uses intimidation toward others;

- Frequent physical altercations with others that are initiated by individual;

- Use of a weapon with the intention of causing serious physical harm others;

- Deliberately shows physical cruelty to other people;

- Deliberate physical cruelty to animals;

- Has stolen while confronting a victim such as mugging, armed robbery, or extortion;

- Has perpetrated a forced sexual encounter on another;

- Has deliberately set fire with the intention of property destruction by arson;

- Property destruction by other means than fire;

- Has broken into someone else's property, such as a car, building, or house;

- Has engaged in stealing of nontrivial value, such as retail theft, e.g., shoplifting;

- Often lies or cons in order to obtain goods or avoid debts;

- Ignored parent's curfew prior to age 13;

- Has run away from home at least two times overnight or once if remained gone for a lengthy time period;

- Has truancy issues that began before age 13,

The DSM-5 stated that the risk factors associated with conduct disorder include under-controlled temperament, low verbal IQ, parental rejection or neglect, child maltreatment, sexual abuse, and inconsistent parenting patterns.

According to Fairchild et al. (2019), many school age children diagnosed with conduct disorder are placed in special education, foster care, youth welfare institutions, or the juvenile justice or detention system. In addition, studies monitoring children with conduct disorder into late adolescence has shown that they are at increased risk of criminal behavior, substance use, and lower educational attainment. In addition, Savage et al. (2017) completed a meta-analysis of research studies on the association between academic achievement and physically aggressive or violent behavior, which revealed that the association between low academic achievement and violent behavior is consistent across many individual studies. According to Visser et al. (2020a), children diagnosed with a specific learning disorder in reading, spelling, and/or arithmetic skills have an elevated risk of also being diagnosed with conduct disorder.

Generalized Anxiety Disorder

The DSM-5 criteria for diagnosis of generalized anxiety disorder in children is the following (APA, 2013): excessive anxiety and worry that causes clinically significant distress or impairment in social, occupational, or other important areas of functioning occurring more days than not for at least 6 months, about different events or activities; the individual finds it difficult to control the worry; the anxiety and worry is associated with one or more of the following six symptoms:

- Restlessness, feeling keyed up or on edge;

- Being easily fatigued;

- Difficulty concentrating or mind going blank;

- Irritability;

- Muscle tension;

- Difficulty falling or staying asleep, or restless, unsatisfying sleep.

It is important to determine that the symptoms are not related to any medical condition or substance. It is also important to rule out the possibility that the symptoms could better be explained by post-traumatic stress disorder, separation anxiety, obsessive compulsive disorder, or panic disorder.

De Lijster et al. (2018) verbalized that the etiology of anxiety disorders has been studied from genetic, epigenetic, and environmental perspectives. There is indication that parents who are affected by anxiety disorders are four to six times more likely to have children with generalized anxiety. There are many external factors that contribute to anxiety. These include: stress from school; stress in a personal relationship; stress that results from an emotional trauma, such as the loss of a loved one; victimization by crime; a natural disaster; and sexual or physical abuse (Hooda & Saini, 2017). A recent meta-analysis of the international prevalence of early childhood mental health disorders conducted by Vasileva et al. (2021), compared a total of ten epidemiological studies reporting data on N = 18,282 children (12–83 months old) from eight countries, revealing a prevalence of any anxiety disorders at 8.5% in children younger than 7 years of age. According to de Lijster et al. (2018), anxiety can be separated from fear by understanding that anxiety is the anticipation of a future threat. Fear is a response to a present or perceived threat in a direct situation or environment.

Adolescents with anxiety disorders had a lower social capability when compared to their peers (de Lijster et al., 2018). In addition, adolescents with high levels of anxiety report higher levels of negativity within social relationships, as well as increased reports of loneliness and victimization. Many adolescents with anxiety disorders feel impaired at school and are at a higher risk for school refusal and lower levels of secondary education. According to de Lijster et al., impairments in social and academic functioning appeared differently across the type and the number of diagnosed anxiety disorders. However, de Lijster et al. reported that the 7.4% of children who developed anxiety and depression symptoms at age 10 had lower self-esteem and poorer school-related outcomes.

Depressive Disorders

According to the DSM-5, depression is defined as a mood disorder characterized by symptoms of low mood, loss of interest or pleasure, fatigue or loss of energy, and diminished ability to process thoughts or concentrate for a time period, that exceeds two weeks (APA, 2013). The primary symptom of depressed mood, or loss of interest or pleasure, must be associated with four or more additional symptoms and must cause clinically significant distress or deficiency in normal activities (Substance Abuse and Mental Health Services Administration [SAMHSA], 2016). In children and adolescents, depressed mood can be listed as irritable mood as observed and reported by others, such as parent, caregiver, or teacher (SAMHSA, 2016). According to Damaiyanti and Fitriani (2017), depression is one of the common psychiatric diagnoses that increase adolescent's school refusals. Adolescents lose hope and are unable to study and succeed in the school or reach their full ability for academic achievement. Oftentimes, in certain conditions and situations, students withdraw from attending school. Common co-occurring problems for depressed children and adolescents are academic underachievement, school

attendance problems, and school failure due to rising amount of schoolwork, assignment

deadlines, and exams, which increase depression as self-esteem decreases.

Research conducted by Sung-Man (2020) sought to examine the long-term effects of

social stigma and community disorder on adolescent school dropouts with depressive symptoms.

Sung-Man pronounced that depression is a major mental health disorder that creates a barrier for

adolescents to establish a foundation in academic and personal relationships. In addition, the

social stigma related to mental health illness impacts a persons' depression through the act of

mediating self-esteem. In the findings, Sung-Man expressed that the research showed a link

between higher education and increased depressive symptoms, indicating that the level of

intensity of the school assignments and tests can be a risk factor for depression. Social media has

long been thought to increase depression, however recent research has shown that there is no

correlation between the use of social media and depression or anxiety disorders (Coyne et al.,

2020).

Disruptive Mood Dysregulation Disorder

Disruptive mood dysregulation disorder is classified by the DSM-5 under depressive

disorders as a way of documenting symptoms of bipolar disorder mixed with oppositional defiant

disorder in childhood (SAMHSA, 2016). Disruptive mood dysregulation disorder is

characterized by severe and recurring temper outbursts that are completely out of proportion in

duration and intensity to the situation. These outburst present, on average, three or more times

weekly and last for at least one year. The primary diagnostic feature of disruptive mood

dysregulation disorder is chronic irritability that is present in between episodes of anger or

temper tantrums. In order to make a clear diagnosis, the episodes and symptoms must be present

in at least two settings (at home, at school, in the community, or with peers) for 12 or more

months, and symptoms must be severe in at least one of these settings. In addition, the onset of

disruptive mood dysregulation disorder must occur before age 10. However, the diagnosis of

disruptive mood dysregulation disorder cannot be given until the child reaches age six. The main

reason behind the DSM-5 addition and conceptualization of disruptive mood dysregulation

disorder was concern that the diagnosis of bipolar disorder was being applied unreliably across

clinicians because of the disagreement about how to classify irritability in the DSM-IV. Even

though the diagnosis and symptoms are related to those in bipolar disorder, chronic childhood

irritability has not been shown to predict later onset of bipolar disorder, suggesting that

irritability may be best contained within a separate mood dysregulation category.

Anorexia Nervosa

According to the DSM-5, anorexia nervosa is defined as an eating disorder in which a

person displays the following criteria (APA, 2013):

- Restriction of energy intake relative to requirements leading to a significantly low body
  weight in the context of age, sex, developmental trajectory, and physical health;

- Intense fear of gaining weight or becoming fat, even though underweight;

- Disturbance in the way in which one's body weight or shape is experienced, undue
  influence of body weight or shape on self-evaluation, or denial of the seriousness of the
  current low body weight.

According to Herpertz-Dahlmann and Dahmen (2019), the primary symptom of anorexia nervosa

includes excessive dieting, over exercising, and food avoidance. Over the past 10 years there has

been an increase in children and adolescents who meet the criteria for anorexia nervosa as well

as a decrease in age of onset (Herpertz-Dahlmann & Dahmen, 2019). Research conducted by

Seitz et al. (2018) states that adolescents diagnosed with anorexia nervosa had a higher brain

volume loss in both gray and white matter than adults diagnosed with anorexia nervosa. In addition, Seitz et al. states that it is highly probable that long-lasting anorexia nervosa disrupts normal development of the brain and is potentially responsible for neuropsychological deficits known to occur in patients with chronic anorexia nervosa. Anorexia nervosa is the third most common chronic illness in adolescence with the highest mortality of all psychiatric illnesses (Seitz et al., 2018). However, research conducted by Dalsgaard et al. (2020) revealed that students diagnosed with anorexia nervosa showed significantly higher mean grades on examinations given than individuals without this mental disorder as opposed to all other mental health disorders.

Internal Symptoms

According to Lane et al. (2017), symptoms of internalizing behaviors include being emotionally flat, shy, withdrawn, sad, depressed, anxious, obsessive-compulsive, lonely, and self-inflicting pain. These symptoms are all documented as symptoms of mental health disorders when disrupting the individual's ability to perform daily activities (Platt et al., 2019). Internal symptoms are more often found in females and can increase incidents of self-harm behaviors (Esmaili et al., 2016). Findling et al. (2018) identified irritability, mood lability, distractibility, poor judgement, grandiosity, hopelessness, and depression as internal symptoms of pediatric bipolar disorder. Many of these same symptoms were shown to be associated with ADHD, such as proper peer and teacher relations resulting in increased frustration, hopelessness, and emotional dysregulation (Passarotti et al., 2019). To accurately identify internal symptoms, training for educators is necessary. However, educators often focus more on external behaviors that prevent students with internalizing diagnoses from receiving proper services for success (Poppen et al., 2016).

External Symptoms

Symptoms related to external behaviors include stealing, aggressive behavior, disruptive behaviors, lying, impulsivity, and cheating (Jordan et al., 2020; Lane et al., 2017). In addition, Findling et al. (2018) listed increased energy, goal-directed activity, euphoria/elated mood, pressured speech, hyperactivity, racing thoughts, inappropriate laughter, decreased need for sleep, and flight of ideas as external symptoms of pediatric bipolar disorder. These same symptoms can also be seen in ADHD (Passarotti et al., 2019). According to Deighton et al. (2018), externalizing problems continue to affect later academic achievement in most individuals. Individuals who display external symptoms receive the highest level of attention in school settings due to the disruption that the symptoms create (Poppen et al., 2016). According to Suldo et al. (2016), students who display external symptoms and have a specific learning disorder are at the highest risk for poor outcomes academically.

Psychiatric Comorbidity

Comorbidity is defined as having two or more risk factors within one individual. (Valderas et al., 2009). Psychiatric comorbidity is when at least one of these factors is related to a mental health diagnosis (Hendren et al., 2018). Previous research reported that prevalence of an additional psychiatric disorder, along with ADHD in children and adolescents, can range from 40 to 80%, differing based on the sample tested (Elia et al., 2008; Gillberg et al., 2004; Larson et al., 2011; Wilens et al., 2002; Yoshimasu et al., 2012). According to McDonough et al. (2017), the comorbidity between ADHD and learning disorders is particularly high. Children with ADHD, who are clinically referred to mental health agencies, have the highest rates of comorbidity ranging from 67–87%. A diagnosis of ADHD increases the chance of many other possible mental health disorders (Reale et al., 2017). According to Reale et al., the primary disorders

likely to co-occur with ADHD are oppositional defiant disorder at a likelihood of 50–60%; conduct disorder at a likelihood of 20–50% in children and 40–50% in adolescents; depression disorder at a likelihood of 16–26%; anxiety disorder at a likelihood of 10–40%; bipolar disorders at a likelihood of 11–75%; tic disorders at a likelihood of 20%; and obsessive-compulsive disorders at a likelihood of 6–15%. Finally, autism spectrum disorders are at a likelihood of 65–80% (Reale et al., 2017). A recent report by Lin et al. (2021) has shown that patients with disruptive mood dysregulation disorder almost always have a comorbid psychiatric disorder(s). It was reported that as high as 92.8% of patients with disruptive mood dysregulation disorder met the criteria for other psychiatric disorders. Anorexia nervosa most frequent comorbidity includes depression and dysthymia, anxiety disorders, and obsessive-compulsive disorder (Herpertz-Dahlmann & Dahmen, 2019).

According to Hendren et al. (2018), academic struggle and social, emotional, and behavioral problems show evidence of high comorbidity with ADHD, anxiety disorder, depressive disorder, disruptive mood dysregulation disorder, impulse-control disorder, pediatric bipolar disorder, conduct disorder, and autism spectrum disorder. According to Darweesh et al. (2020), children with the specific learning disorder dyslexia frequently present with at least one additional psychiatric disorder. Psychiatric comorbidity is important to understand due to the complexity involved, which can affect severity of clinical condition and the need for specific treatments and interventions. In addition, Darweesh et al. postulated that psychiatric comorbidity increases the likelihood of secondary concerns, such as low self-esteem, behavioral problems, and dropping out of school.

The combined diagnosis of a learning disorder and a mental health disorder creates additional barriers for student's' academic performance and future barriers to success. According

to Sahu et al. (2019), a primary concern should be to use insight gained through research of psychiatric comorbidities and the complication associated with specific learning disorders to identify children's needs, developing proper educational plans, which facilitate effective and holistic improvement in a student's educational and behavioral achievements. Ball et al. (2016) stated that the IDEA (2004) mandated appropriate services for students who have mental health concerns that disrupt learning.

Prevalence of Mental Health Diagnosis Comorbidities

Comorbidity of mental health disorders and specific learning disorders have been widely researched, and evidence has shown increased risk of academic deficits when the two are both present (Hendren et al., 2018; Poppen et al., 2016). Research conducted by Altay and Görker (2017) showed that 92.5% of students with a specific learning disorder had a comorbid mental health diagnosis. The breakdown of comorbidity was ADHD (82.3%), specific phobia (46.3%), oppositional defiant disorder (26.3%), enuresis (25%), and tic disorders (22.5%). Based on these findings, it is important to continue research on how these risk factors affect students' academic performance. According to Platt et al. (2019), his research showed a comorbidity of a lifetime psychiatric disorder of youths identified as having an intellectual disorder at a 65.1% rate. This is higher than the previously reported ranges of 30–50% compared to the general population, where only 1/3 of students are found to have mental health disorders (Suldo et al., 2016). In addition, research conducted by Meherali et al. (2021), has shown that COVID-19 has had a significant impact on the mental health of children and adolescents. Based on these findings, it is important to continue research on how these risk factors affect students' academic performance.

Comorbidity Risk Factors

Many risk factors are increased when students have comorbid mental health diagnoses and learning disorders. However, for the purpose of this research, the primary concern was that, when emotional supports are not implemented, student performance on academic tasks decrease (Darling-Hammond et al., 2020; Deighton et al., 2018; Gujare & Tiwari, 2016). Co-morbid problems in students with specific learning disorder predict poor academic skills and outcomes (Darweesh et al., 2020; Esmaili et al., 2016). In addition, Darweesh et al. (2020) reported increased levels of sense of failure, demoralization, poor metacognitive awareness, learned helplessness, proper social integration, and an increase in lack of interest in school in children with dyslexia. According to Hendren et al. (2018), children diagnosed with a specific learning disorder are at increased risk for diagnoses of anxiety, depression, and higher incidence of bullying and peer victimization. Gillberg et al. (2004) provided information regarding the risk factors of ADHD co-occurring with another disorder indicating an increase in the likelihood of criminal behavior, accidents of various nature, autistic-type features, and academic failure.

Mental Health Diagnosis & Student Academic Achievement

Academic skills and participation appear to be closely linked with mental health problems (Kovess-Masfety et al., 2020; Suldo et al., 2016). Students with learning disorders are often allotted accommodations through an IEP that assists them in performing to their best ability. Research by Kern et al. (2019) expressed that accommodations are often uneven across classroom settings for standardized testing, with other health impaired students receiving fewer accommodations than other learning disorder categories. Inadequate accommodations decrease academic achievement for students with disabilities (Gujare & Tiwari, 2016). According to Esmaili et al. (2016), children diagnosed with a specific learning disorder are less likely to have

access to proper mental health services. In addition, children who have appropriate access to mental health care often are not treated in a manner that appropriately treats their psychiatric and developmental needs through evidence based therapeutic care. According to Rosvall (2019), another barrier to adequate treatment is that individuals often avoid or delay seeking proper care from a professional mental health provider due to embarrassment and stigma, difficulties recognizing symptoms, and preference for self-reliance.

Deighton et al. (2018) conducted research to expand on longitudinal associations between internalizing symptoms, externalizing difficulties, and academic achievement, using a large representative sample of children and adolescents in England. According to Deighton et al., mental health disorders and low academic achievement share many of the same risk factors. The three models that were explored were the adjustment erosion model, the academic-incompetence model, and the shared-risk hypothesis. The adjustment erosion model specifies that internalizing and/or externalizing symptoms lead to later academic difficulties. In contrast, the academic-incompetence model reverses the processes of the adjustment-erosion model and demonstrates that problems relating to academic attainment leads to, or exacerbates, existing internalizing and externalizing difficulties. The shared-risk model showed that there is a third variable that consists of risk markers, such as intellectual ability, parenting quality, and deprivation or socio-economic status. Through the research, the adjustment-erosion model had the most consistent empirical support. According to Deighton et al., externalizing problems appeared to weaken later academic achievement, even after accounting for the shared-risk factors of deprivation and special educational needs. With any model, decreased academic achievement has both short- and long-term effects for individuals seeking to maximize their independence while being diagnosed with a comorbid mental health disorder and specific learning disorder.

Short-Term Effects of Psychiatric Comorbidity

According to Kern et al. (2019), teachers are challenged with selecting proper accommodations to meet the individual student's needs. Without the proper accommodations, self-esteem, academic performance, and overall mental health are affected (Sullivan et al., 2018). In 2017, the number of children with learning disorders serviced in the standard classroom for at least 80 percent of the day increased to 63.5 percent (U.S. Department of Education, 2019). With an increase in the number of students served in the standard classroom, non-special education teachers provide the bulk of services to children with special needs. According to Kern et al. (2019), teachers without proper training for mental health and children with learning disorders become overwhelmed, and educational instruction becomes less effective.

Research conducted by Arango et al. (2018) showed that individuals diagnosed with mental disorders or disorders may be less capable of defending themselves and seem to be more often targeted by bullies and abusers. Once these individuals become vulnerable, it is more likely that further risk factors that may lead to a vicious cycle. The stress creates a neurobiological change, which can lead to maladaptive responses to future stress, which then increases vulnerability to stress-related diseases and creates a lifetime cycle of revictimization. Increased mental health diagnosis and decreased academic achievement is also related to an increase in somatic and health related disorders in children and adults.

Children diagnosed with a specific learning disorder with a psychiatric comorbidity that do not receive proper interventions and accommodations experience increased risk for educational truancy, low attainment in academics, reduced working memory, and the development of neuropsychiatric comorbidities, such as conduct disorder (Barkley & Fischer, 2011). Socially, children with the psychiatric comorbidity have decreased peer relationships,

lower self-esteem, increased negative behavior, and are often subjects and offenders of bullying (Shetgiri, 2013). Though each disorder, psychiatric disorders and specific learning disorders, share many symptoms, this does not minimize the effect of the psychiatric comorbidity. Instead, these symptoms are exacerbated due to the complexity and increased deficit of the two working together against academic achievement (Esmaili et al., 2016). The combination of educational and social short-term risk factors often leads to long-term risk factors when left untreated.

Long-Term Effects of Psychiatric Comorbidity

Poor academic achievement has long-term effects for individuals with learning disorders and mental health diagnoses (Deighton et al., 2018). These effects include difficulties with physical health, mortality, economic instability, poor social functioning, alcoholism, and violent behavior. Sullivan et al. (2018) verbalized that 80% of incarcerated youth have a diagnosable disorder or disability. In addition, research conducted by Lane et al. (2017) showed that psychiatric comorbidity often leads to maladaptive friendships or a lack of friendships. According to Barbot and Hunter (2012), youth diagnosed with mental disorders and disabilities are at a higher risk for involvement in the juvenile justice system, with estimates of approximately 80% of incarcerated youth having a diagnosable disorder or disability. In addition, previous research demonstrated that, without proper accommodations in childhood, adults often suffer with higher levels of unemployment, accidents resulting in a disability or premature death, and the development of neuropsychiatric comorbidities, such as antisocial personality disorder, and substance abuse disorder (Barkley & Fischer, 2011). According to Bishnoi et al. (2018), social stigma related to a mental health disorder, whether perceived or factual, is known to negatively affect treatment, recovery, and long-term goals. Early intervention for individuals with learning disorders and mental health diagnoses is imperative to reduce the risk factors

associated with this comorbidity (Ball et al., 2016; Robson et al., 2020). Research to show the relationship of impairment to academic achievement is vital to achieving this task.

Barriers to Treatment for Mental Health

Mental health disorders in children and adolescents are highly undertreated (Radez et al., 2021). According to Sadler et al. (2018), more than one-third of children and their families access professional help. Parents report that barriers to seeking professional services for mental health in children and adolescents include systematic barriers such as cost and wait times, trust and confidence in professionals, understanding and recognizing the needs of children, lack of transportation, and lack of family support as primary reasons (Radez et al., 2021). In addition, general practitioners also list a lack of providers as a primary barrier for treatment. According to Radez et al. (2021), in those age 18 or below, the primary reason they listed for not seeking mental health treatment was the desire to handle the situation on their own, unknowing if the issues were serious enough to require help, and the doubtfulness that professional help would resolve the issue. Therefore, the adolescents preferred to speak with a friend or family member rather than to show weakness and seek professional help (Radez et al., 2021).

According to data from the 2015 National Survey on Drug Use and Health, 3.2 million adolescents in the United States are utilizing mental health services in the school setting (Lipari et al., 2016). The primary students who are receiving services in the school include disadvantaged populations who have public insurance, lower socioeconomic households, and racial or ethnic minorities (Ali et al., 2019). In addition, Ali et al. (2019) states that the common reasons for seeking mental health services in the school for this population are poor social skills to include problems with friends, school staff, and family members. The COVID-19 pandemic interrupted many school services to include the treatment of mental health disorders among

children who were receiving in school services. Therefore, even with an increase of outpatient providers, school services for mental health are still desperately needed for many disadvantaged youths.

Summary

Current research shows many factors related to reduced academic achievement in students who have a specific learning disorder. Through the theoretical framework of Bronfenbrenner's Ecological Systems (1978) and Bandura's Self-Efficacy theory (1977), mental health diagnoses could affect students' academic performance in students with a learning disorder. Specific learning disorders include three specifiers to identify areas of deficits (APA, 2013; McDonough et al., 2017). These specifiers include impairment in reading, often referred to as dyslexia, impairment in written expression, called dysgraphia, and impairment in mathematics, often referred to as dyscalculia (APA, 2013; McDonough et al., 2017). For the purpose of this research, the focus will be on dyslexia and dyscalculia. There are many mental health disorders that are present in school-aged children. These mental health disorders are diagnosed using the criteria set in the DSM-5 and have different levels of effect on academics and daily living.

Mental health includes both internal and external symptoms, with each playing a role in academic success or lack thereof. When combined with a learning disorder, many students experience multiple comorbid diagnoses. Academic achievement is then affected, which presents short-term (Arango et al., 2018; Esmaili et al., 2016; Shetgiri, 2013) and long-term risk factors (Deighton et al., 2018; Lane et al., 2017; Sullivan et al., 2018). An increase in student mental health diagnoses calls for additional research on how comorbid diagnoses affect today's students' academic achievement (Poppen et al., 2016). Many disadvantaged youths are currently

receiving school based mental health treatment which reduces the barriers that are often listed by those students who have previously been untreated for their mental health diagnoses. The purpose of this study was to investigate the impact of mental health diagnoses in combination with learning disorders for students with an IEP or 504 plan on standardized test scores.

CHAPTER THREE: METHODS

Overview

This chapter begins with a rationale for the design of this quantitative causal-comparative study to determine if there is a difference in academic achievement in students with a specific learning disorder and students with a comorbid diagnosis of specific learning disorders and a mental health disorder. Following the design are the research questions and null hypotheses. Next, a description of the population and sample is provided, along with a rationale for the sample size. A review of the instruments used is followed by the procedures and data analysis. The chapter ends with a summary.

Design

A quantitative causal-comparative research design was used in this quantitative study. A causal-comparative design was used because the groups are naturally occurring, and the design allows the researcher to investigate cause-and-effect relationships between groups on the dependent variable (Gall et al., 2007). This is the appropriate design for this study, as the independent variables are categorical, cannot be manipulated, and the purpose of the study is to look at the causal relationship between comorbid disorders and academic achievement.

For this study, students diagnosed with SLD were divided into two groups, with a comorbid mental health diagnosis and without a mental health diagnosis. The dependent variables were academic achievement for 3rd, 8th, and 10th grade, as measured by the Florida Standards Assessments (FSA) scores on the reading portion of the assessment. The researcher chose this design to determine if there is a relationship between comorbidity of mental health diagnoses and a learning disorder, as well as students diagnosed with a learning disorder but do not have a comorbid diagnosis on academic achievement.

Research Question(s)

RQ1: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 3rd-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

RQ2: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 8th-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

RQ3: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 10th-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

Null Hypotheses

The null hypotheses for this study are:

$H_0 1$: There is no significant difference in academic achievement as measured by Florida Standards Assessments (FSA) reading scores between 3rd-grade students with comorbidity of mental health diagnoses and a learning disability and students diagnosed with a learning disability but do not have a comorbid diagnosis.

$H_0 2$: There is no significant difference in academic achievement as measured by Florida Standards Assessments (FSA) reading scores between 8th-grade students with comorbidity of mental health diagnoses and a learning disability and students diagnosed with a learning disability but do not have a comorbid diagnosis.

H₀3: There is no significant difference in academic achievement as measured by Florida

Standards Assessments (FSA) reading scores between 10th-grade students with comorbidity of

mental health diagnoses and a learning disability and students diagnosed with a learning

disability but do not have a comorbid diagnosis.

Participants and Setting

The study participants were drawn from a convenience sample of 3rd, 8th, and 10th-

grade students located in northwest Florida during the 2018-2019 school year, diagnosed with a

SLD. The school districts are located in a rural area of Florida. A school board employee

gathered historical data from all 3rd, 8th, and 10th grade students within the district who have a

SLD. All identifying information was removed from the report, leaving only the FSA score and

an indicator of the presents or absence of a comorbid mental health diagnosis. Due to all

identifying information being removed, gender of the students was not reported.

The sample size was a minimum of 100 students from each grade level, and the groups

were approximately 50/50 within each grade, which exceeds the minimum sample size when

assuming a medium effect size with a statistical power of .7 at the .05 alpha level (Gall et al.,

2007). The data was divided into two groups depending on the presence or absence of a

comorbid mental health diagnosis. The naturally occurring groups were identified and their sizes

was reported. Due to the lack of ability to manipulate the naturally occurring variables, random

assignment was not utilized.

Instrumentation

The instrument used for the dependent variable was the 2018-2019 Florida Standards

Assessments (FSA). The FSA is given annually to all students attending public schools in the

state of Florida, grades 3 through 10. The data was archival, and, to ensure confidentiality, all

identifying information, such as names and student numbers, were removed. Each county

provided the FSA score results of any student in the 3rd, 8th, and 10th grade diagnosed with a

specific learning disorder and answered "yes" or "no" as to whether or not the student had a

comorbid mental health diagnosis. Data was provided in the form of an Excel spreadsheet, and

all counties were combined into one spreadsheet prior to analysis. There was one independent

variable with two groups and one dependent variable measured on a continuous scale for each

null hypothesis. The use of FSA scores for Group-Level Decisions was determined to be valid

and reliable for measuring academic achievement in the aggregate by independent consulting

agencies Alpine Testing Solutions and edCount LLC, at the order of Governor Rick Scott in

2015 (Verges et al., 2015). This included the evaluation of testing preparation, test

administration, and test score analysis. Therefore, the FSA was the best available instrument to

use in this analysis. The data was archival, and to ensure confidentiality, all identifying

information, such as names and student numbers, were removed. Each county provided the FSA

score results of any student diagnosed with a specific learning disorder and answered "yes" or

"no" as to whether or not the student had a comorbid mental health diagnosis. Data was provided

in the form of a Microsoft Excel spreadsheet, and all counties were combined into one

spreadsheet prior to analysis. There were two independent variables, with one dependent variable

measured on a continuous scale.

Academic achievement has been measured through standardized test scores in numerous

studies (e.g., Chen & Yang, 2019; Meyer et al., 2019; Sewasew & Schroeders, 2019). The FSA

is scored into five separate levels. According to the U.S. Department of Education (2017), Level

1 scores indicate that students do not demonstrate an adequate level of success with the Florida

Standards Access Points. Level 2 score indicates that students demonstrate a limited level of

success with the Florida Standards Access Points. A Level 3 student score demonstrates a satisfactory level of success with the Florida Standards Access Points. In addition, a Level 4 score is indicative of a student's demonstration of an above satisfactory level of success with the Florida Standards Access Points (U.S. Department of Education, 2017). Level five is the highest level and demonstrates maximum performance. Scores range from 240 to 412 in the English/Language Arts grades three through 10. In mathematics grades three through eight, the scores range from 240 to 393. Grade 10 scores for Algebra I, Algebra II, and Geometry End-of-Course Assessment Scale Scores range from 425 to 575.

Procedures

Upon completion of required course work, the researcher gained approval from Liberty University's Institutional Review Board (see Appendix). Once approval was given, the researcher contacted each school district's superintendent by email requesting permission to use the school districts' 2019 FSA results in the planned research. In addition, the researcher offered a full review of the proposed research to the superintendent, if requested, via an in-person or Zoom meeting. The email contained a required read receipt to verify successful transmission to the superintendent. The researcher also requested that the Special Education Director or a designee be assigned as the central point of contact for the researcher. The researcher requested a response by email within 10 business days of receiving the email. When approval was granted by the superintendent, the researcher emailed the Special Education Director or a designee within 10 business days to set up an in-person or Zoom meeting to discuss the needed data to conduct the research and to answer any questions regarding the purpose of the research. The researcher met with the Special Education Director or a designee of each participating school district in person or by Zoom and discussed the needed data. The needed data was historical without

identifying information, leaving only the students 2019 FSA testing results, the grade at the time

of the 2019 FSA test, and a yes or no answer that indicated either the presence of (yes) or the

absence of (no) a mental health disorder. Following these meetings, the researcher provided a

password-protected Excel spreadsheet with columns preset labeled as A1 (Test Score), A2

(Diagnosed Mental Health Disorder with an option to only select yes or no), and A3 (Grade with

the option to choose numbers 3 through 10) by email within 10 business days. The Special

Education Director or a designee entered the requested data on any student within the county

who met the criteria of having a specific learning disorder and was tested on the FSA in the

school year 2018/2019, returning to the researcher within 30 days. Once the password-protected

spreadsheet was emailed to the researcher, it was stored on a password-protected physical

computer's OneDrive cloud and backed up on an external hard drive locked in a secure filing

cabinet named by the name of the county and the date received from the county. Once all

participating counties had returned the requested data, all counties were combined into one

spreadsheet. The spreadsheet for all participating counties contained the FSA test score, grade

level, and a yes or no answer in a column that indicated either the presence of (yes) or the

absence of (no) a mental health disorder. The final file name was listed and saved as *Combined*

Data. The data was on a physical computer's OneDrive cloud and backed up on an external hard

drive locked in a secure filing cabinet.

Data Analysis

The data was analyzed using three separate independent sample *t* tests, one for each grade

level. The independent sample *t* test was appropriate when there was one independent variable

with two groups and one dependent variable measured on a continuous scale (Warner, 2013).

Due to the assumption of normality not being met, the Independent Sample Mann Whitney U

was also conducted. Archival FSA scores from three hundred students diagnosed with a specific learning disorder or a specific learning disorder with a mental health disorder for each grade of 3rd, 8th, and 10th was gathered from several Florida school districts. Each grade level consisted of at least 100 students equally distributed between the groups of those with a specific learning disorder and those with a specific learning disorder and a comorbid mental health diagnosis. Data was obtained for the dependent variable academic achievement, as measured by FSA scores.

Data Screening and Assumption Testing

Data screening was conducted on the dependent variable (FSA scores) and independent variables (specific learning disorder and specific learning disorder with a comorbid mental health diagnosis). The researcher organized the data on each variable and searched for irregularities. A box and whiskers plot was used to identify extreme outliers on the dependent variable. Assumptions of normality was tested using a Kolmogorov-Smirnov test. Kolmogorov-Smirnov was used because the sample size was more than 50 participants (Gall et al., 2007). The assumption of homogeneity of variance was examined using Levene's Test of Equality of Error Variances.

Hypothesis Testing

Three independent sample t tests were used to examine the difference in the means of each group for each grade level and null hypotheses assuming a medium effect size with a statistical power of .7. The effect size was reported using Cohen's d. Since three sample t tests were conducted, a Bonferroni correction was needed to guard against type I error. The alpha level is calculated to be: $0.05/3 = .0167$, rounded to .02 (Warner, 2013). Therefore, each null hypothesis was rejected at $p < .02$.

In conclusion, the researcher conducted independent sample *t* tests' analysis and the Independent Sample Mann Whitney U analysis to determine whether there was a statistically significant probability of a relationship between academic achievement scores for students diagnosed with a specific learning disorder and students diagnosed with specific learning disorder and a comorbid mental health disorder in null hypotheses 1-3. The researcher conducted all necessary assumption testing and any additional statistical methods as needed. Chapter Four discusses the findings of the data.

CHAPTER FOUR: FINDINGS

Overview

This quantitative causal-comparative study was conducted with the purpose to evaluate the level of impact that mental health diagnoses comorbid with specific learning disorders in students enrolled in Individual Education Plans (IEP) or 504 Plans have on standardized testing scores. This chapter is comprised of results from the conducted analyses aimed at addressing the research and hypotheses. This study was conducted using data collected from school districts within Northern Florida, using the data specifically from the grades of 3rd, 8th, and 10th. The findings of the research were centered around the following research questions:

Research Question(s)

RQ1: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 3rd-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

RQ2: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 8th-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

RQ3: Is there a difference in academic achievement as measured by FSA standardized test scores in reading between 10th-grade students with comorbidity of mental health diagnoses and a learning disability and students who are diagnosed with a learning disability but do not have a comorbid diagnosis?

Null Hypothesis(es)

H_01: There is no significant difference in academic achievement as measured by Florida Standards Assessments (FSA) reading scores between 3rd-grade students with comorbidity of mental health diagnoses and a learning disability and students diagnosed with a learning disability but do not have a comorbid diagnosis.

H_02: There is no significant difference in academic achievement as measured by Florida Standards Assessments (FSA) reading scores between 8th-grade students with comorbidity of mental health diagnoses and a learning disability and students diagnosed with a learning disability but do not have a comorbid diagnosis.

H_03: There is no significant difference in academic achievement as measured by Florida Standards Assessments (FSA) reading scores between 10th-grade students with comorbidity of mental health diagnoses and a learning disability and students diagnosed with a learning disability but do not have a comorbid diagnosis.

Data Screening

Data screening was conducted on the dependent variable (FSA scores) and independent variables (specific learning disorder and specific learning disorder with a comorbid mental health diagnosis). The researcher organized the data on each variable and searched for irregularities. A box and whiskers plot was used to identify extreme outliers on the dependent variable. See Figure 1 for box and whisker plots.

Assumptions of normality was tested using a Kolmogorov-Smirnov test. Kolmogorov-Smirnov was used because the sample size was more than 50 participants (Gall et al., 2007). The assumption of homogeneity of variance was examined using Levene's Test of Equality of Error Variances.
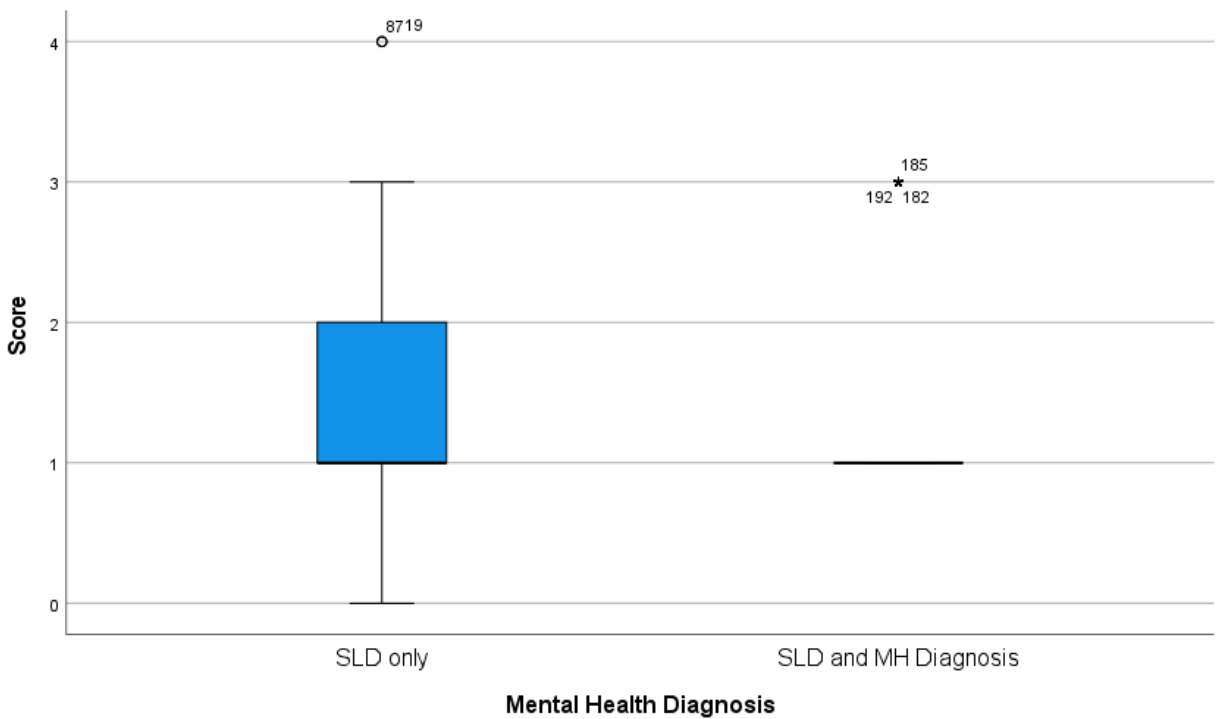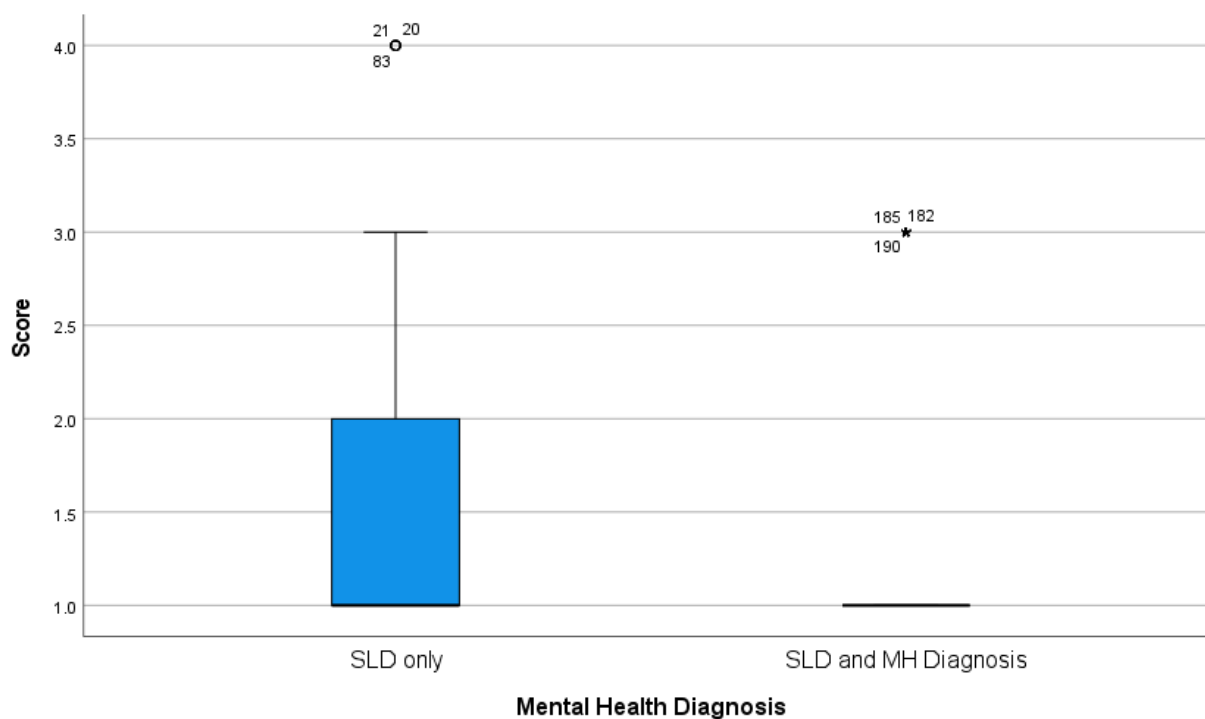
Figure 1

Third Grade Box and Whisker Plots
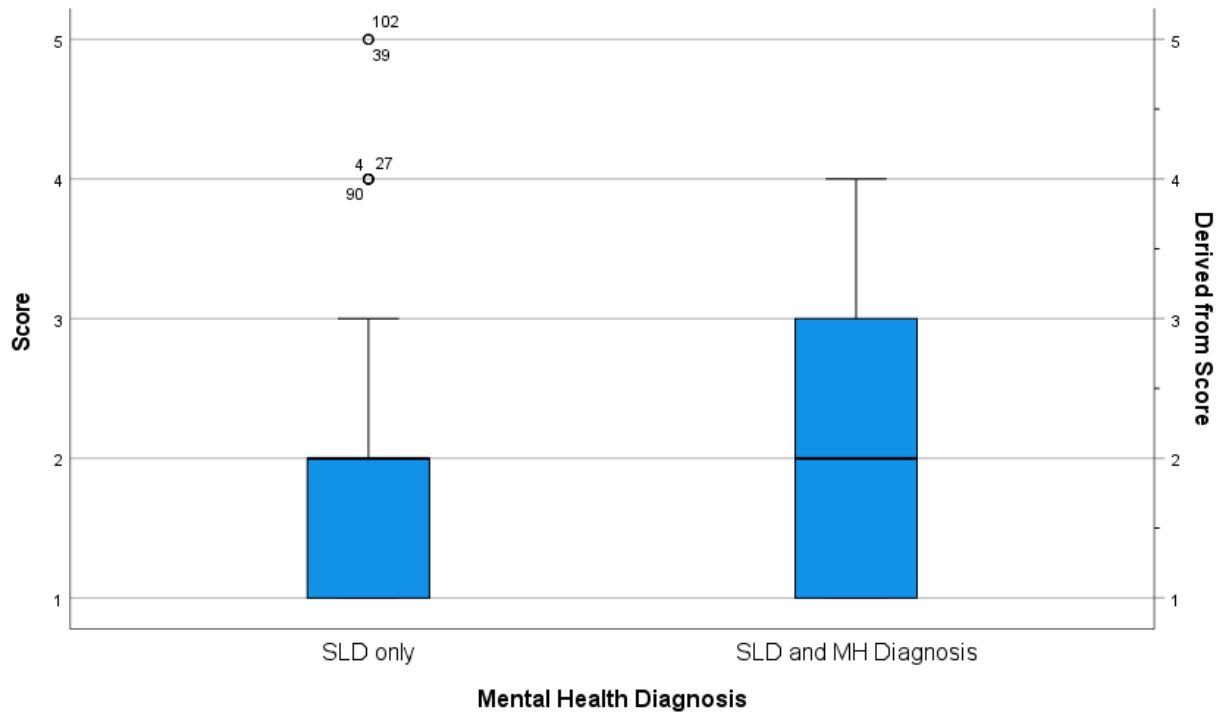
Figure 2

Eighth Grade Box and Whisker Plots

Figure 3

Tenth Grade Box and Whisker Plots

Descriptive Statistics

The researcher conducted independent samples *t* tests for each research question to examine the potential for differences in standardized testing performance between students with SLD only and those with SLD comorbid with a mental health diagnosis. Samples from several school districts in the north Florida region provided data of students in third, eighth, and tenth grade with SLD and those with SLD and a comorbid mental health diagnosis.

The third-grade sample for this study was comprised of 195 students' tests scores that ranged from 1-5. Of those third-grade students with SLD only (*N*=127), 59 received a score of 1, 38 received a score of 2, 24 received a score of 3, four received a score of 4, and two students received a score of 5. The mean score for those third-grade students with SLD only was 1.83. Of those third-grade students with SLD comorbid with a mental health diagnosis (*N*=68), 28

received a score of one, 20 received a score of two, 16 received a score of 3, and four students received a score of 4. Of those third-grade students with comorbid SLD and mental health diagnoses, the mean score was 1.94. See Table 1.

Table 1

Third Grade Descriptive Statistics

	N	*M*	*SD*
SLD only	127	1.83	0.949
SLD and MH Diagnosis	68	1.94	0.944

The eighth-grade sample for this study was comprised of 196 students' tests scores that ranged from 1-4. Of those eighth-grade students with SLD only (*N*=126), 74 received a score of 1, 26 received a score of 2, 22 students received a score of 3, and four students received a score of 4. The mean score of eighth-grade students with SLD only was 1.65. Of those eight grade students with comorbid SLD and a mental health diagnosis (*N*=70), 53 students received a score of 1, and 17 received a score of 3. The mean score of eighth-grade students with SLD comorbid with a mental health diagnosis was 1.49. See Table 2.

Table 2

Eighth Grade Descriptive Statistics

	N	*M*	*SD*	*SEM*
SLD only	126	1.65	0.879	0.078
SLD and MH Diagnosis	70	1.49	0.864	0.103

The tenth-grade sample for this study was comprised of 198 students' tests scores that ranged from 0-4. Of those tenth-grade students with SLD only (*N*=136), two received a score of zero, 82 students received a score of 1, 32 received a score of 2, 18 received a score of 3, and two students received a score of 4. The mean score of those tenth-grade students with SLD only was 1.53. For those students with SLD comorbid with mental health diagnoses (*N*=62), 49 students received a score of 1, and 13 received a score of 3. The mean of tenth-grade students with SLD comorbid with a mental health diagnosis was 1.42. See Table 3.

Table 3

Tenth Grade Descriptive Statistics

	N	*M*	*SD*
SLD only	136	1.53	0.798
SLD and MH Diagnosis	62	1.42	0.821

Assumption Testing

Assumption of Normality

The Independent Samples *t* test requires that the assumption of normality be met. Normality was examined using Shapiro-Wilks. The assumption of normality was not met. See Table 4 for third grade Tests of Normality, Table 5 for eighth grade Tests of Normality, and Table 6 for tenth grade Tests of Normality. According to Warner (2013), if the assumption of normality is not met the nonparametric equivalent to the Independent Samples *t* test, the Independent Sample Mann Whitney U, should be used to determine whether or not to retain or reject the null hypotheses. The Independent-Samples Mann-Whitney U Test is computed using

the median and not the mean (Nachar, 2008). (See Table 11 for results for third grade, Table 13

for the eighth grade, and Table 15 for the tenth-grade results.

Table 4

Third Grade Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SLD only	0.275	127	0.000	0.797	127	0.000
SLD and MH Diagnosis	0.252	68	0.000	0.825	68	0.000

Table 5

Eighth Grade Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SLD only	0.358	126	0.000	0.726	126	0.000
SLD and MH Diagnosis	0.470	70	0.000	0.532	70	0.000

Table 6

Tenth Grade Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SLD only	0.364	136	0.000	0.747	136	0.000
SLD and MH Diagnosis	0.486	62	0.000	0.500	62	0.000

Assumption of Homogeneity of Variance

The Independent Samples *t* test requires that the assumption of homogeneity of variance be met. The assumption of homogeneity of variance was examined using the Levene's test. The assumption of homogeneity of variance was met where in third grade ($p = .996$) in eighth grade ($p = .66$) and in tenth grade ($p = .76$). See Table 7 for Levene's test of Equality of Error Variance for the third grade, Table 8 for Levene's test of Equality of Error Variance for the eighth grade, and Table 9 for Levene's test of Equality of Error Variance for the tenth grade.

Table 7

Third Grade Levene's Test of Equality of Error Variances

	Levene Statistic	df1	df2	Sig.
Score Based on Mean	.000	1	193	.996

Table 8

Eighth Grade Levene's Test of Equality of Error Variances

	Levene Statistic	df1	df2	Sig.
Score Based on Mean	.119	1	194	.656

Table 9

Tenth Grade Levene's Test of Equality of Error Variances

	Levene Statistic	df1	df2	Sig.
Score Based on Mean	.097	1	196	.756

Results

Third Grade

An Independent Samples *t* test analysis calculated the difference between performance on standardized testing for third-grade students with SLD only (*M*=1.83, *SD*=.949) and those with SLD and mental health diagnoses (*M*=1.94, *SD*=.944). The two groups of students were compared on their FSA testing scores using the independent samples *t* test, which identified no significant difference between SLD only and SLD comorbid with a mental health diagnosis, *t*(193)= -0.748. Eta square equaled (η^2 = .003). The effect size was small. Eta square was calculated using the formula $\eta^2 = t^2/(t^2 + df)$.The independent *t* test (equal variances assumed) resulted in a *p*-value greater than 0.05 (*p*= .455); therefore, the research findings fail to reject the null hypothesis for RQ1. See Table 10 for Independent Samples *t*-test results. Additionally, Table 4 further supports the inability to reject the null hypothesis, as *p*= 0.000, was not a normal distribution for both sets of students. Therefore, the Independent-Samples Mann-Whitney U Test was conducted which also failed to reject the null hypothesis. FSA scores on SLD only were the same as those of SLD with a MH diagnosis. A Mann-Whitney test indicated that this difference was not statistically significant, *U(N* SLD Only = 127, *N* SLD and MH Diagnosis = 68) = 4622, *z* = 0.865, p = 0.387. See Table 11 for the Independent-Samples Mann-Whitney U Test results.

Table 10

Third Grade Independent Samples t test

	F	*Sig.*	*t*	*df*	Significance	
					One-Sided *p*	Two-Sided *p*
Equal variances assumed	0.000	0.996	-0.748	193	0.228	0.455

Table 11

Third Grade Independent-Samples Mann-Whitney U test

Null Hypothesis	Test	Sig.[a,b]	Decision
The distribution of Score is the same across categories of Status.	Independent-Samples Mann-Whitney U Test	0.387	Retain the null hypothesis.

a. The significance level is .050.
b. Asymptotic significance is displayed.

Eighth Grade

An independent samples *t* test analysis calculated the difference between performance on standardized testing for eighth-grade students with SLD only (*M*=1.65, *SD*=.879) and those with SLD and mental health diagnoses (*M*=1.49, *SD*=.864). The two groups of students were compared on their FSA testing scores using the independent samples *t* test, which identified no significant difference between SLD only and SLD comorbid with a mental health diagnosis, $t(194)=1.267$. Eta square equaled ($\eta^2 = 0.008$). The effect size was small. Eta square was calculated using the formula $\eta^2 = t^2/(t^2 + df)$. The independent t-test (equal variances assumed) resulted in a *p*-value greater than 0.05 (*p*=0.207); therefore, the research findings fail to reject the null hypothesis for RQ2. See Table 12 for Independent Samples *t*-test results. Additionally, Table 5 further supports the inability to reject the null hypothesis, as *p*= 0.000, was not a normal distribution for both sets of students. Therefore, the Independent-Samples Mann-Whitney U Test a nonparametric test was once again utilized to determine if there was a statistical difference between student with SLD only and students with SLD and a mental health diagnosis. The Independent-Samples Mann-Whitney U Test is the nonparametric alterative to the Independent Samples *t* test analysis when assumptions of normality are not met (Nachar, 2008). The Independent-Samples Mann-Whitney U Test also indicated to retain the null hypothesis. FSA

scores on SLD only were the same as those of SLD with a MH diagnosis. A Mann-Whitney test

indicated that this difference was not statistically significant, $U(N_{\text{SLD Only}} = 126, N_{\text{SLD and MH}}$

$_{\text{Diagnosis}} = 70) = 3848, z = -1.743, \text{p} = 0.081$. See Table 13 for the Independent-Samples Mann-

Whitney U Test results.

Table 12

Eighth Grade Independent Samples t test

	f	Sig.	t	df	Significance	
					One-Sided p	Two-Sided p
Equal variances assumed	0.199	0.656	1.267	194	0.103	0.207

Table 13

Eighth Grade Independent-Samples Mann-Whitney U test

Null Hypothesis	Test	Sig.[a,b]	Decision
The distribution of Score is the same across categories of Diagnosis.	Independent-Samples Mann-Whitney U Test	0.081	Retain the null hypothesis.

a. The significance level is .050.
b. Asymptotic significance is displayed.

Tenth Grade

An Independent Samples *t* test analysis calculated the difference between performance on

standardized testing for tenth-grade students with SLD only (*M*=1.53, *SD*=.798) and those with

SLD and mental health diagnoses (*M*=1.42, *SD*=.821). The two groups of students were

compared on their FSA testing scores using the independent samples *t* test, which identified no

significant difference between SLD only and SLD comorbid with a mental health diagnosis,

$t(196)= 0.892$. Eta square equaled ($\eta^2 = .004$). The effect size was small. Eta square was

calculated using the formula $\eta^2 = t^2/(t^2 + df)$. The independent t-test (equal variances assumed)

resulted in a p-value greater than 0.05 ($p=0.373$); therefore, the research findings fail to reject the

null hypothesis for RQ3. See Table 14 for Independent Samples t test results. Additionally, Table

14 further supports the inability to reject the null hypothesis, as $p= 0.000$, was not a normal

distribution for both sets of students. Therefore, the Independent-Samples Mann-Whitney U Test

was once again conducted to determine whether or not to reject or retain the null hypothesis

which also indicated to retain the null hypothesis. FSA scores on SLD only were the same as

those of SLD with a MH diagnosis. FSA scores on SLD only were the same as those of SLD

with a MH diagnosis. A Mann-Whitney test indicated that this difference was not statistically

significant, $U(N_{\text{SLD Only}} = 136, N_{\text{SLD and MH Diagnosis}} = 62) = 3732$, z = -1.544, p = 0.122. See Table

15 for the Independent-Samples Mann-Whitney U Test results.

Table 14

Tenth Grade Independent Samples t test

	F	Sig.	t	df	Significance	
					One-Sided p	Two-Sided p
Equal variances assumed	0.097	0.756	0.892	196	0.187	0.373

Table 15

Tenth Grade Independent-Samples Mann-Whitney U test

Null Hypothesis	Test	Sig.[a,b]	Decision
The distribution of score is the same across categories of diagnosis.	Independent-Samples Mann-Whitney U Test	0.122	Retain the null hypothesis.

a. The significance level is .050.
b. Asymptotic significance is displayed.

CHAPTER FIVE: CONCLUSIONS

Overview

Chapter Five includes a discussion of the study, as well as the results with specific reference to each null hypothesis. This section also includes an overall conclusion, limitations, as well as further research that would be beneficial to add to the field.

Discussion

The purpose of this quantitative causal-comparative study was to determine if there is an impact of mental health diagnoses in combination with specific learning disorders for students with an IEP or 504 plans on standardized test scores. With rising mental health concerns, researchers must remain vigilant in assessing the effects of an ever-changing classroom curriculum on students at high risk of academic failure. According to Ball et al. (2016), one in five children is diagnosed with a mental health disorder. ADHD, separation anxiety and oppositional defiant disorder are most common in primary school children (aged 4–10 years), and generalized anxiety, conduct disorder, and depression are more common in secondary school students (aged 11–18 years) (Ogundele, 2018). According to Arango et al. (2018), 50% of mental disorders start before age 14, and 75% start before the age of 24. Therefore, each age group faces different challenges throughout their public-school education years. This stated, there is a great need to understand the effects of mental health disorders on academic achievement in students with a specific learning disorder.

Null Hypothesis One

The researcher conducted an independent samples *t*-tests for participants in the third grade to examine the potential for differences in standardized testing performance between students with specific learning disorder only and those with specific learning disorder comorbid

with a mental health diagnosis. An individual samples *t*-test analysis calculated the difference

between performance on standardized testing for third-grade students with SLD only (*M*=1.83,

SD=.949) and those with SLD and mental health diagnoses (*M*=1.94, *SD*=.944). The two groups

of students were compared on their FSA testing scores using the independent samples *t* test,

which identified no significant difference between SLD only and SLD comorbid with a mental

health diagnosis, *t*(193)= -0.748. The independent sample *t* test (equal variances assumed)

resulted in a *p*-value greater than 0.05 (*p*=0.455); therefore, the research findings failed to reject

the null hypothesis for RQ1. In addition, due to the assumption of normality not being met, the

Independent-Samples Mann-Whitney U Test was conducted which indicated to retain the null

hypothesis.

Research conducted by Hendren et al. (2018) and Poppen et al. (2016) demonstrated that

evidence has shown increased risk of academic deficits when psychiatric comorbidity is present

with specific learning disorders. In addition, Darweesh et al. (2020) and Esmaili et al. (2016),

stated that psychiatric comorbidity in students with specific learning disorder predict poor

academic skills and outcomes. The research conducted in this study does not support these

statements. The research conducted in this study found that there is not a decrease in academic

performance for students with a psychiatric comorbidity as compared to students with specific

learning disorder alone.

Null Hypothesis Two

The researcher conducted an independent samples *t* tests for participants in the eighth

grade to examine the potential for differences in standardized testing performance between

students with specific learning disorder only and those with specific learning disorder comorbid

with a mental health diagnosis. The individual samples *t* test analysis calculated the difference

between performance on standardized testing for eighth-grade students with SLD only (M=1.65, SD=.879) and those with SLD and mental health diagnoses (M=1.49, SD=.864). The two groups of students were compared on their FSA testing scores using the independent samples t test, which identified no significant difference between SLD only and SLD comorbid with a mental health diagnosis, t(194)=1.267. The independent t test (equal variances assumed) resulted in a p-value greater than 0.05 (p=0.207); therefore, the research findings failed to reject the null hypothesis for RQ2. In addition, due to the assumption of normality not being met, the Independent-Samples Mann-Whitney U Test was conducted which indicated to retain the null hypothesis.

According to Sahu et al. (2019), a primary concern should be to use insight gained through research of psychiatric comorbidities and the complication associated with specific learning disorders to successfully identify children's needs, developing proper educational plans, which facilitate effective and holistic improvement in a student's educational and behavioral achievements. The results of this study failed to reject the null hypothesis for RQ2. Instead, there was no significant differences between students with specific learning disorder and students with specific learning disorder with a psychiatric comorbidity of a mental health disorder.

Null Hypothesis Three

Finally, the researcher conducted an independent samples t tests for participants in the tenth grade to examine the potential for differences in standardized testing performance between students with specific learning disorder only and those with specific learning disorder comorbid with a mental health diagnosis. The individual samples t test analysis calculated the difference between performance on standardized testing for tenth-grade students with SLD only (M=1.53, SD=.798) and those with SLD and mental health diagnoses (M=1.42, SD=.821). The two groups

of students were compared on their FSA testing scores using the independent samples *t* test, which identified no significant difference between SLD only and SLD comorbid with a mental health diagnosis, $t(196)= 0.892$. The independent *t* test (equal variances assumed) resulted in a *p*-value greater than 0.05 (p=0.373); therefore, the research findings failed to reject the null hypothesis for RQ3. In addition, due to the assumption of normality not being met, the Independent-Samples Mann-Whitney U Test was conducted which indicated to retain the null hypothesis.

The results of this study are also in contrast to previous research which postulated that students with specific learning disorders and a psychiatric comorbidity have lower academic achievement than students with specific learning disorder alone. As with RQ1 and RQ2, the null hypotheses were not rejected. Overall, the scores and results from the independent samples *t* tests showed no significant difference between the two groups. Instead, there was no significant differences between students with specific learning disorder and students with specific learning disorder with a psychiatric comorbidity of a mental health disorder

Implications

The implications of the study stem from the research not showing a significant difference between students who are diagnosed with a specific learning disorder and mental health disorder compared to students diagnosed with a specific learning disorder only. Though the null hypotheses were not rejected, this study did contribute to the overall body of research regarding specific learning disorders and psychiatric comorbidity. There has been limited research to show how psychiatric comorbidity effects academic treatment. In addition, there is limited information on the effects of these disorders on academic treatment in the rural areas. This researcher found there to be several areas that could possibly affect the ability to gather accurate information. First

being that different school districts store and retrieve academic scores and student disorders in multiple ways. Not all districts store the information collected electronically, which hinders the ability to run reports to gather data when needed. None of the school districts document the presences or absence of a mental health disorder consistently on the students' IEP plans. Individual student charts had to be reviewed to determine if the child was receiving mental health services based off school mental health referrals or parental reports. According to Kern et al. (2019), teachers are challenged with selecting proper accommodations to meet individual student's needs. If mental health diagnoses are not properly documented, many teachers are left not knowing what challenges the students face and how to best assist the students in academic achievement.

Limitations

Limitations to the research include the test being limited by the amount of data that was provided. In rural areas with fewer students, it is difficult to gather larger numbers of participants. Another limitation was that the assumption of normality was not met using the Kolmogorov-Smirnov test. Therefore, with a larger data sample, the results may yield a different outcome. Varying procedures in which each school district used to store and collect data could also be a limitation for this research. All data was collected using the same format which protected against false findings. However, when relying on a school district employee to gather data, the researcher was unable to directly observe this process. While this is often a measure in many studies, it offers a limitation. Another limitation is the method used by school districts sampled who do not document mental health disorders on the IEPs. Therefore, some numbers could have been skewed based upon poor record keeping. The participants were all students in the rural area of the Florida panhandle, which also is a limitation to this area for this research.

Recommendations for Future Research

The findings of this study showed a need for further investigation into academic achievement for students who have been diagnosed with a mental health disorder. Suggestions for future studies are listed below.

1. Replicate the study with students residing in other rural areas.

2. Replicate the study with students residing in urban areas.

3. Replicate the study with students who do not have a diagnosis of specific learning disorder to compare students with a mental health disorder to mainstream students with no mental health disorder.

4. Replicate the study using a different scale of measurement.

References

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical psychology review, 30*(2), 217-237. https://doi.org/10.1016/j.cpr.2009.11.004

Ali, M. M., West, K., Teich, J. L., Lynch, S., Mutter, R., & Dubenitz, J. (2019). Utilization of mental health services in educational setting by adolescents in the United States. *Journal of School Health, 89*(5), 393-401. https://doi.org/10.1111/josh.12753

Allan, N., Hume, L., Allan, D., Farrington, A., & Lonigan, C. (2014). Relations between inhibitory control and the development of academic skills in preschool and kindergarten: A meta-analysis. *Developmental Psychology., 50*(10), 2368–2379. https://doi.org/10.1037/a0037493

Altay, M. A., & Görker, I. (2017). Assessment of psychiatric comorbidity and WISC-R profiles in cases diagnosed with specific learning disorder according to DSM-5 criteria. *Archives of Neuropsychiatry, 55*(2), 127–134. https://doi.org/10.5152/npa.2017.18123

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.

Arango, C., Díaz-Caneja, C. M., McGorry, P. D., Rapoport, J., Sommer, I. E., Vorstman, J. A., McDaid, D., Marin, O., Serrano-Drozdowskyj, E., Freedman, R., & Carpenter, W. (2018). Preventive strategies for mental health. *The Lancet Psychiatry, 5*(7), 591-604. https://doi.org/10.1016/S2215-0366(18)30057-9

Arnold, L. E., Hodgkins, P., Kahle, J., Madhoo, M., & Kewley, G. (2020). Long-term outcomes of ADHD: Academic achievement and performance. *Journal of Attention Disorders, 24*(1), 73-85. https://doi.org/10.1177/1087054714566076

Ball, A., Iachini, A., Bohnenkamp, J., Togno, N., Brown, E., Hoffman, J., & George, M. (2016). School mental health content in state in-service K-12 teaching standards in the United States. *Teaching and Teacher Education., 60*, 312–320. https://doi.org/10.1016/j.tate.2016.08.020

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215. https://doi.org/10.1037//0033-295X.84.2.191

Barbot, B., & Hunter, S. R. (2012). Developmental changes in adolescence and risks for delinquency. *In Handbook of Juvenile Forensic Psychology and Psychiatry* (pp. 11-34). Springer, Boston, MA.

Barkley, R. A., & Fischer, M. (2011). Predicting impairment in major life activities and occupational functioning in hyperactive children as adults: Self-reported executive function (EF) deficits versus EF tests. *Developmental neuropsychology, 36*(2), 137-161. https://doi.org/10.1080/87565641.2010.549877

Battaglia, M., Garon-Carrier, G., Côté, S. M., Dionne, G., Touchette, E., Vitaro, F., & Boivin, M. (2017). Early childhood trajectories of separation anxiety: Bearing on mental health, academic achievement, and physical health from mid-childhood to preadolescence. *Depression and Anxiety., 34*(10), 918–927. https://doi.org/10.1002/da.22674

Bishnoi, S., Talwar, P., & Bishnoi, I. (2018). Social stigma in patients of depression and somatization – A north India perspective. *Journal of Evidence Based Medicine and Healthcare, 5*, 2411–2414.

Boak, A., Hamilton, H. A., Adlaf, E. M., Henderson, J. L., & Mann, R. E. (2018). The mental health and well-being of Ontario students, 1991-2017: Detailed findings from the Ontario student drug use and health survey (OSDUHS) (CAMH Research Document Series No. 47). *Toronto, ON: Centre for Addiction and Mental Health*.

Bronfenbrenner, U. (1978). The social role of the child in ecological perspective. *Zeitschrift für Soziologie, 7*(1), 4-20. https://doi.org/10.1515/zfsoz-1978-0101

Burke, J. D., & Romano-Verthelyi, A. M. (2018). Oppositional defiant disorder. In developmental pathways to disruptive, impulse-control and conduct disorders (pp. 21-52). Academic Press. https://doi.org/10.1016/B978-0-12-811323-3.00002-X

Chen, C., & Yang, Y. (2019). Revisiting the effects of project-based learning on students' academic achievement: A meta-analysis investigating moderators. *Educational Research Review., 26,* 71–81. https://doi.org/10.1016/j.edurev.2018.11.001

Coyne, S. M., Rogers, A. A., Zurcher, J. D., Stockdale, L., & Booth, M. (2020). Does time spent using social media impact mental health?: An eight year longitudinal study. *Computers in Human Behavior*, 104, 106160. https://doi.org/10.1016/j.chb.2019.106160

Curtin, S. C., & Heron, M. P. (2019). Death rates due to suicide and homicide among persons aged 10–24: United States, 2000–2017. https://www.cdc.gov/nchs/data/databriefs/db352-h.pdf

Dalsgaard, S., McGrath, J., Østergaard, S. D., Wray, N. R., Pedersen, C. B., Mortensen, P. B., & Petersen, L. (2020). Association of mental disorder in childhood and adolescence with subsequent educational achievement. *JAMA Psychiatry, 77*(8), 797-805. https://doi:10.1001/jamapsychiatry.2020.0217

Damaiyanti, M., & Fitriani, D. R. (2017). The relation of educational level, academic achievement (GPA) and depression among public school adolescent. *IJNP (Indonesian Journal of Nursing Practices), 1*(3), 83-90.

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science., 24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

Darweesh, A. M., Elserogy, Y. M., Khalifa, H., Gabra, R. H., & El-Ghafour, M. A. (2020). Psychiatric comorbidity among children and adolescents with dyslexia. *Middle East Current Psychiatry*, 27(1), 1-9. https://doi.org/10.1186/s43045-020-00035-y

De Feyter, T., Caers, R., Vigna, C., & Berings, D. (2012). Unraveling the impact of the big five personality traits on academic performance: The moderating and mediating effects of self-efficacy and academic motivation. *Learning and Individual Differences., 22*(4), 439–448. https://doi.org/10.1016/j.lindif.2012.03.013

de Lijster, J. M., Dieleman, G. C., Utens, E. M., Dierckx, B., Wierenga, M., Verhulst, F. C., & Legerstee, J. S. (2018). Social and academic functioning in adolescents with anxiety disorders: A systematic review. *Journal of Affective Disorders*, *230,* 108-117. https://doi.org/10.1016/j.jad.2018.01.008

Deighton, J., Humphrey, N., Belsky, J., Boehnke, J., Vostanis, P., & Patalay, P. (2018). Longitudinal pathways between mental health difficulties and academic performance during middle childhood and early adolescence. *The British Journal of Developmental Psychology., 36*(1), 110–126. https://doi.org/10.1111/bjdp.12218

Elia, J., Ambrosini, P., & Berrettini, W. (2008). ADHD characteristics: I. Concurrent co-morbidity patterns in children & adolescents. *Child and Adolescent Psychiatry and Mental Health, 2*(1), 1-9. https://doi.org/10.1186/1753-2000-2-15

Esmaili, S. K., Shafaroodi, N., Mehraban, A. H., Parand, A., Qorbani, M., Yazdani, F., & Mahmoudpour, A. (2016). Prevalence of psychiatric symptoms and mental health services in students with specific learning disabilities in Tehran, Iran. *International Journal of Mental Health and Addiction, 14*(4), 438-448. https://doi.org/10.1007/s11469-015-9617-3

Fairchild, G., Hawes, D. J., Frick, P. J., Copeland, W. E., Odgers, C. L., Franke, B., Freitag, C., & De Brito, S. A. (2019). Conduct disorder. *Nature Reviews Disease Primers, 5*(1), 1-25. https://doi.org/10.1038/s41572-019-0095-y

Fazel, M., Hoagwood, K., Stephan, S., & Ford, T. (2014). Mental health interventions in schools in high-income countries. *The Lancet Psychiatry, 1*(5), 377-387. https://doi.org/10.1016/S2215-0366(14)70312-8

Feriante J., & Bernstein B., (2020). *Separation Anxiety.* https://www.ncbi.nlm.nih.gov/books/NBK560793/

Findling, R. L., Stepanova, E., Youngstrom, E. A., & Young, A. S. (2018). Progress in diagnosis and treatment of bipolar disorder among children and adolescents: An international perspective. *Evidence - Based Mental Health, 21*(4), 177. http://dx.doi.org.ezproxy.liberty.edu/10.1136/eb-2018-102912

Fletcher, J., & Miciak, J. (2017). Comprehensive cognitive assessments are not necessary for the identification and treatment of learning disabilities. *Archives of Clinical Neuropsychology., 32*(1), 2–7. https://doi.org/10.1093/arclin/acw103

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.).
Boston, MA: Pearson Education, Inc.

Gidlund, U., & Boström, L. (2017). What is inclusive didactics? Teachers´ understanding of
inclusive didactics for students with EBD in Swedish mainstream schools. *International
Education Studies, 10*(5), 87-99. https://doi.org/10.5539/ies.v10n5p87

Gillberg, C., Gillberg, I. C., Rasmussen, P., Kadesjö, B., Söderström, H., Råstam, M., Johnson,
M., Rothenberger. A., & Niklasson, L. (2004). Co–existing disorders in ADHD–
implications for diagnosis and intervention. *European Child & Adolescent Psychiatry,
13*(1), i80-i92. https://doi.org/10.1007/s00787-004-1008-4

Gujare, S. K., & Tiwari, G. K. (2016). Mental health symptoms predict academic achievement of
the female students. *The International Journal of Indian Psychology, 4*(1), 93-111.
https://doi.org/10.25215/0476.006

Haberstroh, S., & Schulte-Körne, G. (2019). The Diagnosis and Treatment of Dyscalculia.
Deutsches Ärzteblatt International., 116(7), 107–114.
https://doi.org/10.3238/arztebl.2019.0107

Hooda, M., & Saini, A. (2017). Academic anxiety: An overview. *Educational Quest: An
International Journal of Education and Applied Social Science., 8*(3).
https://doi.org/10.5958/2230-7311.2017.00139.8

Hendren, R., Haft, S., Black, J., White, N., & Hoeft, F. (2018). Recognizing psychiatric
comorbidity with reading disorders. *Frontiers in Psychiatry., 9*, 101.
https://doi.org/10.3389/fpsyt.2018.00101

Herpertz-Dahlmann, B., & Dahmen, B. (2019). Children in need—Diagnostics, epidemiology, treatment and outcome of early onset anorexia nervosa. *Nutrients, 11*(8), 1932. http://dx.doi.org/10.3390/nu11081932

Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., Smith, M., Bullock Mann, F., Barmer, A., & Dilig, R. (2020). The condition of education 2020. NCES 2020-144. *National Center for Education Statistics.*

Jordan, R., Fernandez, E., Costa, L., & Hooper, S. (2020). Internalizing and externalizing behaviors of children with writing disabilities. *Learning Disabilities Research & Practice., 35*(2), 72–81. https://doi.org/10.1111/ldrp.12216

Kamenopoulou, L. (2016). Ecological systems theory: A valuable framework for research on inclusion and special educational needs/disabilities. *Педагогика, 88*(4), 515-527. http://www.globi-observatory.org/wp-content/uploads/2016/04/Pedagogy_Leda_4_2016.pdf

Kelchner, V., Perleoni, M., & Lambie, G. (2019). An investigation of change: Elementary students with an individual education program participating in a school-based mental health counselling intervention. *Journal of Research in Special Educational Needs: JORSEN., 19*(4), 325–333. https://doi.org/10.1111/1471-3802.12451

Kern, L., Hetrick, A., Custer, B., & Commisso, C. (2019). An evaluation of IEP accommodations for secondary students with emotional and behavioral problems. *Journal of Emotional and Behavioral Disorders., 27*(3), 178–192. https://doi.org/10.1177/1063426618763108

Kovess-Masfety, V., Ester, W. A., Wild, K., Bitfoi, A., Goelitz, D., Lesinskiene, S., & Husky,
M. M. (2020). Mental health problems, low birthweight and academic achievement in
mathematics and reading. *Current Psychology*, 1-11. https://doi.org/10.1007/s12144-020-
00674-8

Lane, K., Oakes, W., Cantwell, E., Menzies, H., Schatschneider, C., Lambert, W., & Common,
E. (2017). Psychometric evidence of SRSS-IE scores in middle and high schools. *Journal
of Emotional and Behavioral Disorders., 25*(4), 233–245.
https://doi.org/10.1177/1063426616670862

Larson, K., Russ, S. A., Kahn, R. S., & Halfon, N. (2011). Patterns of comorbidity, functioning,
and service use for US children with ADHD, 2007. *Pediatrics, 127*(3), 462–470.
https://doi.org/10.1542/peds.2010-0165

Lavallee, K., Herren, C., Blatter-Meunier, J., Adornetto, C., In-Albon, T., & Schneider, S.
(2011). Early predictors of separation anxiety disorder: Early stranger anxiety, parental
pathology and prenatal factors. *Psychopathology, 44*(6), 354-361.

Leadbeater, B. J., & Ames, M. E. (2017). The longitudinal effects of oppositional defiant
disorder symptoms on academic and occupational functioning in the transition to young
adulthood. *Journal of Abnormal Child Psychology, 45*(4), 749-763.
https://doi.org/10.1007/s10802-016-0190-4

Leyland, A., Rowse, G., & Emerson, L. M. (2019). Experimental effects of mindfulness
inductions on self-regulation: Systematic review and meta-analysis. *Emotion, 19*(1), 108-
122. https://doi.org/10.1037/emo0000425

Lin, Y. J., Tseng, W. L., & Gau, S. S. F. (2021). Psychiatric comorbidity and social adjustment difficulties in children with disruptive mood dysregulation disorder: A national epidemiological study. *Journal of Affective Disorders, 281*, 485-492. https://doi.org/10.1016/j.jad.2020.12.039

Linkenheil, A., Honigfeld, L., & Pidano, A. (2021). Family history of mental health disorders and parental help-seeking for behavioral health concerns in pediatric primary care offices. *Journal of Pediatric Health Care Official Publication of National Association of Pediatric Nurse Associates & Practitioners*. https://doi.org/10.1016/j.pedhc.2021.04.004

Lipari, R. N., Hedden, S., Blau, G., & Rubenstein, L. (2016). Adolescent mental health service use and reasons for using services in specialty, educational, and general medical settings. *The CBHSQ Report*.

Long, E., Gardani, M., McCann, M., Sweeting, H., Tranmer, M., & Moore, L. (2020). Mental health disorders and adolescent peer relationships. *Social Science & Medicine, 253*, 112973. https://doi.org/10.1016/j.socscimed.2020.112973

Liu, C. Y., Huang, W. L., Kao, W. C., & Gau, S. S. F. (2017). Influence of disruptive behavior disorders on academic performance and school functions of youths with attention-deficit/hyperactivity disorder. *Child Psychiatry & Human Development, 48*(6), 870-880. https://doi.org/10.1007/s10578-017-0710-7

MacLeod, K., Causton, J. N., Radel, M., & Radel, P. (2017). Rethinking the individualized education plan process: Voices from the other side of the table. *Disability & Society, 32*(3), 381-400. https://doi.org/10.1080/09687599.2017.1294048

Mariano, V., Achsel, T., Bagni, C., & Kanellopoulos, A. K. (2020). Modelling learning and memory in drosophila to understand intellectual disabilities. *Neuroscience.*, *445*, 12–30. https://doi.org/10.1016/j.neuroscience.2020.07.034

Marshall, M. (2020). The hidden links between mental disorders. *Nature., 581*(7806), 19–21. https://doi.org/10.1038/d41586-020-00922-8

Mayes, S. D., Calhoun, S. L., & Crowell, E. W. (2000). Learning disabilities and ADHD: Overlapping spectrum disorders. *Journal of Learning Disabilities, 33*(5), 417-424. https://doi.org/10.1177/002221940003300502

McDonough, E. M., Flanagan, D. P., Sy, M., & Alfonso, V. C. (2017). Specific learning disorder. In *Handbook of DSM-5 Disorders in Children and Adolescents* (pp. 77-104). Springer, Cham.

Meherali, S., Punjani, N., Louie-Poon, S., Abdul Rahim, K., Das, J. K., Salam, R. A., & Lassi, Z. S. (2021). Mental health of children and adolescents amidst COVID-19 and past pandemics: A rapid systematic review. *International Journal of Environmental Research and Public Health, 18*(7), 3432. https://doi.org/10.3390/ijerph18073432

Meyer, J., Fleckenstein, J., & Köller, O. (2019). Expectancy value interactions and academic achievement: Differential relationships with achievement measures. *Contemporary Educational Psychology., 58*, 58–74. https://doi.org/10.1016/j.cedpsych.2019.01.006

Mvududu, N. (2019). Culturally responsive teaching: The Bible tells me so. *International Christian Community of Teacher Educators Journal, 14*(1), 5. https://digitalcommons.georgefox.edu/icctej/vol5/iss1/5

Nachar, N. (2008). The Mann-Whitney U: A test for assessing whether two independent samples come from the same distribution. *Tutorials in quantitative Methods for Psychology, 4*(1), 13-20.

Nelson, J. M., & Harwood, H. (2011). Learning disabilities and anxiety: A meta-analysis. *Journal of Learning Disabilities, 44*(1), 3–17.
https://doi.org/10.1177/0022219409359939

Ogundele M. O., (2018). Behavioural and emotional disorders in childhood: A brief overview for pediatricians. *World Journal of Clinical Pediatrics, 7*(1), 9–26.
https://doi.org/10.5409/wjcp.v7.i1.9

Passarotti, A. M., Balaban, L., Colman, L. D., Katz, L. A., Trivedi, N., Liu, L., & Langenecker, S. A. (2019). A preliminary study on the functional benefits of computerized working memory training in children with pediatric bipolar disorder and attention deficit hyperactivity disorder. *Frontiers in Psychology, 10*, 3060.
https://doi:10.3389/fpsyg.2019.03060

Peters, L., de Beeck, H. O., & De Smedt, B. (2020). Cognitive correlates of dyslexia, dyscalculia and comorbid dyslexia/dyscalculia: Effects of numerical magnitude processing and phonological processing. Research in Developmental Disabilities, 107.
https://doi.org/10.1016/j.ridd.2020.103806

Platt, J. M., Keyes, K. M., McLaughlin, K. A., & Kaufman, A. S. (2019). Intellectual disability and mental disorders in a US population representative sample of adolescents. *Psychological Medicine, 49*(6), 952-961. https://doi.org/10.1017/S0033291718001605

Poppen, M., Sinclair, J., Hirano, K., Lindstrom, L., & Unruh, D. (2016). Perceptions of mental health concerns for secondary students with disabilities during transition to adulthood. *Education & Treatment of Children., 39*(2), 221–246. https://doi.org/10.1353/etc.2016.0008

Price, M., Polk, W., Hill, N., Liang, B., & Perella, J. (2019). The intersectionality of identity-based victimization in adolescence: A person-centered examination of mental health and academic achievement in a U.S. high school. *Journal of Adolescence., 76*, 185–196. https://doi.org/10.1016/j.adolescence.2019.09.002

Radez, J., Reardon, T., Creswell, C., Lawrence, P. J., Evdoka-Burton, G., & Waite, P. (2021). Why do children and adolescents (not) seek and access professional help for their mental health problems? A systematic review of quantitative and qualitative studies. *European Child & Adolescent Psychiatry, 30*(2), 183-211. https://doi.org/10.1007/s00787-019-01469-4

Reale, L., Bartoli, B., Cartabia, M., Zanetti, M., Costantino, M. A., Canevini, M. P., ... & Lombardy ADHD Group. (2017). Comorbidity prevalence and treatment outcome in children and adolescents with ADHD. *European Child & Adolescent Psychiatry, 26*(12), 1443-1457. https://doi.org/10.1007/s00787-017-1005-z

Rajabi, M. (2020). Mental health problems amongst school-age children and adolescents during the COVID-19 pandemic in the UK, Ireland and Iran: A call to action and research. *Health Promotion Perspectives., 10*(4), 293–294. https://doi.org/10.34172/hpp.2020.46

Robson, D., Allen, M., & Howard, S. (2020). Self-regulation in childhood as a predictor of future outcomes: A meta-analytic review. *Psychological Bulletin., 146*(4), 324–354. https://doi.org/10.1037/bul0000227

Rosa, E. M., & Tudge, J. (2013). Urie Bronfenbrenner's theory of human development: Its evolution from ecology to bioecology. *Journal of Family Theory & Review, 5*(4), 243-258. https://doi.org/10.1111/jftr.12022

Rosvall, P. (2019). Perspectives of students with mental health problems on improving the school environment and practice. *Education Inquiry*., 1–16. https://doi.org/10.1080/20004508.2019.1687394

Sadler, K., Vizard, T., Ford, T., Goodman, A., Goodman, R., & McManus, S. (2018). *Mental health of children and young people in England, 2017: Trends and characteristics*. https://openaccess.city.ac.uk/id/eprint/23650/

Sahu, A., Patil, V., Sagar, R., & Bhargava, R. (2019). Psychiatric comorbidities in children with specific learning disorder-mixed type: A cross-sectional study. *Journal of Neurosciences in Rural Practice., 10*(04), 617–622. https://doi.org/10.1055/s-0039-1697879

Salihu, L., Aro, M., & Rasanen, P. (2018). Children with learning difficulties in mathematics: Relating mathematics skills and reading comprehension. *Issues in Educational Research., 28*(4). https://doi.org/10.3316/ielapa.022495701125234

Savage, J., Ferguson, C. J., & Flores, L. (2017). The effect of academic achievement on aggression and violent behavior: A meta-analysis. *Aggression and Violent Behavior, 37*, 91-101. http://dx.doi.org/10.1016/j.avb.2017.08.002

Scaini, S., Ogliari, A., Eley, T. C., Zavos, H. M., & Battaglia, M. (2012). Genetic and environmental contributions to separation anxiety: A meta-analytic approach to twin data. *Depression and Anxiety, 29*(9), 754-761.

Schäfer, J. Ö., Naumann, E., Holmes, E. A., Tuschen-Caffier, B., & Samson, A. C. (2017). Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *Journal of Youth and Adolescence, 46*(2), 261-276. https://doi.org/10.1007/s10964-016-0585-0

Seitz, J., Konrad, K., & Herpertz-Dahlmann, B. (2018). Extend, pathomechanism and clinical consequences of brain volume changes in anorexia nervosa. *Current Neuropharmacology, 16*(8), 1164-1173. http://dx.doi.org/10.3390/nu11081932

Sewasew, D., & Schroeders, U. (2019). The developmental interplay of academic self-concept and achievement within and across domains among primary school students. *Contemporary Educational Psychology., 58*, 204–212. https://doi.org/10.1016/j.cedpsych.2019.03.009

Sexton, C. C., Gelhorn, H. L., Bell, J. A., & Classi, P. M. (2012). The co-occurrence of reading disorder and ADHD: Epidemiology, treatment, psychosocial impact, and economic burden. *Journal of Learning Disabilities*, *45*(6), 538-564. https://doi.org/10.1177/0022219411407772

Shetgiri, R. (2013). Bullying and victimization among children. *Advances in Pediatrics, 60*(1), 33-51. https://doi.org/10.1016/j.yapd.2013.04.004

Silva, D., Colvin, L., Glauert, R., Stanley, F., Srinivas Jois, R., & Bower, C. (2020). Literacy and numeracy underachievement in boys and girls with ADHD. *Journal of Attention Disorders*, *24*(10), 1392-1402. https://doi.org/10.1177/1087054715613438

Stanberry, K. (2017). *Understanding 504 plans*. New York, NY: Understood USA, LLC.

Substance Abuse and Mental Health Services Administration. (2016). *DSM-5 Changes: Implications for child serious emotional disturbance*. U.S. Department of Health and Human Services. https://www.ncbi.nlm.nih.gov/books/NBK519712/

Sullivan, A., Thayer, A., & Sadeh, S. (2018). Multisector involvement among adolescents with disabilities. *Remedial and Special Education., 39*(6), 353–364. https://doi.org/10.1177/0741932517735574

Suldo, S., Thalji-Raitano, A., Kiefer, S., & Ferron, J. (2016). Conceptualizing high school students' mental health through a dual-factor model. *School Psychology Review., 45*(4), 434–457. https://doi.org/10.17105/SPR45-4.434-457

Sung-Man, B. (2020). The long-term effects of perceived community disorder and social stigma on depressive symptoms among adolescent school dropouts using multivariate latent growth modeling. *School Psychology International., 41*(6), 485–498. https://doi.org/10.1177/0143034320951232

Tandon, M., & Pergjika, A. (2017). Attention deficit hyperactivity disorder in preschool-age children. *Child and Adolescent Psychiatric Clinics, 26*(3), 523-538. https://doi.org/10.1016/j.chc.2017.02.007

Tassé, M. J. (2016). Defining intellectual disability: Finally, we all agree… almost. *American Psychological Association Newsletter*. https://www.apa.org/pi/disability/resources/publications/newsletter/2016/09/intellectual-disability

Tassé, M. J., Luckasson, R., & Schalock, R. L. (2016). The relation between intellectual functioning and adaptive behavior in the diagnosis of intellectual disability. *Intellectual and Developmental Disabilities*, 54(6), 381-390. https://doi.org/10.1352/1934-9556-54.6.381

Toffalini, E., Giofrè, D., & Cornoldi, C. (2017). Strengths and weaknesses in the intellectual profile of different subtypes of specific learning disorder. *Clinical Psychological Science, 5*, 402–409. https://doi:10.1177/2167702616672038

Tomaino, M. A. E., Greenberg, A. L., Kagawa-Purohit, S. A., Doering, S. A., & Miguel, E. S. (2021). An assessment of the feasibility and effectiveness of distance learning for students with severe developmental disabilities and high behavioral needs. *Behavior Analysis in Practice*, 1-17. https://doi.org/10.1007/s40617-020-00549-1

Toye, M. K., Wilson, C., & Wardle, G. A. (2019). Education professionals' attitudes towards the inclusion of children with ADHD: the role of knowledge and stigma. *Journal of Research in Special Educational Needs, 19*(3), 184–196. https://doi.org/10.1111/1471-3802.12441

U.S. Department of Education. (2017). Establishing achievement level standards for Florida standards alternate assessments. http://www.fldoe.org/accountability/assessments/k-12-student-assessment/stard-setting.stml

U.S. Department of Education. (2019). *41st annual report to Congress on the Implementation of the Individuals with Disabilities Education Act, 2019.* Washington, DC: Office of Special Education Programs. https://www2.ed.gov/about/reports/annual/osep/2019/parts-b-c/41st-arc-for-idea.pdf

Valderas, J., Starfield, B., Sibbald, B., Salisbury, C., & Roland, M. (2009). Defining

    comorbidity: implications for understanding health and health services. *Annals of Family*

    Medicine., 7(4), 357–363. https://doi.org/10.1370/afm.983

Vasileva, M., Graf, R. K., Reinelt, T., Petermann, U., & Petermann, F. (2021). Research review:

    A meta-analysis of the international prevalence and comorbidity of mental disorders in

    children between 1 and 7 years. *Journal of Child Psychology and Psychiatry, 62*(4), 372-

    381. https://doi.org/10.1111/jcpp.13261

Vaughan, J., Coddington, J., Ahmed, A., & Ertel, M. (2017). Separation anxiety disorder in

    school-age children: What health care providers should know. *Journal of Pediatric*

    Health Care : Official Publication of National Association of Pediatric Nurse Associates

    & Practitioners., 31(4), 433–440. https://doi.org/10.1016/j.pedhc.2016.11.003

Verges, V., Wiley, A., Hembry, T. R., Buckendahl, C. W., Forte, E., Towles, E., Nebelsick-

    Gullett, L., & edCount, L. L. C. (2015). Independent verification of the psychometric

    validity for the Florida standards assessment. Alpine Testing Solutions: Orem, UT.

    Retrieved on August 7, 2021 from

    http://www.fldoe.org/core/fileparse.php/5663/urlt/1415TechV4FSA.pdf

Visser, L., Kalmar, J., Linkersdörfer, J., Görgen, R., Rothe, J., Hasselhorn, M., & Schulte-Körne,

    G. (2020a). Comorbidities between specific learning disorders and psychopathology in

    elementary school children in Germany. *Frontiers in Psychiatry., 11*.

    https://doi.org/10.3389/fpsyt.2020.00292

Visser, L., Linkersdörfer, J., & Hasselhorn, M. (2020b). The role of ADHD symptoms in the

    relationship between academic achievement and psychopathological symptoms. *Research*

    in Developmental Disabilities., 97. https://doi.org/10.1016/j.ridd.2019.103552

Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Thousand Oaks, CA: Sage Publications. ISBN: 9781412991346

Wilens, T. E., Biederman, J., & Spencer, T. J. (2002). Attention deficit/hyperactivity disorder across the lifespan. Annual review of medicine, 53(1), 113-131.

Williams, M. K. (2017). John Dewey in the 21st century. *Journal of Inquiry and Action in Education, 9*(1), 7. https://eric.ed.gov/?id=EJ1158258

Woolfson, A. (2019). The biological basis of mental illness. *Nature, 566*(7743), 180-181. http://dx.doi.org.ezproxy.liberty.edu/10.1038/d41586-019-00521-2

Yoshimasu, K., Barbaresi, W. J., Colligan, R. C., Killian, J. M., Voigt, R. G., Weaver, A. L., & Katusic, S. K. (2010). Gender, attention-deficit/hyperactivity disorder, and reading disability in a population-based birth cohort. *Pediatrics*, *126*(4), e788-e795. https://doi.org/10.1542/peds.2010-1187

Yoshimasu, K., Barbaresi, W. J., Colligan, R. C., Voigt, R. G., Killian, J. M., Weaver, A. L., & Katusic, S. K. (2012). Childhood ADHD is strongly associated with a broad range of psychiatric disorders during adolescence: a population-based birth cohort study. *Journal of Child Psychology and Psychiatry, 53*(10), 1036-1043. https://doi.org/10.1111%2Fj.1469-7610.2012.02567.x

APPENDIX

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

September 20, 2021

 IRB Exemption - IRB-FY21-22-233 The Impact of Mental Health Diagnoses in Combination with Learning Disorders

Dear Tanya Gulledge, Treg Hopkins,

The Liberty University Institutional Review Board (IRB) 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 the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 4. Secondary research for which consent is not required: Secondary research uses

of identifiable private information or identifiable biospecimens, if at least one of the

following criteria is met:

(i) The identifiable private information or identifiable biospecimens are publicly

available;

(ii) Information, which may include information about biospecimens, is recorded by the

investigator in such a manner that the identity of the human subjects cannot readily be

ascertained directly or through identifiers linked to the subjects, the investigator does not

contact the subjects, and the investigator will not re-identify subjects;

(iii) The research involves only information collection and analysis involving the

investigator's use of identifiable health information when that use is regulated under 45 CFR

parts 160 and 164, subparts A and E, for the purposes of "health care operations" or

"research" as those terms are defined at 45 CFR 164.501 or for "public health activities and

purposes" as described under 45 CFR 164.512(b); or

(iv) The research is conducted by, or on behalf of, a Federal department or agency

using government-generated or government-collected information obtained for

nonresearch activities, if the research generates identifiable private information that is or will

be maintained on information technology that is subject to and in compliance with section

208(b) of the E-Government Act of 2002, 44 U.S.C. 3501 note, if all of the identifiable private

information collected, used, or generated as part of the activity will be maintained in

systems of records subject to the Privacy Act of 1974, 5 U.S.C. 552a, and, if applicable, the

information used in the research was collected subject to the Paperwork Reduction Act of

1995, 44 U.S.C. 3501 et seq.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

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

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Research Ethics Office