THE IMPACT OF TEACHER TRAINING ON ADHD: ASSESSING CLASSROOM INTERVENTIONS AND TEACHER’S SELF-EFFICACY

by

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A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

School of Behavioral Sciences

Liberty University

April 2021
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Abstract

Attention-deficit/hyperactivity disorder (ADHD) has been a topic that has gained widespread attention, especially in the last decade. Researchers have attempted to study the growing epidemic in numerous ways, from understanding the cause to helping children and adults learn how to deal with the lifelong diagnosis. More recently, the mainstream topic has leaned towards institutional factors that continuously a lack of support for teachers within the classroom. Teachers and educators around the world have been placed at the forefront to manage something that may appear foreign. Consequently, school districts are left with the daunting task of following federal regulations that they may not be prepared to understand. Assessments have been utilized to determine how this growing epidemic has reshaped the outcomes of students within the classroom. It should come as no surprise that studies show a link between negative teacher’s beliefs and student academics. After reviewing past and present research, there appears to be a significant research deficit in the area of teacher’s knowledge, training, and teacher self-efficacy. Research is needed to evaluate the effectiveness of providing training that will aim to enhance teacher’s understanding of ADHD, develop classroom strategies, and strengthen teacher self-efficacy.

Keywords: Attention-Deficit/Hyperactivity Disorder ADHD, teacher self-efficacy, knowledge, classroom strategies
Dedication

Giving all honor to my Lord and Savior, Jesus Christ, I would like to first dedicate this dissertation to God, the one who sits most high. Throughout this process, I have lived by the scripture Jeremiah 29:11, "For I know the plans I have for you," declares the Lord, "plans to prosper you and not to harm you, plans to give you hope and a future." The road to becoming Dr. Cheryl Young Hamilton has not been easy; in fact, it has been a tedious one surrounded by a global pandemic and severe loss. Gratefully, God saw fit and made this whole thing possible.

I would also like to dedicate my dissertation to my loving family; my husband Christopher, my children Jatereus, Key’Aira, and Krishaelyn, my mom, siblings, and friends. You all have been such a dream come true, and I am forever grateful for your love and advice throughout these trying times.

A special thanks to my big sister Anita Coleman, who has genuinely been my all since I was a little girl. Through your actions, you have taught me how to honor God always, persevere, and never give up. God gave me a special gift when He gave me you, and for that, I will forever be grateful. To my mentor Dr. Brenda Richardson, for over 12 years, you have indeed been an inspiration in my career, spiritually, and a good friend. I am so humbled and grateful that God chose you as my mentor.
Acknowledgement

I wish to acknowledge and thank my chair Dr. Laura Daniel and my reader Dr. Kelly Gorbett. Their presence, spirit, and collaboration are what committees should always resemble. Dr. Daniels and Dr. Gorbett dedicated countless hours of reading, inspiring, and encouraging me to keep pressing towards completion, and for that, I will forever be grateful. I want to say a special thank you to Bright Komeng and Dr. Fred Volk for never giving up on me during statistics and helping me understand the importance of my dissertation topic.

I want to thank my school division for allowing me to conduct my research and providing any requested assistance. Finally, I would like to thank all my professors, mentor-teachers, and administrators in our school division that assisted me with this project. Their excitement and willingness to provide feedback made the completion of this research an enjoyable experience.
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List of Abbreviations

Attention-Deficit/Hyperactivity Disorder (ADHD)

Diagnostic and Statistical Manual of Mental Disorders III (DSM-III)

Social Cognitive Theory (SCT)
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Chapter One: Introduction

Overview

As one of the most publicized conditions affecting children over the past two decades, there is an increase in attention deficit hyperactivity disorder (ADHD) related behavior in our classrooms (Kern et al., 2015). School teachers play an essential role in a child's life. Researchers reported a limited level of knowledge about ADHD among teachers coupled with widespread misconceptions (Kikas & Timoštšuk, 2016). In conducting this study, I aimed to evaluate teacher’s understanding of ADHD and determine if implementing training and intervention strategies for the disorder in the classroom would increase their knowledge and improve their efficacy.

Background

Although ADHD is one of the leading diagnoses within the mental health field, skepticism continues regarding whether the diagnosis is an actual disorder. Coined in 1980, attention deficit disorder with or without hyperactivity made its way into the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) and over the last 40 years continues its prevalence. One common assumption surrounds the presumed relative newness of ADHD. However, the British pediatrician Sir George Still published a series of children presenting with the characteristic clinical features in the Lancet in 1902, and descriptions pre-date this publication by several centuries (Thapar et al., 2012). Researchers found the disorder intriguing, especially those focused on developmental-behavioral disorders. Conversely, ADHD continues to generate debate (Alkahtan, 2013). Attempts to study the growing epidemic in numerous ways, such as trying to understand the cause along with effective use of medications, can help those living with the
While it is usually first diagnosed in childhood, many children diagnosed with ADHD demonstrate symptoms that persist into adolescence and adulthood (Youssef et al., 2015). Over the years, numerous researchers uncovered how ADHD continued to rise in numbers within the mental health field, notwithstanding lingering results. Additionally, a preponderance of the research on ADHD revealed those outside of the United States believe ADHD is a disorder rooted in cultural and social factors prevalent in the country (Youssef et al., 2015). However, international rates of ADHD continue to rise, albeit the use of medication as a treatment modality, and unclear etiology as cases continue to escalate (Lawerence et al., 2016).

Importantly, defining children with ADHD includes identifying a pattern of symptoms or behaviors such as inattention, overactivity, and impulsivity. These behaviors also carry into their often spontaneous and sometimes inappropriate interactions with their peers (Climie et al., 2017). Current descriptions of ADHD as a chronic mental health disorder, also recognize significant behavioral symptoms, which manifest from childhood into adulthood. It is important to note a national survey data from 2016 revealed 9.4% of US children determined as suffering from ADHD at some point in their lives and 8.4% currently diagnosed (Wolraich et al., 2019). There are several different subtypes listed in the DSM-IV, but the diagnostic criteria do not require the presentation of all nine for proper diagnosis. Historically, the DSM-V required symptoms of ADHD to take place in numerous settings, which included, home, social settings, and school (Imeraj et al., 2013).

The core symptoms of ADHD may affect a child's functioning in an educational environment, and associates with poor school outcomes, including challenges with
reading, writing, and mathematics, causing low school grades (Moore et al., 2017). In addition to these causal factors, Hurtig et al. (2007) identified academic problems, family history of ADHD, the severity of ADHD, psychiatric comorbidity, and psychosocial adversity as additional concerns (Hurtig et al., 2007). Labeled as a lifelong diagnosis, ADHD carries a high psychosocial burden because it influences the quality of life for affected children and their families, demands on educational resources, behavioral sequelae, which includes risky behaviors, along with the complications of comorbid conditions (Cuffe et al., 2005).

Teachers play a significant role in the life of school-aged children. They facilitate optimal learning experiences and the acquisition of social skills, issues of particular importance for children diagnosed with ADHD (Lawerence et al., 2016). Unfortunately, these children often lack the skills emphasized within school settings, leading to frequent encounters of negative feedback, frustration, and failure (Climie & Mastoras, 2015). Teachers noted the difficulties and time consumption associated with taking care of students with behavioral issues. Elementary teachers play a major role in the assessment of children's academic and behavioral problems (Stevens et al., 1998). Considered as one of the most invaluable sources of information regarding diagnosis, they have daily exposure to children in a variety of clinically relevant situations. Although this may be true, without adequate knowledge or training on ADHD for addressing children's needs in the classroom, teachers may feel unprepared to handle the many challenges children with ADHD pose, which lessens the likelihood they would seek services or support for their students (Legato, 2011).
Traditional theoretical frameworks described the link between attitudes and behaviors when specifically investigating attitudes towards completing a behavior or describing an integral component of a feeling (Mulholland, 2016). Bandura (2012) emphasized the nature of self-efficacy as contextual and domain-specific to the criterion tasks at hand. They proposed self-efficacy judgments as specific to tasks in certain situations. Even more interesting, teacher self-efficacy builds on the foundation of teaching as an instrumental element in helping students learn. More importantly, teacher efficacy describes a teacher's residing belief in his or her competency for carrying out the tasks necessary to affect positive student and classroom outcomes (Curtis et al., 2014). Centered around a set of beliefs, a teacher with high efficacy believes in the capacity of all students to learn. Whereas, a teacher with a low sense of teaching efficacy believes some students can or will not learn in school regardless of the teacher’s ability to influence the outcome (Shillingford & Karlin, 2014).

I discuss teacher’s self-efficacy along with their belief and their ability to perform a task successfully. Fernandez et al. (2016) extensively explored the self-efficacy construct in various fields such as education, administration, health, and sports. Latouche and Gascoigne (2019) established their self-efficacy as an important element of effective teaching and defined the beliefs in their capabilities to organize and implement strategies as contributing to bringing about desired outcomes for student engagement and learning. Social cognitive theory (SCT) is a learning theory emphasizing the reciprocal relationship and interaction among personal characteristics, behaviors, and environment while also recognizing the agentic, active role of individuals (Rubenstein et al., 2018). In Chapter 2 I
detail several SCTs. According to SCT, personal and interpersonal factors contribute to individuals' agentic thoughts, behavior, and emotions (Martin et al., 2017).

In more recent research, attitude content, structure, and strength models from social psychology theory provided a theoretical foundation for the study (Anderson et al., 2017). Researchers used the theory of reasoned (TRA) and the theory of planned behavior (TPB), to establish the relationship between attitude and behavior. These theories both conceptualized attitude as a single entity and focused on the performance of a reaction based on the notion a person contemplates consequences of actions and behavior before the completion of the behavior (Mulolland & Cumming, 2016). However, the reliability is low due to the entity being based on other influencing factors and not the behavior. It should be noted SCT developed one of the few concepts related to human control, which distinguishes between competence and contingency as a guide serving for future actions.

In summary, ADHD is a multifaceted, chronic disorder associated with deficits in multiple areas of functioning. As such, psychotropic medication, and home-based behavioral strategies, while effective, rarely decrease long-term ADHD symptoms (Liang & GAO, 2016). Empirical studies of school-based interventions supported the efficacy of strategies for teachers tasked with educating children with ADHD (Mulholland et al., 2014). Over the years following it as a diagnosis, promising interventions evolved for addressing social relationship difficulties among students. In addition to maintaining constant communication among parents, teachers, physicians, and other health professionals, school-based professionals implemented empirically supported strategies by individualizing interventions based on assessment data (Liang & Gao, 2016). Program
development and training can aid in providing teachers with evidence-based strategies and support needs in the classroom. Due to the nature of the research, I aimed to show how implementing training and intervention strategies for ADHD in the classroom could increase teacher’s knowledge of ADHD and strengthen their self-efficacy.

**Problem Statement**

The lack of knowledge regarding ADHD is one of the greatest impediments in teachers being able to attend to the additional needs of students with the condition (Latouche, & Gascoigne, 2019). Empirical studies of school-based interventions supported the efficacy of strategies for teachers tasked with educating children with ADHD (Mulholland et al., 2014). Numerous researchers focused on evaluating interventions, resulting in an increase in understanding ADHD. For example, a recent cross-national comparison of teacher’s knowledge and misconceptions of ADHD involving nine countries including South Africa emphasized the importance of greater teacher’s knowledge of ADHD in many aspects including in promoting help-seeking (Lasisi et al., 2017). Through this study, researchers were able to prove a significantly higher score concerning the utilization of interventions within the classroom. Although I was unable to find studies demonstrating interventions that increase ADHD knowledge directly result in higher teacher self-efficacy, researchers using correlational methods documented an association between the two phenomena (Latouche & Gascoigne, 2019). The specific problem is inadequately prepared teachers cannot provide support or implement strategies for students who have ADHD. The federal government enacted legislation ensuring students receive a quality education; however, I was unable to locate programs ensuring educators receive evident-based professional development training. I
discovered a gap in salient research concerning whether a lack of ADHD knowledge is directly correlated to lower teacher self-efficacy and if higher teacher self-efficacy results from implementing training. Legato (2011) focused on teacher efficacy and knowledge, using a sample including only teachers in elementary schools, kindergarten through 6th grade. The current study targeted elementary school teachers and implementing training.

**Purpose Statement**

The purpose of this study was to evaluate the effectiveness of providing training aimed at enhancing teacher’s understanding of ADHD, developing classroom strategies, and strengthening teacher self-efficacy. I included teachers currently working in an inclusive classroom with children who have ADHD. This study will be a program development study and will use a social-cognitive approach to social learning theory, using assessments and training with teachers in Duncanville, Texas. Using teachers who have worked with students who have ADHD provided insight regarding whether training replaced their negative beliefs about ADHD, thereby increasing their feeling of efficacy.

**Significance of the Study**

At present, students with a diagnosis of ADHD frequently experience significant academic impairment compared to normally developing peers (Spiel et al., 2014). Specifically, in terms of general learning, students with ADHD were unable to focus, concentrate, attend, and remain on task for long periods (Shaughnessy & Waggoner, 2015). It is important to recognize the frequency of the diagnosis, which estimates at least one child in every elementary school classroom receiving the classification of ADHD. Changing teacher’s knowledge and attitudes can result in them changing the strategies used in the classroom (Barnett et al., 2012). Because students demonstrate ADHD
symptoms in classrooms where the expectation is for them to calmly attend to their daily instruction, displaying self-control, teachers face the daunting task of educating themselves on effective methods of including students diagnosed with the increasing malady (Bell et al., 2011). Consequently, no exact statistics are available about the percentage of teachers or the frequency with which teachers utilize evidence-based interventions (Elik et al., 2015). Researchers also reported how teachers provided incorrect and unsuitable advice to parents of children with ADHD, which many of them followed (Lasisi et al., 2017).

Over the years, researchers who completed assessments of teacher’s knowledge of ADHD often lack knowledge of diagnosis and tended to hold substantial misperceptions about the nature, course, causes, and outcomes of the disorder (Alkahtani, 2013). Furthermore, the investigators did not explore issues concerning knowledge, teacher efficacy, and training. School districts can benefit from this study by offering training and providing intervention strategies for integration into classrooms. Using this study’s result, administrators may find a greater need for collaboration involving school psychologists. School psychologists can advocate for the use of evidence-based evaluation and intervention procedures while consulting with and training teachers and school staff members to identify children displaying academic or behavioral difficulties potentially indicative of ADHD (DuPaul et al., 2016). I aimed to demonstrate opportunities for implementing training to increase teacher’s knowledge of issues related to ADHD, as well as promoting higher teacher self-efficacy.
Research Question(s)

Self-efficacy beliefs exert influence on the steps teachers take, which may signal improvement or prevention of their actions, as well as determining the perceptions of environmental opportunities and difficulties (Fernandez et al., 2016). The research questions I posed included:

**RQ1:** Can the implementation of ADHD training and program development increase teacher’s knowledge of ADHD?

**RQ2:** Can teacher’s self-efficacy positively increase in teaching children with ADHD?

**RQ3:** Will implementation of evidenced-based strategies be used effectively within the classroom?

As there is little research on knowledge of ADHD and teacher efficacy, utilizing a quantitative study may be limiting. I used program development to identify if a correlation between knowledge and teacher efficacy exists.

Definitions

1. **Teacher Self**- Teachers ’ residing belief in their competency for carrying out the tasks necessary to affect positive student and classroom outcomes (Curtis et al., 2014).

2. **Attention-Deficit/Hyperactivity Disorder (ADHD)**- Attention-deficit hyperactivity disorder (ADHD) is a prevalent and debilitating disorder diagnosed based on persistent and developmentally inappropriate levels of overactivity, inattention, and impulsivity - (Tripp & Wickens, 2009).
Summary

Globally, ADHD is now one of the most frequent student classifications (Wienen et al., 2019). Researchers predict teachers will have at least 1:10 students in their class diagnosed with ADHD. Consequently, ADHD in terms of academic achievement contributes to developing negative perceptions of pupils which influence the educational outcomes of their pupils (Kendall, 2016). Although teacher’s internal beliefs play a crucial role in learning and teaching in an inclusive setting, minimal investigations examine the underlying factors associated with teacher’s self-efficacy in classroom management (Lee et al., 2019). There remains a dearth of ADHD-specific knowledge for many general education teachers in the US as well as other countries worldwide (Wilkinson et al., 2013).

Notably, teacher’s misconceptions about ADHD could lead to inappropriate advice and teaching practices for parents and students (Lee et al., 2019). The general problem is the inadequate preparation of teachers on how to provide support and implement strategies for students with ADHD. Researchers documented a correlation between lack of knowledge and teacher efficacy, which can lead to negative beliefs. I aimed to evaluate teacher’s understanding of ADHD along with whether implementing training and intervention strategies for ADHD in the classroom would decrease the negative beliefs teachers held regarding their competency.
Chapter Two: Literature Review

Overview

As one of the most publicized conditions affecting children over the past two decades, there is an increase in ADHD-related behavior in our classrooms (Kern et al., 2015). School teachers play an essential role in a child's life. Researchers asserted the level of knowledge about ADHD among teachers remained limited and various misconceptions continued to circulate throughout the profession (Kikas & Timoštšuk, 2016). I aimed to evaluate teacher’s understanding of ADHD and to determine if implementing training and intervention strategies for ADHD in the classroom would decrease negative beliefs about ADHD and increase teacher’s feelings of efficacy. I explored the research examining negative teacher’s beliefs and the effect training and intervention strategies have within the classroom.

Conceptual or Theoretical Framework

Grounding the study in social cognitive theory supported my analysis of teachers and learners as active participants who were, “self-organizing, proactive, self-reflecting, and self-regulating” (Love et al., 2019, p.42). I designed the study to identify factors that influence low teacher self-efficacy when working with students who have ADHD. My assumption was through training and education on ADHD, teacher’s negative beliefs would decrease, and self-efficacy would increase. The goal of my literature review was to summarize the history of ADHD and provide relevant information on the correlation of teacher self-efficacy as it related to knowledge of ADHD and training. Additionally, in this section, I cover essential variables within the literature pertinent to this study including, risk factors of ADHD, educational needs and requirements, medical and
behavioral interventions, knowledge and beliefs of teachers, and professional
development. I also incorporated considerations from the literature on classroom
strategies and interventions. Finally, I sought to incorporate the social cognitive
theoretical (SCT) framework as I summarized teacher self-efficacy. It is important to
note, the concept of self-efficacy is an essential construct within the SCT of Bandura
(Fernandez et al., 2016). Self-efficacy rests at the center of Bandura's SCT and is a
leading agent in the development of social constructs. More significantly, Bandura's SCT
focuses on the personal, proxy, collective agency as influences of life circumstances
(Stefanidis et al., 2019). Correspondingly, Bandura argued individual’s natural
inclination is toward self-improvement, and thus the likelihood of identifying how their
current state/performance differed from their desired state/performance (Burns et al.,
2018). More importantly, researchers noted how self-efficacy referred to individual’s
beliefs about their capabilities to carry out a particular course of action successfully
(Klassen & Chiu, 2010).

Uniquely, SCT highlights factors and processes that are important for student’s
academic functioning (Martin & Burns, 2014). According to researchers, self-actualized
individuals share a range of characteristics, most of which contribute to the development
of their greater potential (Shen et al., 2015). Numerous researchers explored meeting
psychological needs by working and contributing to greater satisfaction through
employment and overall life (Lee & Shin, 2017). Johnson and Johnson (2015) noted that
SCT places cooperation at the center of a community of practice, a group of people who
share a craft or a profession. Equally, investigators posited researchers use SCT when
explaining how personal agency and interpersonal agency significantly imply an
individual’s motivation, engagement, and achievement. For teachers, efforts to build self-efficacy may include adapting lessons and activities to maximize opportunities for success (Martin & Burns, 2014). Also, teachers may need to focus on relationship building with individual students as they develop goal-oriented lessons. This may include individualizing learning activities (Schunk & Miller, 2002), developing students' goal-setting skills (Locke & Latham, 2002), and building students' ability to problem-solve effectively (Young & Bramham, 2012) which also may help build self-efficacy (Martin et al., 2017). Researchers documented how building evidence around these determinants can act as a guide for future intervention development, implementation, evaluation, and refinement (Eather et al., 2013). After a review of previous articles and research, SCT was the most appropriate guiding theory to assist in understanding the importance of self-efficacy as it relates to teachers and their perceptions of students diagnosed with ADHD.

**Related Literature**

Attention deficit hyperactivity disorder (ADHD) is reportedly the most pervasive disorder of childhood affecting approximately 3% to 5% of school-aged children with prevalence rates increasing significantly over the past two decades (Youssef et al., 2015). ADHD appears to be a mixture of inherited and genetic factors. Although the cause remains unknown at the current time, evidence suggests the disorders are more prevalent in boys than girls. Researchers suggested girls may be underdiagnosed due to being less disruptive in the classroom (Quinn & Wigal, 2004). They revealed girls with ADHD as less likely than boys with ADHD to exhibit conduct disorder, aggression, or delinquency, leading to lower referrals for disruptive behavior (Quinn & Wigal, 2004).
Substantial comorbidity exists with ADHD and childhood-onset neurodevelopmental disorders as well as psychiatric disorders (American Psychiatric Association, 2012.). Low dopamine and norepinephrine, located in the prefrontal cortex of the brain, play a significant part in the ADHD diagnosis. Typically, images and CT scans revealed below-normal activity. This part of the brain controls our ability to maintain alertness, focus attention, and sustain thought, effort, and motivation (Goldich & Goldrich, 2019). However, Mulholland et al. (2014) described neither as a disease nor as an emotional disorder, but a cluster of personality traits that normally appear in all children, but more intensely in some.

For years, many providers questioned the cause of ADHD, but to no avail, leaving the inquiries unanswered. In acknowledgment of the controversy over the diagnosis and pharmaceutical treatment of ADHD, the National Institutes of Health (NIH) held a Consensus Development Conference in 1998 (Lee, 2008). At the end of the conference, the panel concluded the findings indicated no known strategies to prevent ADHD, and more importantly, a more consistent set of diagnostic procedures and practice guidelines was of utmost importance (Lee, 2008). According to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5), to meet the criteria for this diagnosis, a child must display six or more of nine symptoms of inattentiveness (e.g., be easily distracted, lack attention to details, and have trouble maintaining focus), six or more out of the nine symptoms of hyperactivity and impulsivity (e.g., be unable to sit still, have trouble awaiting turn, and interrupt or intrude on others), or both sets of symptoms. (Ohan et al., 2009). Correspondingly, the symptoms of this ongoing diagnosis must be evident in two different environments.
In general, children with ADHD are often non-compliant with commands, disruptive in the classroom, and impulsive in their behaviors (Alkahtani, 2013). They often struggle academically and need additional support that may not be immediately available within the classroom. Also, children with ADHD have difficulty interacting with peers and building relationships. Researchers found children with ADHD had difficulty playing with peers, fewer meaningful friendships, higher levels of peer rejection, and strained parent-child relationships (Barnes et al., 2017). Another consideration is potential comorbidity with other diagnoses. Most children with ADHD also have at least one co-existing condition, the presence of which contributes to poorer long-term outcomes (Mulraney et al., 2016). ADHD shows high concurrent comorbidity with other neurodevelopmental disorders namely, autism spectrum disorder, communication, and specific learning or motor disorders (e.g., reading disability, developmental coordination disorder), intellectual disability, and tic disorders (Thapar & Cooper, 2016). Statistics indicate approximately 8% to 20% of children with ADHD also have a learning disorder, 33% an anxiety disorder, 25% depression, and 55% also have oppositional-defiant or conduct disorder (Ohan et al., 2009). In sum, ADHD is a serious disorder negatively affecting children’s possibilities of school success.

Teachers report feeling more pressure and often communicate negatively with children with ADHD. These findings are particularly concerning considering evidence suggesting teacher’s attitudes about ADHD may influence their selection of an educational approach, (Anderson et al., 2012) which often increased adverse behavioral outcomes in students. Teachers confront situations that foster chaos within the classroom along with disruptions produced by ADHD-type behaviors. ADHD behavior tends to
worsen in environments requiring attention for long periods, quiet activities, and waiting for one’s turn (Thapar & Cooper, 2016). The ratio of ADHD children in a classroom setting is currently 20:2. All participants in a recent, relatively large sample of elementary school teachers reported having taught at least one child diagnosed with ADHD, with over half taught 20 or more such children (Ohan et al., 2009). Due to traditional limitations, requiring students to stay in their assigned classrooms, ignites maladaptive behaviors leaving teachers hopeless and frustrated. This factor often contributes to negative judgments of students with ADHD before they enter a classroom environment.

While the initial difficulties of inattention and classroom disruption associated with primary school, diminish in secondary school students with ADHD who often experience academic challenges and the frustrations associated with reduced performance (Travell & Visser, 2006). Often negative outlooks pertaining not only to their education but their life in general prevail. All these conditions can lead to students with ADHD remaining at greater risk of school dropout and academic failure (Bussing et al., 2010). Such findings highlight the important role teachers play in identifying children who need additional support, making referrals for their assessment, and managing them in the classroom (Sherman et al., 2008). A diagnosis of ADHD takes time and requires input from parents, teachers, and medical practitioners. Diagnosing children with ADHD requires a collaborative approach. Teachers, parents, caregivers, and medical professionals completed questionnaires rating students on the behaviors they observed. Collectively, the responses in conjunction with psychological assessments determine if the exhibited behavior is maladaptive and inconsistent with the developmental level of
the assessed child (Mulholland et al., 2014). Henceforth, the significance of teacher’s knowledge of ADHD is critical.

After evaluation, managing the behaviors the child displays leading to the diagnosis becomes determinative of what services best address their challenges. The management of ADHD is multimodal and may include medication, behavioral, and academic interventions (Sherman et al., 2008). Assuming everyone agrees with the diagnosis of ADHD, its effective treatment often requires varying approaches consisting of psychosocial/behavioral interventions, educational support, and pharmacotherapy (Akram et al., 2009). Researchers asserted low levels of knowledge about ADHD can potentially lead to a failure to notice the warning signs of students requiring assistance (Mulholland et al., 2014). Nonetheless, as the pressure for additional teachers as the number of students with ADHD increases, further professional development would benefit teachers in the classroom and allow for better help for those children who require it (Sciutto et al., 2000). Knowledge of this disorder is crucially important in applying useful interventions (Swanson, 2012). Most importantly, based on these findings, it is evident, a need is present for further investigation of teacher’s knowledge and teacher’s self-efficacy towards students diagnosed with ADHD.

**Cultural Considerations of ADHD**

The prevalence of ADHD in African Americans is similar to that among the general population (3-5%); however, fewer Blacks receive the proper diagnoses and treatment (Bailey, 2005). Comparatively, minority children are less likely than White children to receive a diagnosis and treatment for ADHD (Morgan et al., 2013). These alarming factors contribute to many years of mistreatment and racism towards the Black
community. Importantly, the under-diagnosis of ADHD and over-punishment of Black children reflects long-standing racial inequalities systemically reinforced in American for the last several hundred years (Moody, 2016). Even though the diagnosis rate is considerably low, recent studies report that ADHD constitutes a serious issue in the Black community (Bailey & Ofoemezie, 2013).

Loe and Feldman (2007) noted the core symptoms of ADHD may affect a child's functioning in an educational environment. Children with ADHD are more likely to exhibit classroom behavior that warrants punishment (Behnken et al., 2014). Oddly, Black children receive disproportionate punishment compared to their White counterparts (Behnken et al., 2014). Furthermore, researchers reported Black children who display symptoms of ADHD were more inclined to receive a diagnosis of conduct disorder and/or oppositional defiant disorder, based on negative beliefs. When considering adverse effects within the classroom, researchers revealed a greater likelihood of identifying Black students as having special education needs when compared to their White classmates (Mandell et al., 2008). Informatively, the National Center for Education, documented how Blacks make up the majority of students classified as "emotionally disturbed" (Bailey & Ofoemezie, 2013). In general, a diagnosis of ADHD can lead to negative school experiences resulting in harsh school discipline, and ultimately, justice system involvement spanning several developmental stages (Behnken et al., 2014).

Racial/ethnic disparities in ADHD diagnosis occur by kindergarten and continue until at least the end of eighth grade (Morgan et al., 2013). A study completed by Gingrich and colleagues (1998) revealed how African American children were rated as being more hyperactive than expected based on their representative population when
compared with schools located in White, middle-class neighborhoods (Bailey & Ofoemezie, 2013). The researchers found the frequency of hyperactivity was consistent across all ethnic groups (Bailey & Ofoemezie, 2013). Also, ADHD is present in up to 46% of juvenile offenders and 25% of adult offenders (Behnken et al., 2014).

Nationally, 2.5 million children ages 4-17 years old receive medication treatment for attention-deficit/hyperactivity disorder (Butz et al., 2006). However, there is a low rate of Black children on medication. To clarify, Black families have greater concerns about psychotropic medications than Whites. In the same token, they are less likely to believe the effectiveness of psychotropic medications (Butz et al., 2006). Presently, there is a paucity of empirical research specific to Blacks addressing deficits in their understanding of ADHD in their communities, as well as within the school systems (Behnken et al., 2014). For these reasons, there is a need for adequate training and education within the school system to prevent diagnosed students from being ignorant and racist.

**Socio-economic Considerations of ADHD**

Gul and Gul (2018) found an association between ADHD and impairments in numerous domains of family functioning, including marital relationships, parenting difficulties, and child outcomes. Moreover, the correlation between the and multiple neuropsychological deficits, decreases the child’s capacity to cope with environmental demands throughout their life span while increasing their vulnerability to environmental stresses along with the likelihood of encountering adversity (Garcia et al., 2012). Previous investigators also found a connection between child abuse and parental
psychiatric disorders and higher rates of ADHD with comorbid disruptive behavior disorder (Du Prel et al., 2012).

Over the years, researchers diligently studied different factors and variables related to the ADHD diagnosis. For example, Nasol et al. (2019) documented a correlation existing between ADHD and low socioeconomic outcomes. Consequently, compared with their typically developing peers, children with ADHD faced more challenges in school, the juvenile justice system, and maintaining relationships with peers and family (Nasol et al., 2019). Without adequate support, these children were more likely to have lower educational achievement than their peers, problems with cognitive and behavioral development, and an increased risk of comorbid mental health conditions (Russell et al., 2016). These factors underscore the need for continuous research to support the incorporation of classroom interventions targeted towards obtaining student success.

**Treatment Consideration for ADHD**

In 2011, the American Academy of Pediatrics created recommended treatment guidelines for children diagnosed with ADHD. Correspondingly, US guidelines highlighted the need for an individual treatment plan that includes pharmacotherapy, behavioral therapy, and/or psychosocial interventions (Bachmann et al., 2017). Danielson et al. (2017) suggested parent- or teacher-administered behavior therapy as the first-line treatment for preschool-aged children with ADHD. Recent researchers highlighted ADHD treatment as very effective for managing symptoms and impairments, with effect sizes (proportion of a standard deviation) ranging from .6 for behavioral strategies and .7 for non-stimulant medications to 1.0 for stimulant medications (American Academy of
Pediatrics, 2011). Over the years, prescribed medication relative to ADHD significantly increased. ADHD treatments have been the focus of extensive scientific study as well as of public controversy (Bussing, Koro-Ljungberg et al., 2012). Visser et al. (2014) reported medication increases of 25% in middle and high school students over the previous years. Researchers posited several contributing factors, such as parental awareness of ADHD, school pressure, academic demands, and diagnosis, as the reasons for the increase.

**Medical Treatment For ADHD**

Researchers determined parents play the most critical role in deciding which treatment is best for their child. The use of medication for treatment often starts after determining an ADHD diagnosis. According to study data involving more than 154 million people from 14 countries published in The Lancet Psychiatry, between 2001 and 2015 the prevalence of ADHD medication use increased among adults and children (Demko, 2018). For more than a decade, providers incorporated the use of medication for ADHD symptoms into treatment modalities. The first medications for children with similar behavior problems date back to 1937 (Lange et al., 2017). Wolraich et al. (2019) reported the use of stimulant medications and behavioral interventions for the treatment of children with ADHD began more than 45 years ago. However, a low percentage rate of students received both medication and behavior services. More importantly, researchers indicated how parents' perceptions of ADHD and treatment acceptability present the main barriers to medication adherence (Bai et al., 2015). In contrast, teachers tended to hold positive expectations regarding the effect of stimulant medications on school-related behaviors. Sluiter et al. (2019) did not find evidence of drug treatments
enhancing academic performance over the long term. The stimulant medications methylphenidate, dexamfetamine, and mixed amphetamine salts are the most commonly administered drugs used in the treatment of ADHD (Faraone & Buitelaar, 2010). Other medications used for treatment include methylphenidate derivatives-stimulants, Concerta, Focalin, Ritalin, Metadate, Methylin, and Daytrana. Medical providers also prescribe non-stimulant amphetamine derivatives such as Vyvanse, Adderall, Dexedrine Spansule, Dextroamphetamine, and Procentra. The non-stimulants given include Intuniv, Kapvau, and Strattera.

The drug methylphenidate (MPH) known for its quick-acting form, only demonstrates effectiveness for ~4 hours. For this reason, children need to take MPH repeatedly throughout the day to maintain potency (Breuer et al., 2011). Another form of MPH is a long-acting formulation. This formula is a mixture that combines both immediate and extended-release ingredients. The higher percentage of males than females who filled stimulant prescriptions is consistent with community epidemiological studies of the prevalence of ADHD (Sultan et al., 2018). As with any drug, numerous side-effects can occur. Some of the side effects of stimulant medications include headache, insomnia, decreased appetite, motor-tics, nausea, and abdominal pain (Ahn et al. 2016). In addition to those side effects, ADHD drugs (stimulants) may also contribute to sleep disturbances (Furster & Hallerbäck, 2015). Although doctors increasingly recommend using stimulant drugs, when shown ineffective they offer non-stimulant drugs, such as atomoxetine (ATMX) as a viable alternative (Tsang et al., 2011). ATMX is a purported optional treatment, with particular efficacy for children and adolescents with ADHD and susceptibility to problems with inhibition, anxiety, and substance abuse.
(Tsang et al., 2011). Both drugs have similar side effects, but non-stimulant drugs last longer, and therefore, taken once a day.

Given these points, concerns over the adverse effects of pharmacotherapy prompted researchers to consider unconventional treatment strategies, including the use of nutritional supplements (Lange et al. 2017), botanical or herbal medicines, vitamins, minerals, and amino acids (Ahn et al., 2016). Studies show that at least 12% of children with ADHD currently utilize natural or nutritional supplements. In certain parts of the world, alternative medicine and its relationship with ADHD is a growing phenomenon.

**Educational Needs and Requirements**

In 2008, Congress amended the Americans with Disabilities Act (ADA) to add symptoms of behaviors that ADHD may compromise, such as lack of focus, reading, and different functions of the brain. In 2016, the US Department of Education Office for Civil Rights (OCR) issued two documents to clarify and provide guidance on the federal obligations of school districts to students with ADHD under Section 504 (DuPaul et al., 2016). Federal law and regulations mandate school districts across the United States provide specific learning opportunities to all children.

Currently, 5.1 million US children with ADHD also demonstrate pronounced needs in the areas of education and health care. Challenges in disorder management contribute to children falling behind academically (Nasol et al., 2019). Accommodations are one support intentionally designed to help students overcome performance obstacles impeding learning and masking the accurate measure of skills during testing situations (Kern et al., 2018). Provisions for specialized accommodations included in a 504 plan supported students who did not qualify for services under the Individuals with
Disabilities Education Act (IDEA). Importantly, federal law mandates developing an individualized education program (IEP) when a student meets the criteria for an educational disability (e.g., LD, other health impairment), and the disability limits educational functioning to the extent special education services become necessary (DuPaul et al., 2016). Even with new provisions to the laws, studies continue to show a decline in children receiving support and intervention within the classroom. Statistically, the majority of students with ADHD receive their instructions in mainstream classrooms and without the assistance of paraprofessionals (Goldrich & Goldrich, 2019). Early studies indicated approximately 25% of children with ADHD received school-based services for ADHD and related impairments (DuPaul et al., 2019). In a multivariable model study, Dupaul et al. (2019) found a critical gap in the percentage of students with ADHD who need school support, due to academic or social impairment and the percentage of students who currently receive services. In a similar study, researchers found the majority of accommodations provided within the classroom inefficient for students with ADHD. Despite existing evidence-based school/classroom interventions for ADHD, minimal information exists concerning the implementation of interventions and related factors regarding the teacher’s utilization of them (Blotnicky-Gallant et al., 2015). There is a need for the implementation of functional, evidence-based program development, and training to assist teachers in the classroom.

**Teacher Self-Efficacy**

Teacher’s attitudes towards children with ADHD are essential themes to study, as successful interventions for these children depend on teachers and other adults who interact with them directly. Teacher's self-efficacy is a supportive factor in determining
the detriments of lack of knowledge and harmful beliefs on them. Efficacy derives from one's experience, beliefs, and emotional state. Zee et al. (2017) acknowledged teacher’s self-efficacy as one of the most basic yet potent psychological resources for their functioning in the classroom. According to Bandura, people do not have a singular, overall sense of efficacy; rather, one's level of self-efficacy depends on both the task and the context in which they undertake the task (Levi et al., 2014). Self-efficacy beliefs provide an individual with the confidence they need to perform daily tasks. Self-efficacy beliefs answer the question, "Can I do this?" (Levi et al., 2014). Asking and answering these types of questions allow teachers to maintain a higher level of confidence to ensure the accurate delivery of information. In satisfying the requirement of creating an environment conducive for all learners, they embrace the need to remain cognitively aware of the pedagogical means that enable students to learn (Hattie, 2012) while continuing their dedication and passion for the subjects they teach.

Correspondingly, self-efficacy is a vital element of effective teaching and defined as a teacher's belief in their capabilities to organize and implement strategies that bring about desired outcomes of student engagement and learning (Latouche & Gascoigne, 2019). Huber and Seidel (2018) asserted the importance of teachers understanding student’s characteristics because of the central role it plays in student learning. This reason underscores the imperative for establishing positive, healthy relationships with each student. Researchers detailed how teachers who display high levels of self-efficacy also consistently prepare for implementing new strategies for students who need assistance. A high sense of efficacy may encourage teachers to exert substantial effort into organizing, planning, and delivering their lessons (Chao et al., 2017). These teachers
maintain a passionate belief that students can learn the content and understand the learning intention of the lesson (Hattie, 2012). Karhu et al. (2018) related how changes in educational and environmental redesign increase teacher perceptions of efficacy, and decrease their symptoms of burnout (Karhu et al., 2018). Teachers with a low level of efficacy doubt their ability to influence student learning and tend to reduce their efforts or give up entirely when faced with difficulties (Shillingford & Kalin 2014). These teachers acknowledged experiencing a lack of support and trust within the school system.

Nonetheless, research on teaching efficacy specific to the context of inclusive education is relatively scarce despite the emerging trend of inclusive education (Shaukat et al., 2013). Latouche and Gascoigne (2019) verified the absence of definitive studies demonstrating interventions that increase ADHD knowledge directly resulted in higher teacher self-efficacy. However, through multiple studies, a correlational between the two exists. In recent years, the emphasis on inclusive education training for teachers strengthened in the hope of enhancing their capability to face challenges resulting from incorporating the methodology (Lai et al., 2016).

In conclusion, researchers documented how teachers who maintain a higher level of self-efficacy maintain an exceptional ability to teach children with ADHD. Savolainen et al. (2012) discussed teacher’s self-efficacy as it aligns with student’s learning outcomes, such as academic adjustment, academic achievement, and literacy skills. Other significant factors include knowledge, support from administrative staff, a healthy work environment, and parental support. All these factors have been well documented in scholarly literature as factors that can impact teacher’s perceptions of and approach to working with students with ADHD (Karhu et al., 2018). There is a continuous need to
identify if providing teachers with training on ADHD increases their self-efficacy when working with children diagnosed with ADHD.

**Knowledge and Negative Beliefs of Teachers**

ADHD gained widespread attention in the last decade. Researchers attempted to study the growing epidemic in numerous ways, from understanding the causes to helping children and adults learn how to deal with the lifelong diagnosis. More recently, the focus of the mainstream topic leaned towards considering institutional factors. Researchers utilized various assessments to determine how this growing epidemic affects students within the classroom. Nevertheless, children with ADHD are at an increased risk of academic failure due to troublesome characteristics. Yet many teachers lack the information, time, and resources needed for these children to succeed in the classroom. Literature addressing general aspects of ADHD is abundant, but literature specific to teacher knowledge is scarce (Swanson, 2012). Garcia (2009) found mainstream teacher knowledge related to ADHD as low. Correspondingly, some researchers reported a linkage between negative teacher’s beliefs and student academics. One belief teachers hold relates to their high expectations of outcomes based on medication compliance. (Sluiter et al. (2019) posited teachers tended to have positive expectations about the effect of stimulant medication on school-related behaviors despite empirical evidence of correlational connections between medicine and academics. A more recent study completed by Shroff et al. (2017), aimed to assess teacher’s knowledge and misperceptions of ADHD in Mumbai, India. Their research revealed teachers in Mumbai need general information and instructions on the treatment of ADHD, with a focus on correcting common misperceptions they held regarding ADHD.
Teachers play a significant role in the lives of all students, both inside and outside of the classroom. However, there remains a need for research to determine if the lack of knowledge, leads to negative beliefs when working with students diagnosed with ADHD. The influence of teacher attitudes, beliefs, treatment practices, behavior, and education of children with ADHD remains misunderstood (Sherman et. al, 2008). Throughout the years, defining the teaching profession evolved from a career of high standards to one of mere mediocrity. However, because of its demanding requirements, the teaching field is still one of the most challenging jobs in the world. High expectations of teacher’s ability to know and meet the needs of each student continue. Interestingly, few researchers focused on the actual feelings, attitudes, and perceptions teachers hold towards students who exhibit behavior associated with ADHD, regardless of their diagnosis (Mulholland et al., 2014). It is important to note, teacher’s beliefs (or visions) influence their planning, teaching, interaction, and action in the classroom, which can change with practice and experience (Hammerless, 2003; Mahlo et al., 2010). Beliefs build the individual’s identity as a teacher (Pinnegar et al., 2011), deriving from personal experience, previous schooling, and formal knowledge (Ungar, 2016). Researchers, Blotnicky-Gallant et al. (2015) investigated the correlation between negative beliefs and the use of classroom strategies among Canadian teachers. They concluded that teachers who had more negative beliefs about ADHD were less likely to use evidence-based behavioral strategies in their classrooms (Shroff et al., 2017).

For these reasons, it is important to investigate the demographic predictors of teacher’s attitudes and feelings towards teaching students who display ADHD-type behaviors, as students with various disorders and disabilities are increasingly part of
mainstream classrooms (Mulholland et al., 2014). In the past, researchers focused on knowledge but did not emphasize attitude. Attitudes refer to the evaluation of people, events, objects, or issues as either favorable or unfavorable. Stronger attitudes greatly influence thought processes and behaviors. They are more durable and resistant to opposing viewpoints, compared with weaker attitudes, which tend to be changeable and inconsequential (Anderson et al., 2017). Even though researchers may find a connection between the two, teacher’s knowledge and understanding cannot be minimized.

A recent study completed by Latouche and Gascoigne (2019), assessed 274 teachers from ten different schools, knowledge of ADHD. After completion of the assessment, teachers attended a 2 hour and 15-minute brief in-service workshop concentrated on ADHD and classroom strategies. Also, they held a one-month follow-up to assess retention and self-efficacy level. The researcher concluded knowledge increased more than twofold, from very low to high levels. However, the participants reported only modest increases in self-efficacy (Latouche & Gascoigne, 2019). Guerra Jr. and Brown (2012) concluded educators require adequate preparation to teach adolescents and meet the individual needs of all students. Because teachers are often involved in the assessment process, they realize the importance of their input. In some studies, teachers recognized the validity of an ADHD diagnosis and understood how their commitment to the student made a difference. However, other teachers believed a special education teacher should complete assessments and teach children with ADHD.

One of the most common reasons cited by the participants for their diffidence in managing students with ADHD was lack of knowledge, especially practical knowledge about how to address the needs of students with ADHD in classroom settings (Liang &
In a study focused on the behavior of a child diagnosed with ADHD, one teacher stated:

Very, very high maintenance. He cannot sit still for more than two to three minutes. Always pulling a child’s hair that sits in front of him. Always talking to the child next to him. If we put him in time out, he can’t. For example, if I say: ‘Sit on the floor for five minutes, he’s constantly spinning or crawling on the floor. Calls out, whether he’s called on or not … Not able to stay on task … Will not follow directions on the color sheet (Ron, a kindergarten teacher).

In these situations, teachers appeared helpless and less able to focus on achieving the learning objectives for the whole class. Youssef et al. (2015) shared how in-service education concerning ADHD significantly improved knowledge, attitudes, and management skills among teachers. A finding supported by our data. Also, teachers who had a good understanding of ADHD were most often better prepared to be in a position to offer adequate teaching assistance and render required support for children with the diagnosis (Woyessa et al., 2019). Gaining knowledge of ADHD allows teachers to obtain better classroom management, increase their level of understanding of ADHD, and gain the confidence to aid in positive self-efficacy.

**Different Types of Interventions**

Several recent researchers demonstrated how children who exhibited behavior problems in the classroom, particularly those who display inattention and/or hyperactivity symptoms, are at high risk for poor scholastic attainment and dropping out of school (Martinussen et al., 2011). More experienced teachers easily manage their classrooms. However, classroom management is often a big concern for novice teachers...
(Grube et al., 2018). Daily confrontations with one or more children with ADHD create a need for them to emote confidence when instructing these students (Gaastra et al., 2016). Over the years, classroom interventions for students with ADHD focused on reducing problematic behaviors and enhancing task engagement (Dilawari & Tripathi, 2013). However, students exhibiting behavior problems may require supports and interventions that address both their behavioral and academic difficulties (Martinussen et al., 2011). School-based interventions are a critical component to a comprehensive treatment plan for students with ADHD (DuPaul et al., 2011). The requirement for teachers to make the tasking decision of which goal becomes prioritized, assisting struggling students with their academics or controlling the child's behavior creates discourse regarding their role.

Numerous studies show a massive deficit in professional development and training centered around ADHD for teachers. However, despite indications of teachers not receiving information about ADHD, evidenced-based interventions to use in the classroom exist (Jones & Chronis-Tuscano, 2008). Decades of school-based intervention research targeted the behavioral and academic problems associated with ADHD (Macphee et al., 2019). However, teachers need to remember they can only enforce classroom strategies if they create a climate of trust. Prior researchers indicated a need to incorporate other strategies such as time management and organization of materials when creating a comprehensive plan. Also, there is growing evidence that explicit instruction inclusive of self-regulation guidance can enhance academic skills in students with ADHD (Martinussen et al., 2011). A review of literature emphasizes various methods of empirically supported strategies proven as efficacious in classroom settings. Numerous additional evidence-based classroom interventions currently exist. However, I
incorporated four primary strategies including antecedent-based strategies, consequence-based strategies, self-regulation strategies, and universal design learning.

There is evidence of the need for alternative approaches to assist students diagnosed with ADHD. Researchers underscored how students with ADHD are not meeting academic and behavioral expectations within their classrooms. Hence, the teacher’s involvement is essential in offering comprehensive interventions for students with ADHD (Rogers & Meek, 2015). A full understanding and appreciation of the role of medication, including its limitations, would appear to be both desirable and useful for teachers and other professionals working in the educational field (Akram et al., 2009).

Classroom Interventions and Strategies

Several recent investigators demonstrated that children who exhibited behavior problems in the classroom, particularly those who display inattention and/or hyperactivity symptoms, are at high risk for poor academic achievement and becoming a school dropout (Martinussen et al., 2011). Mohr-Jensen et al. (2019) characterized most classrooms as not conducive to a student who cannot sit quietly, stay focused, and cannot follow more than one step directions at a time. Over the years, classroom interventions for students with ADHD focused on reducing problematic behaviors and enhancing task engagement (Dilawari & Tripathi, 2013). However, many students exhibiting behavior problems require supports and interventions that address both their behavioral and academic difficulties (Martinussen et al., 2011).
Behavior Modifications and Interventions

ADHD has become an increasingly noticeable challenge for teachers worldwide (Liang & Gao, 2016). Every year, teachers face new challenges such as increasing teacher-to-student ratio and ongoing, escalating behavior problems. Despite the increased stress from working longer hours and lower pay, teachers described how educating children with behavior problems is one of the most difficult and stressful aspects of their jobs (Stoiber & Gettinger, 2011). Even though behavior concerns within the classroom continue to rise, teachers reported a lack of assistance to support their management efforts. For these reasons, it is important to build a large repertoire of strategies and skills to effectively address maladaptive behaviors in the classroom (Rief, 2012). Currently, behavioral treatments, psychostimulant medication, and their combination are the most widely studied and accepted treatments for ADHD (Pelham et al., 2014). Comparatively, behavioral modification interventions that incorporate caregivers and potential teachers, may broadly promote self-regulation skills by use of reinforcement contingencies, which in turn may reduce social disinhibition and enhance self-awareness (Hinshaw et al., 2015).

Understanding appropriate strategies to utilize within the classroom is essential when working with children with ADHD. To date, students diagnosed with ADHD receive classroom accommodations through federal law. In an attempt to prevent behavior problems from occurring, educational accommodations include manipulating the classroom environment (Reid, 2001). Educators selecting evidence-based interventions for students with ADHD show interest in interventions with known effectiveness for increasing academic performance (Dilawari Tripathi, 2014). Presently,
several different types of classroom strategies have proven to be efficient in an educational setting. Antecedent and consequence-based strategies are two behavioral modalities typically used as interventions within the classroom. Antecedent-based approaches typically focus on changing the learning context to reduce behavioral problems (Martinussen et al., 2011), whereas consequence-based strategies involve manipulating environmental events following a specific behavior to alter the frequency the students display the targeted conduct (DuPaul et al., 2011).

Previous researchers indicated the use of these strategies improves students’ behavior and academic functioning (Martinussen et al., 2011). Based on numerous studies, both interventions demonstrated value. Fabiano et al. (2009) conducted a meta-analysis of 174 studies examining the effectiveness of behavioral interventions for children and youth with ADHD (Blotnicky-Gallant et al., 2015). Findings from this study revealed improvement in student’s daily functioning. Some examples of the antecedent-based approach include giving clear concrete rules, letting students know expectations, and manifesting clear communication patterns between the student and the teacher. When focusing on this method it is important to observe and remain aware of common triggers. Teacher’s awareness of common triggers to problematic behaviors can be proactive, supporting their ability to make adjustments that prevent or significantly reduce the chance of many behavioral problems from occurring (Rief, 2012). Some examples of consequence-based strategies are the use of rewards and punishments, social rewards, and token-based rewards. However, reward systems often fail due to the individual’s low stimulation and motivation within the brain. This may require implementing other motivational and behavior modifications. In recent years,
psychological interventions employing behavioral and cognitive techniques demonstrated efficacy when educating children diagnosed with ADHD (Hodgson et al., 2014). The use of a cognitive behavior approach encourages children to problem-solve using an appropriate strategy while simultaneously weighing the consequences of their actions (Kern et al., 2015).

Researchers revealed the implementation of four types of psychosocial interventions resulted in promising initial results with adolescents diagnosed with ADHD: (a) note-taking, (b) self-monitoring training, (c) functional assessment with behavioral interventions, and (d) family-based intervention (Evans et al., 2004). Forms of psychosocial interventions included but were not limited to, parenting classes, psychotherapy, individual counseling, social skills training, and family counseling. Assessing children's social functioning using norm-based outcome measures informs professionals about whether children will remain at-risk of ongoing social difficulties in their adolescent developmental stages (Barnes et al., 2017). Researchers recognized the importance of social skills across some previous studies where they actively incorporated them into interventions and teaching strategies when working with students with ADHD (Moore et al., 2017). Social skills training is usually facilitated by an ADHD coach, licensed professional counselor, school counselor, or other mental health providers who often facilitate social skills training. Using multiple therapeutic methods and skills, children learn useful techniques.

Exercise and physical activity evidenced efficacy when working with children diagnosed with ADHD. Rief (2016) suggested a link between physical activity and behavioral and academic performance. The researcher found playing as helpful for
children to learn to inhibit their impulsive behavior and follow rules. Another study conducted by Goldrich and Goldrich (2016) highlighted the benefits of physical exercise in improving cognitive function in children with ADHD. Physical activity, including a range of aerobic exercise forms, increased attention, and impulse control (Lambez et al., 2019). Researchers recommended adding extra-curricular activities as a daily intervention for students with ADHD. Collectively, these interventions improved working memory, inhibition, attention, and nonverbal reasoning ability, and may potentially reduce behavioral symptoms of ADHD as reported by parents and/or teachers (Halperin & Healey, 2011). Evidence-based strategies are easily obtainable for classroom settings. It is important to note that all techniques may not be useful for each student. However, numerous available studies suggest employing varying strategies and methods.

**Self-Regulation Techniques**

Self-regulation techniques in the classroom are one of the leading strategies for children who experience ADHD symptoms or behavioral concerns. An association between behavioral challenges demonstrated by students lacking self-regulation and poor student outcomes, including underachievement, absenteeism, drop out, strained relationships with peers and adults, and time away from teaching and learning (Korinek & deFur, 2016). Notably, self-regulation interventions aim to improve student’s ability to exert increased self-control in environments where they experience functional impairment (DuPaul et al., 2014). In its purest form, self-regulation can consist of helping students recognize triggers, process emotions, and respond assertively. The executive function plays a significant role in self-regulation and organization. As a top priority topic for many researchers, executive function challenges affect learning, motivation,
behavior (Goldrich & Goldrich, 2019). They also refer to an array of organizing and self-regulating behaviors often associated with the maturation of the prefrontal cortex (Shaheen, 2014).

Also, self-regulation contains many subcomponents. Subcomponents of self-regulation also referred to as self-management, self-control, and self-direction, include skills such as goal setting, planning, self-talk, self-monitoring, self-recording, and self-evaluation (Korinek & deFur, 2016). Supporting evidence suggested the ability to self-regulate leads to academic and social success for children with ADHD. In a study using mental contrasting with implementation intentions (MCII), a technique known to facilitate the self-regulation of goal pursuit results indicated significant benefits for children at risk for ADHD (Gawrilow et al., 2013). The utilization of emotional regulation in the classroom has proven as an effective intervention in classroom settings. Ancillary factors require additional consideration before implementing these strategies. Teachers need to understand how all strategies may not work alone and integration of other techniques has proven profound outcomes. However, building foundational skills that contribute to self-regulation by structuring classroom environments and instruction to consistently promote and support student self-management contributes to achieving stated goals (Korinek & deFur, 2016). To summarize, teachers should incorporate self-regulation strategies within the classroom so children can gain a greater perception of self and display the ability to control their behavior.

**Universal Design Learning**

Reportedly, individual, and environmental factors influence children’s mental health and well-being, thereby affecting their vulnerability to developing mental,
emotional, or behavioral disorders (Streimann et al., 2019). Over the years, teachers utilized various classroom strategies to assist with children who displayed high-risk behaviors. This leads to tasking researchers with developing intervention strategies suited for children within this generation and beyond.

Over 50 years ago, combining the best practices for teaching and learning with flexible, accessible electronic, and information technologies lead to the incorporation of universal design learning (Curry, 2003), universal designs model is ideal for today’s modern children as it derived from the conception that learning without mistakes proved more effective and lasted longer than other techniques. In addition to its flexible and modern-day techniques, the universal design transforms the education environment to provide students with the same rigorous, progressive, and thoughtful curriculum (Curry, 2003). Beneath its origin, the creation of diverse curriculums accompanies the modern-day approach. However, the foundation continues to remain harmonious. The curriculum accommodates most learners and allows for multiple means of engagement to capture their interest, challenging and motivating them to master tasks (National Center on Universal Design for Learning, 2014). More importantly, the UDL classroom has clearly defined rules and expectations, is an organized environment with structured routines (Zelenka, 2017), which leaves little room for negative behavior and disruptions.

UDL incorporates computer-based programs, games, and instructional teachers for all classroom students. Uniquely, digital technologies applied using UDL principles enable accessible and effective individualized customization of curricula for all learners. Researchers revealed that the utilization of UDL programs resulted in positive outcomes for both students and teachers (Zelenaka, 2017). Various researchers confirmed its
validity, and when consistently used, demonstrates its efficacy. A study completed by Streimann et al. (2019), revealed the PAX Good Behavior Game system exhibited positive effects on mental health and prosocial behavior for high-risk students during their first year of usage. The same study also resulted in an increase in teacher self-efficacy. As technology and modern-day methods continue to rise and develop, educational and behavioral interventions will be essential within the classroom.

**Summary**

I presented a variety of articles to support the idea of achieving mastery of educating students with ADHD correlates with teacher’s knowledge and self-efficacy. However, more additional studies can assist with increasing awareness and teacher’s knowledge concerning ADHD. In summary, ADHD is a multifaceted, chronic disorder associated with deficits in multiple areas of functioning. As such, psychotropic medication, and home-based behavioral strategies, while useful, rarely decrease ADHD symptoms over the long term (Liang & Gao, 2016). Correspondingly, behavioral treatments alone usually do not normalize children’s symptoms (Pelham et al., 2000), and requiring consideration of using a combination of different strategies and modalities. In addition to maintaining constant communication among parents, teachers, physicians, and other health professionals, Liang and Gao (2016) urged school-based professionals to implement empirically supported strategies by individualizing interventions based on assessment data. Through the long-term implementation of evidence-based strategies, deficits within the classroom can continue to decrease, thereby maximizing student’s success. Teachers play a vital role in the continuity of care for all students, which requires them to maintain a high level of self-efficacy. Implementing change within the
educational system requires educating teachers about ADHD and receiving evidence-based strategies to ensure optimal teacher self-efficacy. This study offered an opportunity to contribute to filling the existing knowledge gap regarding whether the provision of training enhances teacher’s understanding of ADHD, the ability to develop classroom strategies, and strengthen their feelings of self-efficacy. I provide an overview of the quasi-experimental design, using a pretest/post-test method in Chapter 3.
CHAPTER THREE: METHODS

Overview

I aimed to evaluate teacher’s understanding of Attention Deficit Hyperactivity Disorder (ADHD) and to determine if training and intervention strategies for ADHD in the classroom would increase their knowledge of ADHD and their self-efficacy. I conducted in three phases:

1.) Teacher’s sense of efficacy scale aims to measure teacher efficacy in student engagement, instructional practices, and classroom management.

2.) Knowledge of attention deficit disorders scale measures the knowledge of the teachers to provide training and coaching

3.) Teacher intervention scale measures the amount of usage in the classroom after training.

I acquired the sample from different schools within a school district in Texas. A total of 12 teachers voluntarily completed the surveys. I informed each participant of the voluntary nature of the study, which included a pre-test survey, 2-week training, and a follow-up post-survey. After completing the study each teacher participant completed the KADDS, TSES, and the ADHD intervention scale, to identify if they effectively used interventions in the classroom after 2 weeks. I provide information on each survey in detail in the instrument section of this Chapter.

Design

I used a pretest/posttest design, conducted as a quasi-experimental design. The quasi-experimental design focuses on interventions taking place in real-world settings and displays a stronger external validity than laboratory-based studies (Warner, 2013). I measured change in knowledge and teacher self-efficacy using a comprehensive
educational training approach among elementary and middle school teachers following comprehensive training.

**Research Question(s)**

Self-efficacy beliefs exert influence on the actions, which may signal improvement or prevention of the action as well as determining how people perceive environmental opportunities and difficulties (Fernandez et al., 2016). I posed the following research questions:

**RQ1:** Can the implementation of ADHD training and program development increase teacher’s knowledge of ADHD?

**RQ2:** Can teacher’s self-efficacy positively increase in teaching children with ADHD?

As there is little research on knowledge of ADHD and teacher efficacy, utilizing a quantitative study may be limiting. I used program development to identify if there is a correlation between knowledge and teacher efficacy.

**RQ3:** Will implementation of evidenced-based strategies be used effectively within the classroom?

**Hypothesis(es)**

**H1:** After completing training on ADHD, teachers will show a higher level of knowledge of ADHD.

**H2:** After completing training on ADHD, teacher’s self-efficacy will positively increase.

The alternate hypothesis for this study is:
H10: Teachers participating in the ADHD training will have increased self-efficacy, indicated by changes in the ADHD belief and attitude scale, knowledge of attention deficit disorders scale, the teacher intervention scale posttest responses.

Participants and Setting

Upon Liberty University’s Institutional Review Board (IRB) approval, a sample of 10-12 candidates volunteered to participate in the training program. I distributed surveys to schools located in a school district in Texas. The school district was an appropriate site for this study due to having a high ratio of students with ADHD, behavior challenges, and learning disabilities.

After receiving IRB approval, I emailed principals and administrators and made telephone outreaches to principals to assist in contacting teachers who would compose the participant pool if they met the criteria for the study. All participants were over the age of 18 years of age, fluent in English, however, I did not require English to be their preferred language. Participants held a college-level degree and a teacher certification allowing them to teach in the state of Texas. I required participants to have some experience with working with children within an elementary school setting diagnosed or evidencing symptoms of ADHD. An informed consent form from Each participant completed an informed consent form before starting the study. Surveys range from Likert scales to rating scales.

I recruited approximately 20 participants for this study, but 11 completed the study. I used a web-based program and a single group format with pretest/posttest survey responses. I also provided surveys, supplies, and materials to each participant.
Instrumentation

Most surveys measure teacher’s knowledge of ADHD based on either Jerome et al.’s, (1994) 20-item untitled scale or Sciutto et al.’s (2000) 36-item knowledge of attention deficit disorders scale. Respondents to Jerome et al.’s questionnaire read statements regarding ADHD and respond either true or false. I calculated the percentage of correct answers (Anderson et al., 2012). In addition to those scales, researchers used other instruments to assist with measuring teacher’s beliefs towards ADHD. They included the teacher’s sense of efficacy scale, knowledge of attention deficit disorders scale, and the teacher intervention scale. All three of the assessments had proven to be useful when researching teacher efficacy and negative beliefs about ADHD.

Teacher’s Sense of Efficacy Scale

Teacher’s sense of efficacy scale aims to measure teacher efficacy in student engagement, instructional practices, and classroom management. The scale consists of a short and long-form version. The long-form includes 24 questions and uses a 9-point Likert scale, and the short form consisting of 12 questions, also uses a 9-point Likert scale. The psychometric properties of the short form of the TSES are nearly identical to those of the long-form (Tschannen-Moran & Hoy, 2001). Each participant read all questions and rated their skillset relative to teaching. Researchers used this scale in over 80 articles and currently shows extensive reliability and validity.

Knowledge of Attention Deficit Disorders Scale

The knowledge of attention deficit disorders scale, also known as KADDS, is a 36-item rating scale developed by Sciutto and colleagues (Sciutto et al., 2000), and used to measure the attitudes and perceptions of teachers about ADHD. It consists of 36 items,
18 positive and 18 negative, and measures three areas of knowledge related to ADHD: 1) symptoms/diagnosis of ADHD (9 items), 2) General information on nature, causes, and effects of ADHD (15 items), and 3) treatment of ADHD (12 items) (Echoles, 2013). Researchers considered the KADDS as, “one of the most widely used instruments to assess the level of knowledge of teachers regarding ADHD, and is the first instrument whose indices of reliability and validity were the first instrument whose indices of reliability and validity were published in this field” (Soroa et al., 2013).

**The ADHD Intervention Scale**

The ADHD intervention scale measures effective intervention usage within the classroom. The scale contains nine questions from five different studies that surveyed the effectiveness of implementing evidence-based classroom interventions to teachers who work directly with students with an official diagnosis of ADHD (Streimann et al., 2019). The scale also includes three independent variables that concentrate on antecedent-based interventions, consequence-based interventions, and self-regulation interventions. This scale does not show any validity and has never been used in an article.

**Procedures**

After approval from the IRB, I began the study. Telephone calls to principals within the selected district assisted with contacting potential participants who met the criteria for the study. I employed a three-phase process to conduct this study. The first phase consisted of a brief introduction to the program; participants received informed consent forms for review and signature, and the pre-test was then administered, which included:

1. Pre-test/ post-test, teacher’s sense of efficacy scale (Long-form)
2. KADDS to measure the knowledge of the teachers, provide training and coaching

3. Post-test, ADHD Intervention Scale to measure effective intervention usage within the classroom. Participants completed the KADDS and the TSES before and after the study to see if the null hypothesis would be rejected. Two weeks after the training to measure effective intervention usage within the classroom, I administered the ADHD intervention scale. I delivered professional development training through a web-based training program, which consisted of four modules. I utilized supported research, *Managing ADHD In School*, and *How to reach and teach children with ADD/ADHD: Practical techniques, strategies, and interventions* (Vol. 2), to create the training program.

Module One: Understanding ADHD and How to Recognize Symptoms

Module Two: Components of Assessments and Understanding Medication

Module Three: Learning how to Implement Strategies within the Classroom

Module Four: Building Effective Relationships

After completion of modules, participants administered strategies within the classroom for two weeks. After two weeks, participants complete an online post-test survey. All assessments were anonymous and provided through email. All participants received an eight-hour certification of completion of the post-test survey.

**Data Analysis**

In my analysis, all participants received a pretest/posttest to measure if training increased their knowledge and efficacy level. The experiment took place in a workshop setting within a conference room, and the sample size remained small (N=11). I used the Mann Whitney U
Wilcoxon test to examine outcome measures. The Wilcoxon signed-rank test is a frequently used nonparametric test for paired data based on independent units of analysis (Jiang et al., 2017). The Wilcoxon, a nonparametric test, is best used with pre and post-test measurements, which was consistent with this study. The test does not require the data to exhibit specific characteristics of some statistical distribution (Warner, 2013).

The surveys measured using the Wilcoxon signed-rank test were, teacher sense of self-efficacy scale, KADDS, and the ADHD intervention scale. I examined the outcomes to measure the presence of statistical changes. In addition, I also used Cronbach's Alpha to test for reliability. Researchers employ the use of Cronbach's Alpha reliability to describe the internal consistency reliability and is the most popular measure of internal consistency reliability (Warner, 2013).
CHAPTER FOUR: FINDINGS

Overview

This chapter includes the social cognitive theory methodology study results to answer the three research questions. The purpose of this study was to evaluate the effectiveness of providing training aimed at enhancing teacher’s understanding of ADHD, developing classroom strategies, and strengthening teacher self-efficacy. The study included teachers who currently work within an inclusive classroom with children diagnosed with or displaying symptoms of ADHD. This study used a pre/posttest design, which utilized the knowledge of attention deficit disorders scale, also known as KADDS (Sciutto et al., 2000), and teacher’s sense of efficacy scale also known as TSES (Tschannen-Moran & Hoy, 2001) to measure teacher’s efficacy and knowledge before and after training. I created the ADHD intervention scale for the purpose of this study and measured the effective use of interventions within the classroom. This chapter also includes demographics, tables, and graphs to present detailed data.

Demographics

All participants were volunteers responding to the recruitment flyer on social media and emails. All participants were 18 years of age or older, fluent in English, held a bachelor’s degree and a teacher certification allowing them to teach in Texas. All participants had experience working with children within an elementary school setting diagnosed with or showing symptoms of ADHD. Fifteen participants completed the pre-screening and were eligible to participate in the training, however only 11 participants completed training. On the day of training, participants were composed of eleven teachers, females (11 of 11 =100%). The group included African American (6 of 11
=55%), Latinx (3 out of 11=27%), European American (2 out of 11= 18%) ethnicities.

Years of teaching children with ADHD, 1-5 years (5 out of 11=45%), 6-10 years (4 out of 11 =37%), and 11 plus years (2 out of 11=18%). This study did not include demographics on age or highest level of education.

Table 1

Demographic Statistics for Participants

<table>
<thead>
<tr>
<th>Participants Demographics</th>
<th>N=11</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>Male</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>6</td>
<td>55</td>
</tr>
<tr>
<td>Latino</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>Caucasian</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td><strong>Years of teaching students</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 years</td>
<td>5</td>
<td>45</td>
</tr>
<tr>
<td>6-10 years</td>
<td>4</td>
<td>37</td>
</tr>
<tr>
<td>10 plus years</td>
<td>2</td>
<td>18</td>
</tr>
</tbody>
</table>
Descriptive Statistics

Participants completed pre-screening, pre/post-tests, and ADHD Intervention Survey. Each participant received a confidential link by email to maintain confidentiality and anonymity. I developed the training as a one-day intensive workshop. The workshop ran for 9 hours (including a 30-min break for lunch and a 15 min break) and presented in PowerPoint format through Zoom. Throughout the day and at the end of the workshop, I was available for questions and discussions. I divided the workshop into four modules: Understanding ADHD and How to Recognize Symptoms, Components of Assessments and Understanding Medication, Learning How to Implement Strategies within the Classroom, and Building Effective Relationships. Managing ADHD In School (Barkley, 2016), and Reif’s (2016) How to reach and teach children with ADD/ADHD: Practical techniques, strategies, and interventions were the supported research I used to create the training program. I also provided virtual modeling of classroom strategies through demonstrations, hand-outs, and videos through web-based conference style. The workshop's highly structured format allowed uniformity in intervention delivery (Latouche & Gascoigne, 2019) and promoted evidence-based classroom strategies.

I completed all training sessions using Zoom, a web-based platform, and did not allow participants to utilize video conferences. A private chat system provided the means for me to answers questions and post responses. I analyzed all the data using IBM SPSS software. However, I used the Independent Samples Mann-Whitney U t-test to analyze both the KADDS and TESE (Warner, 2013). The following sections offer in-depth data findings.
**KADDS.** The knowledge of attention deficit disorder scale (KADDS) is a 39-item rating scale that uses a (T), false (F), or do not know (DK) format (Sciutto et al., 2000). The KADDS measures knowledge and misconception and is divided into subscales that focus on three different subject matters. The first subscale measures (associated features) and is composed of 15 questions. An example of questions posed is, "Most ADHD children ‘outgrow’ their symptoms by the onset of puberty and subsequently function normally in adulthood." The second subscale measures symptoms/diagnosis of ADHD and is composed of nine questions. An example question is, "It is common for ADHD children to have an inflated sense of self-esteem or grandiosity.”. The third subscale measures treatment and is composed of 12 questions. An example of a question is, "Current research suggests that ADHD is largely the result of ineffective parenting skills.” All subscales were related to both knowledge and misconception. Notably, surveys are an excellent means to address needs and changes in understanding over time (Heppner et al., 2016). In this study, the KADDS measured teacher’s knowledge of ADHD pre/post-training. I administered the testing online through Survey Monkey. To answer question #1:

**RQ1:** Can the implementation of ADHD training and program development increase teacher’s knowledge of ADHD as measured by the Knowledge of Attention Deficient Disorder Scale?

**H1:** After completing training on ADHD, teachers will show a higher level of knowledge of ADHD.

I employed the use of an independent sample Mann–Whitney U test to compare the pre/post-training assessment's overall knowledge score. As supported by the Mann-
Whitney U test, I retained the null hypothesis. The significance level of the Mann-Whitney U test was .05. (see Table 1). The knowledge of attention deficit disorder scale (KADDS) measured teacher's knowledge, displayed no statistically significant change in pre/post-training responses for knowledge and misconceptions. The investigation of the validity of the KADDS highlighted sensitivity to knowledge gained by direct interaction with ADHD children (Scuittto & Feldhammer, 2005).

Carefully scrutiny revealed statically significant changes in one question (It is common for ADHD children to have an inflated sense of self-esteem or grandiosity.) KADDS data noted statistically significant differences in pre/post-training response for Question #11. The standard deviation (SD) for pre-training measured 0.90, to the post-training SD was 0.54. The correlation measurements for pre/post-training significance was .050 utilizing Cronbach's = .05.

Table 2. below presents the results for the Independent Samples t-test for the KADDS scale demonstrating that no significant changes were made in knowledge before (M = 1.07, SD = .890) and after the training (M = 1.12, SD = .901) with significance of p = .173.

**Table 2**

**KADDS PRE-POST TEST**

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The median of difference</td>
<td>Independent-sample Mann-Whitney U Test</td>
<td>.173</td>
<td>Retain the null hypothesis</td>
</tr>
</tbody>
</table>
Training Self-Efficacy and Post-Training Self-Efficacy equal 0.

Table 3 below presents the results for the independent samples t-test for the KADDS scale demonstrating no significant changes were made in Question #11 before (M = 2.30 SD = .9) and after the training (M = 2.10, SD = .54) with significance of $p = .023$.

**Table 3**

*Question #11*

**KADDS**

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The distribution of Answer is the same across categories of Group</td>
<td>Independent-Sample Mann-Whitney U Test</td>
<td>.023</td>
<td>Reject the null hypothesis</td>
</tr>
</tbody>
</table>

Asymptotic significances are displayed. The significance level is .05.
**TSES.** Teacher’s sense of efficacy scale aimed to measure teacher efficacy in student engagement, instructional practices, and classroom management. The scale consists of a short and long-form version. The long-form includes 24 questions and uses a 9-point Likert scale, and rates question in categories ranging from (1) "None all" to (9) "A Great Deal" as each represents a degree on the continuum (Tschannen-Moran & Hoy, 2001). Divided into subscales, the TSES focuses on three different subject matters: efficacy in student engagement, efficacy in instructional strategies, and efficacy in classroom management. Efficacy in student engagement (1, 2,4,6,9,12,14,22) comprises of eight questions. An example is, "How much can you do to help your students think critically.” The second subscale, "efficacy in instructional strategies" (7,10,11,17,18,20,23,24), composed of eight questions. An example is, "How well can respond to difficult questions from your students?” The third subscale "efficacy in classroom management" (3,5,8,13,15,16,19,21), composed of eight questions. An example is, "How much can you do to control disruptive behavior in the classroom?") Subscale symptoms /diagnosis of ADHD displayed nine questions. An example is, "It is common for ADHD children to have an inflated sense of self-esteem or grandiosity?" The primary focus within all subscales included self-efficacy. Importantly, teacher efficacy measures need to tap into teacher’s assessments of their competence across the wide range of activities and tasks they perform (Tschannen-Moran & Hoy, 2001).

In this study, the TSES measured teacher’s student engagement, instructional practices, and classroom management. The primary focus within all subscales included self-efficacy. The teacher’s sense of efficacy scale (TSES) measured the teacher’s self-efficacy and displayed no statistically significant change before and after the pre/post-
training responses for efficacy. The TSES is a reliable and valid instrument for measuring a teacher's general sense of efficacy (Minghui et al., 2018). I also used an independent sample Mann–Whitney U test to compare the pre/post-training assessment's overall self-efficacy. As supported by the Mann-Whitney U test, I retained the null hypothesis. The significance level of the Mann-Whitney U test was .05. (see Table 3). To answer

**RQ2:** Does participation in the ADHD training and program positively increase teacher’s self-efficacy related to teaching children with ADHD?

**H2:** After completing training on ADHD, teacher's self-efficacy will positively increase.

After completing ADHD training, teachers rated their self-efficacy on a nine-point Likert scale. Upon data review, the TSES presented no statistically significant change. The null hypothesis was retained (Median=.637 per Mann-Whitney U Test).

Table 4. below presents the results for the independent samples t-test for the TSES demonstrating that no significant changes were made in self-efficacy before (M = 3.58, SD = .632) and after the training (M = 3.43, SD = .752) with a significance level of \( p = .058 \).

**Table 4**

<table>
<thead>
<tr>
<th>TSES- ALL</th>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The median difference between Pre-</td>
<td>Independent-Sample</td>
<td>.058</td>
<td>Retain the null hypothesis</td>
<td></td>
</tr>
</tbody>
</table>
Asymptotic significances are displayed. The significance level is .05.

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The median difference between Pre-Training Self-Efficacy and Post-Training Self-Efficacy equal 0.</td>
<td>Independent-Sample Mann-Whitney U Test</td>
<td>.058</td>
<td>Retain the null hypothesis</td>
</tr>
</tbody>
</table>

Asymptotic significances are displayed. The significance level is .05.

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The median difference between Pre-Training Self-Efficacy and Post-Training Self-Efficacy equal 0.</td>
<td>Independent-Sample Mann-Whitney U Test</td>
<td>.058</td>
<td>Retain the null hypothesis</td>
</tr>
</tbody>
</table>
Asymptotic significances are displayed. The significance level is .05.

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The median</td>
<td>Independent-Sample Test</td>
<td>.058</td>
<td>Retain the null hypothesis</td>
</tr>
<tr>
<td>difference</td>
<td>Mann-Whitney U Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>between Pre-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training Self-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficacy and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>equal 0.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADHD Intervention Scale. The ADHD intervention scale is a self-report scale used to measure effective intervention usage within the classroom. The scale contains nine questions from five different studies, surveying the effectiveness of implementing evidence-based classroom interventions (Streimann et al. 2019) to teachers who work directly with students with an official diagnosis of ADHD. The scale also includes three independent variables that concentrate on antecedent-based interventions, consequence-based interventions, and self-regulation interventions. I designed this survey for the current study. To answer

**RQ3:** Will implementation of evidenced-based strategies be used effectively within the classroom?

**H3:** After completing training on ADHD evidence-based strategies will be effectively implemented within the classroom?
A measure of the workshop's effectiveness was administered two weeks after the training to evaluate the effective implementation of interventions, confidence level of delivery of interventions, and administrators' support level when implementing interventions within the classroom. As there was no statistically significant change ineffective use of intervention. Teachers rated nine questions on a Likert scale from one to five, with higher scores indicating favorable interventions. I used descriptive statistics to measure the ADHD intervention scale. The following sections offer in-depth data findings (see Appendix I for the ADHD intervention scale).
**Figure 1**

**ADHD Question #1**

![Pie chart showing 50.00% Strongly Disagree and 50.00% Disagree]

*Note.* Q1: Implementation of evidence-based classroom interventions had a positive impact on teacher-rated classroom behavior. Descriptive Statistics for Question #1 display a mean of 4.50 and the standard deviation is 0.50. Out of 8 participants, 50% “agree,” and 50% “strongly agreed.”
Figure 2

ADHD Question #2

Note. Q2: I felt confident in my ability to administer evidence-based interventions in the classroom. Descriptive Statistics for Question #2 display a mean of 4.38 and the standard deviation is 0.70. Out of 8 participants, 12.50% "neither agree nor disagree, 37.50% "agree," and 50% "strongly agreed."
Figure 3

ADHD Question #3

Note. Q3: I felt supported by other staff and administrators when using classroom interventions. Descriptive Statistics for Question #3 display a mean of 4.38 and the standard deviation is 0.48. Out of 8 participants, 62.50% "agree," and 37.50% "strongly agreed."
**Figure 4**

**ADHD Question #4**

Note. Q4: The interventions used decreased off-task in children with symptoms of ADHD. Descriptive Statistics for Question #4 display a mean of 4.38 and the standard deviation is 0.70. Out of 8 participants, 12.50% "neither agree nor disagree, 50.00% "agree," and 37.50% "strongly agreed."
**Figure 5**

*ADHD Question #5*

Note. Q5: The interventions used decreased disruptive classroom behavior in children with symptoms of ADHD. Descriptive Statistics for Question #5 display a mean of 4.50 and the standard deviation is 0.50. Out of 8 participants, 50% “agree,” and 50% “strongly agreed.”
**Figure 6**

*ADHD Question #6*

![Pie chart showing responses to Question #6]

*Note.* Q6: Interventions are most effective in general education classrooms. Descriptive Statistics for Question #6 display a mean of 3.63 and the standard deviation is 0.70. Out of 8 participants, 50.00% "neither agree nor disagree, 37.50% "agree," and 12.50% "strongly agreed."
Figure 7

ADHD Question #7

Note. Q7: I was able to convey directions clearly and effectively. Descriptive Statistics for Question #7 display a mean of 4.50 and the standard deviation is 0.50. Out of 8 participants, 50% “agree,” and 50% “strongly agreed.”
**Figure 8**

*ADHD Question #8*

![Pie chart](image)

**Note.** Q8: Implementation of positive reinforcement to decrease inappropriate behavior was viewed as an effective strategy within the classroom. Descriptive Statistics for Question #8 display a mean of 4.38 and the standard deviation is 0.70. Out of 8 participants, 12.50% "neither agree nor disagree," 37.50% "agree," and 50% "strongly agreed."
**Figure 9**

**ADHD Question #9**

![Pie chart showing responses to ADHD Question #9]

*Note.* Q9: Implementation of self-regulation techniques, such as self-monitoring or self-management was useful within the classroom. Descriptive Statistics for Question #9 display a mean of 4.50 and the standard deviation is 0.50. Out of 8 participants, 50% “agree,” and 50% “strongly agreed.”

**Summary**

Chapter four outlined the data collection results I used in exploring the effectiveness of ADHD training and teacher’s self-efficacy. Utilization of three structured Likert scales, teachers anonymously rated their responses. Data retained the hypothesis for the KADDS, TSES, and ADHD Intervention scale. Both the pre/post-test retained the null hypothesis for the variable
knowledge (KADDS). Data for the TSES retained the null hypothesis for the variable teacher's self-efficacy (TSES). Descriptive statistic data for the variable implementation within the classroom retained the null hypothesis.

For this study, the intention was to answer three questions:

**RQ1:** Can the implementation of ADHD training and program development increase teacher’s knowledge of ADHD as measured by the Knowledge of Attention Deficient Disorder Scale?

**RQ2:** Does participation in the ADHD training and program positively increase teacher’s self-efficacy related to teaching children with ADHD?

**RQ3:** Will implementation of evidenced-based strategies be used effectively within the classroom? After careful review of the data, there were no statistical changes presented in all three areas.
CHAPTER FIVE: CONCLUSIONS

Overview
The purpose of this social cognitive theory study was to identify if providing ADHD training to teachers would enhance teachers' understanding of ADHD, strengthen classroom interventions, and improve teacher self-efficacy. This chapter includes a discussion of findings related to the literature on teachers' knowledge of ADHD, classroom interventions, and teachers' self-efficacy. Notably, instructing teachers to use such behavioral skills within a behavioral framework may be an effective determinant of behavior change in children with ADHD (DuPaul & Stoner, 2003). I include a summary of findings, discussion, implications, the study's limitations, areas for future research, in this chapter.

Discussion
In conducting this study, I aimed to determine the effect of ADHD training on teachers' knowledge and self-efficacy. Researchers reported the prevalence of ADHD diagnosis within an elementary school setting. There is strong evidence to suggest teachers often struggle to manage their classrooms due to a lack of knowledge, strategies, and skills to use with their students (Gaastra et al., 2016). As the number of children diagnosed with ADHD continues to grow, teachers' lack of ADHD training remains stagnant. Self-efficacy grounded the guiding beliefs of Bandura's social cognitive theory, refers to teachers' beliefs in their capability to perform targeted teaching tasks at a specific degree of quality in a given situation (Dellinger et al., 2008; Lee et al., 2019). Levi et al. (2014) posited self-efficacy beliefs can be regarded as answers to the question "Can I do this?"
Sadly, for some teachers, the ability to work with children with ADHD may result in a staggering response, “No.” Shillingford and Karlin (2014) put forth how teachers with a low sense of efficacy doubt their ability to influence student learning when compared to teachers with high self-efficacy. Vereb and Diperna (2014) suggested teachers with training in ADHD had greater knowledge of ADHD than teachers without training, which was relative to the current study. The purpose of the ADHD training program was to educate teachers about ADHD and provide evidence-based classroom interventions focused on creating higher self-efficacy.

In this study, I hypothesized that after completing training on ADHD, teachers would show a higher level of knowledge of ADHD. However, data analyses displayed no relationship between ADHD training and an increase in teacher knowledge. However, question #11 on the testing scale displayed an increase in knowledge after completing the post-test. In contrast to previous findings, researchers deemed the intervention highly efficacious at improving ADHD knowledge (Latouche & Gascoigne, 2019).

Hypothesis 2 proposed that after completing training on ADHD, teacher's self-efficacy would positively increase. After analyzing the data, no significant difference existed between teachers' self-efficacy and ADHD. However, a study completed by Chao et al., 2017 showed a significant improvement following the ADHD training program in self-efficacy.

In the third hypothesis, I proposed that after completing ADHD training, teachers would implement evidence-based strategies effectively within the classroom. I did not uncover a significant difference. The most likely explanation of the negative results was some participants did not complete the ADHD intervention scale due to COVID-19.
In conclusion, I offer a modest contribution to the ongoing discussions about teachers' knowledge, self-efficacy, and implementation of ADHD training programs. There is a widespread agreement concerning the imperative need for training. Despite the results from this current study, researchers continue to stress the importance of teachers receiving training regarding ADHD and classroom interventions.

**Implications**

The current study did not yield any statistical relationship between teacher’s knowledge, self-efficacy, and ADHD training. The data reflected teachers retained similar pre/post-training data on the KADDS and TSES, with no increase after training. However, numerous researchers continue to document the benefits of implementing teacher training. Notably, teachers facilitate optimal learning and the acquisition of social skills, which are particularly important for children with ADHD (Lawrence et al., 2017). As Guerra and Brown (2012) argued, educators must be adequately prepared to teach adolescents and meet the individual needs of all students. Given both past and current literature, teachers, counselors, and other educators could benefit from ADHD training. Both school and professional counselors work with children every day to assist with daily symptoms of ADHD. Attending training sessions increases their knowledge and awareness of providing more evidence-based treatment for the students. The current data introduced interventions for both in-school and web-based classrooms. Partaking in the training program may offer an opportunity to encourage and support teachers, students, and parents. The training informs counselors about evidence-based strategies that focus on a strength-based approach. A study by Portrie-Bethke et al. (2009) found mental health counselors consistently encountering challenges such as impulsivity, distractibility,
and hyperactivity when working with children diagnosed with ADHD. For these reasons, participating in ADHD training could aid in a trajectory shift for all parties involved.

Another important implication concentrates on the correlation between knowledge, self-efficacy, and training. As we know, all three variables represent major components of Christianity. Proverbs 24:5 states, “a wise man is full of strength, and a man of knowledge enhances his might.” Christians called to teach have a higher duty by God, according to James 3:1. From a Christian worldview, it is evident that man is naturally capable of acquiring knowledge of all things since he was created in the image of God (Brown, 2016). In reference to this study, there is widespread agreement that teachers play an essential role in a child's life, especially those with disabilities. Proverbs 18:15 states, "An intelligent heart acquires knowledge, and the ear of the wise seeks knowledge." Working with students diagnosed with ADHD or who have symptoms of ADHD requires a teacher to have a soul for teaching and a love for gaining knowledge. Christian educators work toward accepting the theories of human development embraced by the American educational system that discount spirituality and promote a naturalist worldview (Brown, 2016). However, educators can find biblical comfort in Titus 2:7, which states," in everything make yourself an example of good works with integrity and dignity in your teaching."

Researchers documented an existing correlation between knowledge and efficacy. According to Guerra et al. (2017), researchers established a strong connection between teachers' knowledge and efficacy beliefs. Self-efficacy is the foundational keystone of Bandura's SCT. Likewise, teacher self-efficacy is theoretically predicated on Bandura's (1986) SCT (Perera, & John, 2020; Tschannen-Moran et al., 1998). According to Henson
(2020), positive self-efficacy beliefs are strong predictors of future behavior in a wide range of applications, including working with children who have ADHD. Theoretically, self-efficacy perceptions may strongly influence a person's motivation to undertake activities and persevere in the face of difficulties (Oman et al., 2012). This study may prove beneficial in increasing knowledge and self-efficacy through ADHD training programs for teachers and counselors.

**Limitations**

After completion of the data, I noted the presence of several limitations. The deficiencies included sample size (n=11), recruitment, and method of training. I initially designed an in-person training with more than 80 participants over 4 weeks. However, the global pandemic COVID-19 forced school districts to close, and thereby requiring the canceling of face-to-face training sessions. Teachers and students changed learning styles from face-to-face to web-based teaching, which left implementing classroom interventions impossible. Three participants could not complete the ADHD intervention scale due to their school closing in response to the global pandemic. I recommend future researchers increase the sample size, once the school reopens safely and healthily.

For the current study, researchers initiated initial recruitment by collaborating with neighboring schools within Texas. However, due to the global pandemic (COVID-19), I completed my recruitment by using social media outlets specific to elementary school teachers. Prospective researchers should consider a network within schools in the community and allow all teachers to participate.

Conclusively, the method of training teachers received affected the outcomes. Due to the global pandemic, I was forced into delivering the training via Zoom. While I
condensed the overabundance of information into a one-day training program, I removed the hands-on activities. Participants learned an enormous amount of information about ADHD within a short time frame, which was not the original plan of delivering the curriculum. This could reduce the quality of the instruction. Other researchers revealed how creating and implementing productive teacher training enables schools to support increasing teacher’s knowledge to promote academic success for students with ADHD (Guerra et al., 2017). Future researchers should consider the method of delivery, creating a more in-depth learning style for participants.

**Recommendations for Future Research**

I researched the effects of teachers' knowledge and self-efficacy using pre/post participation in an ADHD training program. As stated earlier, teachers play a vital role in the lives of students diagnosed with ADHD. An important part of them instructing students highlights the need for them to feel knowledgeable about administering effective evidence-based classroom intervention. However, due to the lack of ADHD training programs, teachers lack the skills and knowledge to work with students, which leads to a decrease in teachers' self-efficacy.

Current and prior researchers focused on teachers' knowledge of ADHD and beliefs, but few concentrated on knowledge and teacher self-efficacy. Future researchers would benefit from including variables such as level of education and years of teaching experience. Similarly, they may find opportunities for innovation by evaluating existing programs and conducting professional development activities related to promoting knowledge and accurate beliefs about ADHD (Bell et al., 2011). In addition to including more variables, further recommendations can center around expanding the sample size. I
yielded a small sample size partly due to the training only being available through Zoom. Partnering with school districts, churches, and teaching organizations would significantly increase the participation size, which may increase the data collected and then analyzed. Based on the current study and previous research, teachers may not feel adequately prepared to work with students diagnosed with ADHD. However, there is an abundance of programs and training available to help gain knowledge about ADHD and provide them with a positive sense of teacher self-efficacy.
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Appendix A

IRB-FY19-20-333 - Initial: Initial - Exempt

irb@liberty.edu <irb@liberty.edu>

Fri 8/28/2020 2:52 PM

To: Hamilton, Cheryl <chamilton16@liberty.edu>; Daniel, Laura (Ctr for Counseling & Family Studies) <lauradaniel@liberty.edu>

LIBERTY UNIVERSITY
INSTITUTIONAL REVIEW BOARD

August 28, 2020

Cheryl Hamilton
Laura Daniel

Re: IRB Exemption - IRB-FY19-20-333 The Impact of Teacher Training on ADHD: Assessing Teachers' Self-efficacy and Classroom Interventions

Dear Cheryl Hamilton, Laura Daniel:

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: 101(o):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording). The information obtained 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.

Your stamped consent form can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. This form should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document should be made available without alteration.

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 krb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office
Appendix B

Email Recruitment Script

Hello, my name is Cheryl Hamilton, and I am a student from the School of Behavioral Sciences at Liberty University. I am writing to invite you to participate in my research study. The purpose of this study is to research the impact of training related to teacher self-efficacy and ADHD. You are eligible to be in this study because you are a certified teacher in the state of Texas, hold at least a bachelor’s degree, are at least 18 years old, speak fluent English, and have experience working with children within an elementary school setting who have ADHD or display symptoms of ADHD. I obtained your contact information from your principal.

If you decide to participate in this study, you will take a pre and a post survey, complete a webinar on ADHD, and incorporate classroom strategies for two weeks. For participating, you will receive a certificate of completion and evidence-based strategies to utilize within the classroom.

A consent document is attached. The consent document contains additional information about my research, but you do not need to sign and return the consent document.

Remember, this is completely voluntary. You can choose to be in the study or not. If you'd like to participate, please click on the following link to complete a screening survey: https://www.surveymonkey.com/r/SDLJLCE.
I will review your responses to the screening survey and, if you are eligible to participate, contact you with instructions for how to complete the study procedures. If you have any more questions about this process or if you need to contact me about participation, I may be reached at 214-927-6953 or chamilton16@liberty.edu.

Thank you so much.

Cheryl Young Hamilton
Appendix C

The Impact of Teacher Training on ADHD: Assessing Teachers' Self-efficacy and Classroom Interventions

- Are you 18 years of age or older?
- Do you currently hold a bachelor's degree?
  - Do you speak fluent English?
- Are you a certified teacher in the state of Texas?
- Do you have experience working with children who have ADHD or children who show symptoms of ADHD within an elementary school setting?

The purpose of this study is to evaluate the effectiveness of providing training that will aim to enhance teachers' understanding of ADHD, develop classroom strategies, and strengthen teachers' self-efficacy. Participants will be asked to complete a pre/post survey and complete virtual training. Benefits include an increase awareness of ADHD and classroom interventions.

The study will be held via webinar on November 28th, 2020. Please click on the following link to complete screening survey:
https://www.surveymonkey.com/r/XLKLDBG.

Cheryl Young Hamilton, a doctoral candidate in the Doctor of Education in Community Care and Counseling: Marriage and Family at Liberty University, is conducting this study.

Please contact Cheryl Young Hamilton at (214)927-6953 or Chamilton16@liberty.edu for more information.
Appendix D
Screening Survey

1. Are you 18 years of age or older?

2. Do you currently hold a Bachelor’s degree?

3. Do you speak fluent English?

4. Are you a certified teacher in the state of Texas?

5. Do you have experience working with children who have ADHD or children who show symptoms of ADHD within an elementary school setting?
Appendix E

Consent to Participant in Research Study

Title of the Project: The Impact of Teacher Training on ADHD: Assessing Teachers' Self-efficacy and Classroom Interventions

Principal Investigator: Cheryl Young Hamilton, Doctoral Candidate
Co-investigator(s): Chair: Dr. Laura Daniel, Reader: Dr. Kelly Gorbett

You are invited to participate in a research study. In order to participate, you must be over the age of 18 years of age, fluent in English, but English does not have to be your native language. You must hold a bachelor's degree and a teacher certification that allows you to teach in the state of Texas. You will need to have some experience with working with children within an elementary school setting, who have been diagnosed with ADHD or show symptoms of ADHD. Taking part in this research project is voluntary. Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

The purpose of the study is to evaluate teachers' understanding of Attention Deficit Hyperactivity Disorder (ADHD) and to determine if training and intervention strategies for ADHD in the classroom will increase their knowledge of ADHD and increase teacher efficacy.

If you agree to be apart this study, I will ask you to do the following things:

1. Complete two pre-test that will take approximately 20-30 minutes to complete.
2. Complete four training modules. Estimated time for Training modules are a total of 3 hours and 30 minutes long in material.
3. Implement classroom intervention strategies within the classroom for approximately two weeks.
4. Complete three post-test that will take approximately 30-45 minutes.

Participants will receive direct benefit from this study. This training may increase awareness of ADHD and increase teacher's self-efficacy related to ADHD and classroom interventions.

Benefits to society include continual training for educators on ADHD and implementation of evidence-based classroom intervention. The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records. Participant responses will be anonymous. Participant responses will be kept confidential through the use of pseudonyms/codes. Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or prior to submitting the survey. If you choose to withdraw from the
study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

The researcher conducting this study is Cheryl Young Hamilton. You may ask any questions you have now. If you have questions later, you are encouraged to contact her at 214-927-6953 or email chamilton@ liberty.edu. You may also contact the researcher’s faculty sponsor, Dr. Laura Daniel at ldaniel15@ liberty.edu, Dr. Kelly Gorbett at klgorbett@ liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@ liberty.edu.

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

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

Printed Subject Name                                      Signature & Date
Appendix F

Permission Request

Hamilton, Cheryl <chamilton16@liberty.edu>
Sent 4/25/2020 7:36 PM
To: mxtsch@wm.edu <mxtsch@wm.edu>
Greetings Dr. Tschannen-Moran

I am a doctoral candidate at Liberty University, School of Behavioral Health, and Sciences. I am conducting research as part of the requirements for a Doctoral degree. My research title is The Impact of Teacher Training on ADHD: Assessing Classroom Interventions and Teachers’ Self-efficacy. The purpose of this study is to research the impact of training related to teacher self-efficacy and ADHD.

I am requesting permission to use the Teacher Sense of Efficacy Scale as one of the tools for a pretest/posttest measurement.

Additional information:
Chair: Dr. Laura Daniels - ldaniel15@liberty.edu
Reader: Dr. Kelly Gorbett - kgorbett@liberty.edu

Thank you for your time, attention, and consideration

Cheryl Hamilton, MA, LPC-S, RPT-S, NCC
Chamilton16@Liberty.edu
214-927-6953

https://outlook.office.com/mail/sentitems/idAQkADkyZGQ6ZTQmtlWYsNWE1NiMrMy0SNDE2LTlNNjwOGlzY2Q1YwAQAuSTcC%2FEnGtsUOl...
Appendix G

William & Mary
School of Education

May 9, 2020

Cheryl,

You have my permission to use the Teacher Sense of Efficacy Scale (formerly called the Ohio State Teacher Sense of Efficacy Scale), which I developed with Anita Woolfolk Hoy, in your research.

You can find a copy of the measure and scoring directions on my web site at http://www.mxtsch.wm.edu/education/page/mxtsch.

Please use the following as the proper citation:


I will also attach directions you can follow to access my password protected web site, where you can find the supporting references for this measure as well as other articles I have written on this and related topics.

All the best,

Megan Tschannen-Moran
William & Mary School of Education
Appendix H

Permission Request

Hamilton, Cheryl <chamilton16@liberty.edu>
Sat 6/25/2020 7:57 PM
To: sciutto@muhlenberg.edu <sciutto@muhlenberg.edu>
Greetings Sciutto,

I am a doctoral candidate at Liberty University, School of Behavioral Health and Science. I am conducting research as part of the requirements for a Doctoral degree. My research title is The Impact of Teacher Training on ADHD: Assessing Classroom Interventions and Teachers' Self-efficacy. The purpose of this study is to research the impact of training related to teacher self-efficacy and Knowledge of ADHD.

I am requesting permission to use the KADDS tools for a pretest/posttest measurement.

Additional information:
Chair: Dr. Laura Daniels - Idaniel15@liberty.edu
Reader: Dr. Kelly Gorbett - klgorbett@liberty.edu

Thank you for your time, attention, and consideration,

Cheryl Hamilton, MA, LPC-S, RPT-S, NCC
Chamilton16@Liberty.edu
214-927-6953
[External] Re: Permission Request

Mark Sciutto <marksciutto@muhlenberg.edu>
Sent 4/26/2020 9:33 AM
To: Hamilton, Cheryl <chamilton16@liberty.edu>

7 attachments (493 KB)

Dear Cheryl,

Thank you for your interest in the Knowledge of Attention Deficit Disorders Scale (KADDS). I have attached a brief test manual, which contains information on the scale. It is not quite up to date, but it should give you some idea of the properties of the scale. Several recent studies have used the KADDS and we recently finished a cross-cultural study of teacher knowledge in 9 countries. I have attached a copy of that article. If you would like to use the KADDS, I only ask that you forward a copy of the results when available. I also ask that you do not reproduce the scale in its entirety in any published document.

Best regards and good luck with your research!

Mark

On Sat, Apr 25, 2020 at 8:52 PM Hamilton, Cheryl <chamilton16@liberty.edu> wrote:
Greetings Sciutto,

I am a doctoral candidate at Liberty University, School of Behavioral Health and Science. I am conducting research as part of the requirements for a Doctoral degree. My research title is The Impact of Teacher Training on ADHD: Assessing Classroom Interventions and Teachers' Self-efficacy. The purpose of this study is to research the impact of training related to teacher self-efficacy and Knowledge of ADHD.

I am requesting permission to use the KADDS tools for a pretest/posttest measurement.
Additional information:
Chair: Dr. Laura Daniels - ldaniels5@liberty.edu
Reader: Dr. Kelly Gorbett - kgorbett@liberty.edu

Thank you for your time, attention, and consideration,

Cheryl Hamilton, MA, LPC-S, RPT-S, NCC
Chamilton16@Liberty.edu
214-927-6953

--

Mark J. Sciutto, Ph.D.
Professor of Psychology
Director of the Muhlenberg Center for Teaching and Learning
Muhlenberg College
Allentown, PA 18104
(484) 664-3649
sciutto@muhlenberg.edu
Appendix J

ADHD Intervention Scale

For each of the questions below, circle the response that best characterize how you feel about the statement, where 1=Strongly Disagree, 2=Disagree, 3=Neither Agree nor Disagree, 4=Agree, 5=Strongly Agree

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Implementation of evidence-based classroom interventions had a positive impact on teacher rated classroom behavior.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I felt confident in my ability to administer evidence-based interventions in the classroom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I felt supported by other staff and administrators when using classroom interventions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>The interventions used decreased off-task in children with symptoms of ADHD.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>The interventions used decreased disruptive classroom behavior in children with symptoms of ADHD.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Interventions are most effective in general education classroom.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>7</td>
<td>I was able to convey directions clearly and effectively.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Implementation of positive reinforcement to decrease inappropriate behavior was viewed as an effective strategy within the classroom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Implementation of self-regulation techniques, such as self-monitoring or self-management was useful within the classroom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix K
ADHD shows high concurrent comorbidity with other neurodevelopmental disorders such as autism spectrum disorder, communication and specific learning or motor disorders such as reading disability, developmental coordination disorder, intellectual disability, and tic disorders.
114

2/1/2021

Cultural Barriers
(Bakay & Obermeier, 2013)

13

• The study involved 600 black men
• 399 contracted syphilis • 201 who
did not have the disease.
• Participants were led to believe that
they were being treated for “bad blood.”
• Compensation was free medical
exams, free meals, and burial
insurance.
• The study lasted 39 years and 6
months longer than anticipated.
• Official apology was not given
until 2010.

14

Executive Function
(Whalen & Spencer, 2019)

• Located in the Frontal Lobe of the brain
• The Prefrontal Cortex and Extended Neural
Networks
• Students with ADHD brain have been found to be
underactive and underreactive.
• Prefrontal Cortex not fully developed until late
20’s

15

Execution Function
(Whalen & Spencer, 2019)

• Sustaining attention
• Emotional self-control
• Time awareness
• Goal-directed persistence

16

Working Memory
(2018)

• Immediate and short-term memory
• Self-monitoring and feedback
• Self-regulation and revision

17

WHY is EF so Important

• Executive Function is not exclusive to ADHD
• Executive Function may create academic challenges
• Support from teachers and parents are critical for school success

18
Assessment Tools
American Academy of Child and Adolescent Psychiatry, 2011

Assessment Tools
(adhd-institute.com)

Assessment Tools
(adhd-treatment.com)

- Frequency or severity of ADHD symptoms
- Levels of functional impairment
- Impact on quality of life and finances

Most Commonly Used Teacher Rating Scales
1. Vanderbilt ADHD Diagnostic Teacher Rating Scale
2. Conners' Teacher Rating Scale—Revised

ADHD treatment is very effective for managing ADHD symptoms and impairment.
In 2011 the American Academy of Pediatrics created recommended treatment guidelines for children diagnosed with ADHD.

After diagnosis, treatments can include:
- Medications
- Psychotherapy
- Educational support
- Behavioral therapy

Treatment for ADHD

Stimulants

Teachers tend to have positive expectations about the effect of stimulant medications on school-related behaviors.

Medication:
(Lang, Ham, Lang, Melendez-Giron, Salaman, Ramirez, & Salazar, 2017)

The first use of medication being utilized for children with similar behavior problems range back to the year 1957.
Over the last two decades, the use of ADHD medication in US youth has markedly increased.
Establish Rules & Expectations for A DHR Student

- Keep expectations consistent
- Use rules chart with the rules taped to their desk for quick reference
- Final meeting where rules and expectations are reviewed
- Have students express rules daily

Less Differences Visually

- Set each and other settings for regular instruction
- Avoid distractions while teaching virtually
- Have students participate in perspectives with each other

Use Reminders

- Alerts on phones or computers
- Timers
- Kitchen Timers on stove
- TV Timers

During Instructional Time

Provide Positive Feedback

- Provide immediate positive feedback when observed
- Consistently reinforce positive behavior
- Model appropriate behavior
- Communicate expectations

Self-Regulation Breaks

- Incorporate self-regulation activities
- Use relaxation techniques
- Use visual timers
- Use visual aids
- Use specific break times