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Implicit Bias Toward Students with Attention-Deficit/Hyperactivity Disorder and the Influential Role of Teacher Self-Efficacy

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IMPLICIT BIAS TOWARD STUDENTS WITH ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER AND THE INFLUENTIAL ROLE OF TEACHER SELF-EFFICACY

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ABSTRACT

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The current study observed the presence of implicit bias toward students with Attention-Deficit/Hyperactivity Disorder (ADHD) in the classroom and the influential role of teacher self-efficacy. Teachers report a lack of readiness to work with students with diverse learning needs. Students with alternative learning needs, such as those with ADHD, report less social competency with adults and peers, and lower self-concept. The purpose of the study is to provide further information about the implicit biases held toward students with ADHD within the classroom and the influential role of teacher self-efficacy. Forty general education teachers were recruited. A paired samples t-test was used to answer the first research question which posited whether general education teachers held more implicit bias toward students with ADHD when compared to neurotypical peers. The second research question evaluated the relationship between teacher explicit and implicit associations toward students with ADHD. Lastly, a linear regression was used to observe whether the presence of teacher self-efficacy impacted implicit biases held by general education teachers toward students with ADHD in the classroom. Results indicated that there was no statistically significant difference between teacher implicit bias toward students with ADHD and neurotypical students, and no statistically significant relationship between explicit and implicit attitudes of teachers. There was a statistically significant relationship found between teacher self-efficacy and implicit biases held, which indicated that teachers with higher self-efficacy had less

implicit bias toward students with ADHD. Although the study did not gain the number of participants preferred for this study, the results shed light on the importance of teachers to feel efficacious in their work to have positive associations with students with alternative learning needs

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CHAPTER I

INTRODUCTION

Statement of the Problem

The purpose of the study is to provide further information about the implicit biases held toward students with Attention-Deficit/Hyperactivity Disorder (ADHD) within the classroom and the influential role of teacher self-efficacy. Teachers report they are not prepared to work with students with Attention Deficit/Hyperactivity Disorder (ADHD), which is the most common neurodevelopmental disorder among school-age children (Sagiv et al., 2013), affecting an estimated amount of about one child per classroom (Smith et al., 2006). This lack of preparedness links to low levels of self-efficacy in teaching (Stormont et al., 2011). As the number of students with ADHD increases, teacher programs have not yet adapted to working with students exhibiting disruptive or distracted behaviors. In conjunction with this ill-preparedness, teachers are reporting that they have less than favorable views of these children in their classroom (Anderson et al., 2012). It has been found that teachers view children with ADHD as unintelligent and with unfavorable personalities and behaviors (Batzle et al., 2010). These negative views teachers hold toward children with ADHD in the classroom can be detrimental to those children's personal relationships with their families and peers.

Children with Attention-Deficit/Hyperactivity Disorder typically have difficult relationships with their parents. Harrison and Sofronoff (2002) stated that parents with children with ADHD report feeling less skilled and feel less satisfaction in parenting when compared to

their peers with neurotypical children. Parents with children with ADHD tend to view their children's misbehavior as intentional rather than as a result of ineptitude, causing the parents to have a lower threshold of tolerance for their behavior. This can create a hostile environment within the home for the child and parent/s. At school, children with ADHD are more likely to have difficult relationships with their peers and to be socially rejected (Hinshaw, 2002). In classrooms, children with ADHD are more likely to have lower grades, lower scores on standardized tests, and are more often absent and retained, when compared to their neurotypical peers (Barbaresi et al., 2007). These negative peer relationships have been linked to negative associations attributed to students with ADHD by their teachers.

When teachers hold negative views against students with ADHD in the classroom, those views often result in unconscious, negative actions toward those students, identified as implicit biases. Kahneman (2011) identified two systems in which mental processing occurs: System 1 and System 2. System 1 involves cognition that is outside of human awareness, which operates automatically and quickly. System 2, on the other hand, involves conscious processing, which is used for tasks that require effortful and deliberate concentration (Kahneman, 2011). Staats (2016) further explained that human brains often default to System 1 when we are not deliberately applying concentration to a task, which means System 1 is often in charge when we are pressed to make instant decisions. Implicit associations are often held outside of conscious awareness, and this leads to biases that may develop before any conscious thought has been formed.

The relationship between students with Attention-Deficit/Hyperactivity Disorder and their teachers with low self-efficacy are more contentious because teachers are trying to maintain the academic progress of their students, and when students with ADHD exhibit

undesirable behaviors in their classroom, it is easier for the teachers to make negative inferences about the cause of the ADHD students' behaviors. These negative reactions from the teacher are often performed in front of the ADHD student's peers and have a negative effect on student peer relationships. Then, the student with ADHD develops low levels of self-efficacy in the classroom and continues to perform inappropriate behaviors in the classroom. This cycle repeats until there is a common ground or relationship formed between the teacher and student with ADHD. When positive relationships are formed between a student and their teacher, that student is more likely to experience beneficial outcomes regarding their personal relationships with their peers. Bronfenbrenner's Ecological Systems Theory (1979) addresses beneficial relationships in a classroom and why they are important to uphold.

Bronfenbrenner (1979) identified a system that creates a positive learning environment in the classroom. He emphasized the importance of a positive relationship between the student and teacher and proposed his Ecological Systems Theory. The three dimensions of his theory are affect, power, and reciprocity. This theory identifies that the teacher automatically has the power advantage in the classroom, so creating a positive relationship between student and teacher by sharing some of the power will alleviate student-teacher relationships and tensions. Sharing power allows the student to feel more engaged and in charge of their learning, which can increase motivation. Once there is a positive affect shared, along with shared power, reciprocity blooms between student and teacher that allows for a more inclusive and beneficial learning environment for all parties. Therefore, it is beneficial for teachers to be able to recognize this dynamic and develop awareness of their own implicit biases that may be impairing their ability to recognize harmful relationships present in the classroom.

Teacher self-efficacy significantly influences the relationships between teachers and students within the classroom (Ibrahim & El Zaatari, 2020). When teachers do not feel efficacious in their classroom, and are working with students with diverse learning needs, contentious relationships and negative biases can form between teachers and students. Therefore, the current study aims to evaluate teacher implicit biases while also addressing the influence of teacher efficacy when working with students with ADHD.

Significance of the Problem

It is important that teacher-held implicit biases toward students with Attention-Deficit/Hyperactivity Disorder in the classroom are observed and evaluated in conjunction with teacher levels of self-efficacy. Students with ADHD already experience negative relationships with their parents, peers, and teachers, which can result in negative academic outcomes. A significant contributor to negative teacher reactions to students with ADHD is teachers are required to maintain academic standards and progress with the students their classroom while the number of students with ADHD in the classroom increases each year (Gochenour & Poskey, 2017). Teachers report low levels of self-efficacy with students with ADHD (Stormont et al., 2011) and negative views of students with ADHD (Anderson et al., 2012; Batzle et al., 2010). As a result, students with ADHD are at a great risk of receiving more negative feedback and potentially leading to more academic underachievement. Specific research on teacher implicit biases toward students with ADHD is sparse, but there are significant findings in research on implicit biases, teacher efficacy, and students with ADHD in the classroom that support the need for this current study.

Relevant Literature

Implicit biases are defined as unconscious thoughts and feelings experienced by one individual toward another based on external characteristics (McGinnis, 2017). External characteristics of an individual are often comprised of, but not limited to, race, ethnicity, gender, appearance, and age. People naturally categorize themselves and those they closely identify with as in their own group (in-group) and categorize others they do not identify with as in other groups (out-group). The human brain has the tendency to go as far as to ascribe less than human characteristics to out-group members, and this is discussed in the Infrahumanization Theory (Haslam & Loughnan, 2014). The Infrahumanization Theory proposes that out-group members are often unconsciously perceived as less human than in-group members (Leyens et al., 2000).

Leyens and colleagues (2000) examined this theory on a large body of reviews and found that this phenomenon is actively present and acted out across different populations, regardless of out-group conflicts or in-group favoritism. Implicit biases are formed unconsciously when individuals perceive others as different or inconsistent with what they believe a person should look or act like, and these implicit biases often materialize into negative perceptions that can lead to negative interactions. For example, Jackson and colleagues (2014) found that women in STEM programs, which mostly consist of men, are more likely to experience negative implicit bias. Subsequently, this negatively affects hiring, retention, and promotion opportunities for women in STEM programs. However, Jackson and colleagues (2014) found that people do not often consciously recognize they have negative feelings toward the out-group members. Explicit attitudes are then beneficial to assess to determine if the implicit biases are based on conscious negative feelings or unconscious negative feelings. Jackson and colleagues (2014) found that

while implicit biases against women in STEM were significant, there was no correlation between the explicit and implicit biases held.

Contrary to implicit bias, explicit biases are those that are consciously acted upon (Daumeyer et al., 2019). Explicit biases are often not accurately portrayed in research because individuals may not feel comfortable sharing, or may not be fully aware of, their true thoughts and feelings about a group of people. The *social desirability bias* is an individual's desire to feel accepted by their peers so they will change their truth to appease others (Kopera et al., 2015). Therefore, when measuring implicit biases, it is also important to measure explicit biases to determine if the implicit bias is truly implicit, unconsciously held, or if their opinion is a result of explicit bias (i.e., stereotyping, prejudice, aggression, etc). While it is important to make this distinction, realizing the negative effect of any bias held toward an out-group member is imperative to understanding how the out-group member will begin to think or behave when they experience biased behaviors.

Students, when faced with negative stereotypes, may begin to devalue their worth (Major et al., 1998). *Disidentification* occurs when students begin to de-value their work in the stereotyped category, they are assumed to belong in. For children with ADHD, this can look like a teacher assuming a student will not complete their homework, so the student will not complete their homework because that is what is expected of them. These students tend to eventually disengage from their studies. When teachers exhibit unfavorable feelings toward a student, the other students in the classroom often follow suit.

Dehumanization is another construct that occurs when implicit biases are held against a group of people. This construct is defined as perceiving another person as less than human (Haslam & Loughnan, 2014), and is often cited alongside implicit biases in research (Bandura

et al., 1975; Haslam & Loughnan, 2014; Lammers & Stapel, 2011; Major et al., 1998). Bandura and colleagues (1975) conducted a study on dehumanization where students who overheard an authority figure label another group of students as “animals”. Then, those students would deliver a higher rate of shocks to the students categorized as “animals” than when they delivered shocks to another group of students that were not negatively stereotyped by an authority figure. In K-12 classroom environments, when teachers target students and identify them as “troubled” or “at risk”, the other students in the class observe and treat the labeled child accordingly. It is thought to be the power of the teacher’s position that encourages these interactions in the classroom.

Power has been identified as the only investigated social-structural factor that contributes to dehumanization, and this is demonstrated across studies. When participants rated higher on a scale measuring personal sense of power, they were more likely to ascribe dehumanized identities to members of low-status, other groups (Lammers & Stapel, 2011). In addition, in a study where students were assigned to a higher position in a partnership, they rated their lower status partner as having subhuman traits (Gwinn et al., 2013). Power differentials and hierarchies in a classroom therefore empower dehumanization and can create negative learning environments for the students that are receiving these judgments. However, implicit biases are not consciously held and are enacted without conscious thought, so when teachers do not feel efficacious in working with students with ADHD, they often express elevated levels of frustration when working with these students.

Teacher self-efficacy refers to a teacher’s belief that they are capable of organizing and completing activities and tasks related to teaching within a specific context (Tschannen-Moran et al., 1998). There are many benefits to a classroom with an efficacious teacher, such as student

achievement (Ashton & Webb, 1986; Bandura, 1993; Goddard et al., 2000; Hoy et al., 2002), student motivation (Midgley et al., 1989), and teacher motivation (Senler & Sungur-Vural, 2013) and success (Ham et al., 2015). The three following factors are associated with teacher self-efficacy: teacher locus of control, attitude toward teaching, and teacher anxiety.

When teachers have a high sense of internal locus of control (i.e., they are confident they have control over their students' performance), there are higher levels of student achievement (Murray & Staebler, 1974; Paneque & Barbetta, 2006; Weiner, 1985) and positive student perceptions of their classroom environment (Sadowski et al., 1986; Sadowski & Woodward, 1983). Teacher locus of control has also been associated with teacher tenure (Sadowski, 1993), self-efficacy (Chu, 2011; Paneque & Barbetta, 2006; Parkay et al., 1988), anxiety (Pigge & Marso, 1990; Smith, 1997), psychological empowerment (Wang et al., 2013), self-concept (Chu, 2011; Thomson & Handley, 1990), job satisfaction (Bein et al., 1990; Sünbül, 2003), teaching performance (Sadowski et al., 1986; Sadowski & Woodward, 1983), and job attitude (Bedel, 2008; Cheng, 1994; Smith, 1997). Additionally, teacher attitude toward teaching is another significant factor of teaching efficacy. Positive attitudes toward teaching have been found to increase teacher motivation and enthusiasm in addition to the positive attitudes and achievements of their students (Pigge & Marso, 1997). Teacher anxiety, on the other hand, was found to negatively affect teacher performance and effectiveness (Thomas, 2006). Teachers with higher anxiety will avoid new teaching methods and materials (Thomas, 2006) and experience burnout at a faster rate (Byrne, 1994). These three dimensions have a direct influence over teacher self-efficacy and can provide valuable information on teacher readiness to work with diverse populations.

Teacher efficacy has been studied with many populations. One particular topic of interest is teacher self-efficacy with culturally and linguistically diverse (CLD) populations. Teachers with an internal locus of control are more likely to believe that they are able to use their students' multicultural backgrounds to create a meaningful learning environment for them (Chu, 2011). When students are able to connect their learning to their personal life, it creates a more engaging and meaningful learning experience (Schunk, 2012). Culturally Responsive Teaching (CRT) then is an important skill base to have when working with students in a classroom and is a skill that efficacious teachers often hold (Boyd, 2003). CRT personal efficacy (i.e., internal locus of control) are teachers' perceptions that they are able to provide culturally responsive classroom interventions and instruction (Siwatu, 2007). CRT in a multicultural classroom is cited as the best practice for teaching and learning of students from CLD backgrounds (Cartledge & Kourea, 2008; Gay, 2021). Teachers with low efficacy in working with CLD students are more likely to have lower expectations for those students (Chu, 2011). Therefore, increased teacher self-efficacy with CLD populations will help teachers with their internal locus of control to help students from different backgrounds, including students with exceptional needs.

Teacher efficacy with students with exceptional needs (i.e., learning disability, physical disability, or gifted and talented) is also reported as low across teacher populations. This is difficult because when teachers have low efficacy with this population, they are more likely to refer students to other services rather than keep them in the general education classroom (Poznanski et al., 2018). Students with disabilities who stay in general education classrooms typically have had higher scores on achievement tests, less absences, and performed similar to grade levels when compared to their peers who were excluded from instruction (Blackorby & Wagner, 2005). In order to work with children with exceptional needs, inclusive practices are

necessary to be adopted into the curriculum. Inclusive practices in a classroom are those implemented by the teacher that provide instructional support for individual students, account for and facilitate social/emotional/behavioral development, provide a physically organized classroom to account for and facilitate development, develop skills performed to determine student progress over time, and collaborate with other teachers to build their own skills to facilitate the learning of all the students (Finkelstein et al., 2021). The use of inclusive classroom strategies is vital in fostering academic, social, and behavioral achievement for students with mental health and learning difficulties (Poznanski et al., 2018). Therefore, promoting teacher training and overall knowledge on student capabilities in a general education classroom is imperative when working with populations with diverse learning needs, including students with ADHD.

Attention-Deficit/Hyperactivity Disorder (ADHD) is characterized by emotional dysregulation (Shaw et al., 2014), which can be misinterpreted as self-serving, inappropriate externalizing behaviors. Young and colleagues (2005) found that ADHD symptoms in a sample of adolescent girls, demonstrating pervasive hyperactivity and conduct problems in an eight-year longitudinal study, were a result of their low confidence in school. Students presenting with significant ADHD symptomology often report lower levels of confidence in their ability to make sound decisions and effectively plan for their future careers and education (Tomevi, 2013). In clinical studies, Major et al. (2013) found that females with ADHD had the lowest level of confidence in their ability to self-regulate and learn when compared to their neurotypical peers. In addition, many studies have found that students with ADHD are more likely to experience school failure, poor grades, grade retention, academic under-achievement, and high school dropout (Barbaresi et al., 2007; Barkley et al.,

2006; Biederman et al., 1993, 1994, 1996, 1999, 2004 2006; Faraone et al., 2006). Many explanations exist as to why students with ADHD experience a myriad of negative school interactions, and one is how these students are perceived by others.

Problem Statement

Coping with negative stereotypes about intellectual performance has a significant influence over one's self-efficacy resulting in considerable discomfort for members of that group (Major et al., 1998). Research on ADHD student self-perceptions when negatively perceived by a teacher is very scarce, but there is abundant research conducted on student self-perceptions when a teacher has negative perceptions aimed toward those students. Disidentification and dehumanization are some of the experiences ADHD students face when they are in a classroom. Implicit biases are not consciously acted upon and therefore are solely enacted while the subsequent consequences play out. These consequences include negative academic outcomes and negative student relationships. Meanwhile, these implicit biases are likely enacted because teachers do not feel efficacious in their ability to work with students with diverse learning needs. Therefore, the current study will aim to answer the following research questions:

Research Questions

Q1 Do teachers hold more implicit biases toward students identified with ADHD than neurotypical students in their classroom?

Q2 Is there a statistically significant relationship between teacher explicit and implicit attitudes toward students identified with ADHD in the classroom?

Q3 Is there a relationship between teacher efficacy and implicit biases they hold toward students identified with ADHD in the classroom?

Definition of Terms

Implicit Bias. Unconscious thoughts and feelings about an individual based on external characteristics, such as, race, age, gender, ethnicity, and appearance (McGinnis, 2017). Implicit biases can be activated by a myriad of identities perceived in others and can be easily and negatively formed against those who are perceived as different due to external factors (i.e., age, race, body type, etc.) (Staats, 2016).

Explicit Bias. Biases that are consciously acted upon (Daumeyer et al., 2019).

Self-Efficacy. Introduced by Albert Bandura (1977) as one's perception of how their actions can bring about certain outcomes, favorable or unfavorable. Bandura extended his research on self-efficacy, through his Social Cognitive Theory, to identify it as a construct that describes how people's beliefs about their own capabilities influences how they make their choices, put forth effort, persist and persevere, and the varying degrees of anxiety or peace felt about their experiences (Bandura, 1986). Self-efficacy has since been studied and identified as an influential factor on how individuals feel, think, motivate themselves, and enact behaviors that increase or decrease their self-efficacy (Pajares, 1997).

Attention-Deficit/Hyperactivity Disorder (ADHD). Characterized by high levels of hyperactivity, inattention, and impulsivity that are developmentally inappropriate (Chimiklis et al., 2018). These inappropriate levels cannot be explained by an intellectual disability, through symptoms of a comorbid disorder, or as a result of an inadequate learning environment (American Psychiatric Association, 2013) and the presence of ADHD symptoms can add significant stressors on parents, educators, and children (Moreau & Waldie, 2016).

Neurotypical. Refers to the typically functioning learners in a classroom. These students will rarely need help and are well-adjusted.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Implicit biases are also often based off assumptions that one holds against characteristics of another, such as race, body type, gender, and sexual orientation (Ashford et al., 2019). Race and ethnicity are discussed in the study of implicit biases in the general education classroom because they have been observed through multiple research studies (Bain et al., 2009; Haslam & Loughnan, 2014; Hodson & Costello, 2007; Martínez et al., 2012; Rudman & Mescher, 2012). However, the current study will assess if implicit biases are held by general education teachers against students with Attention Deficit/Hyperactivity Disorder (ADHD) in their classrooms. Teachers report they are not prepared to work with students with ADHD in the classroom, often due to their lack of teaching self-efficacy (Stormont et al., 2011). This lack of self-efficacy to work with students with ADHD can lead to the development of unfavorable attitudes toward students with ADHD, which then become negative, unconsciously enacted behavioral outputs resulting from implicit biases.

Teacher Self-Efficacy

Self-efficacy was introduced by Albert Bandura (1977) as one's perception of how their actions can bring about certain outcomes, favorable or unfavorable. Bandura extended his research on self-efficacy, through his Social Cognitive Theory, to identify it as a construct that describes how people's beliefs about their own capabilities influences how they make their choices, put forth effort, persist and persevere, and the varying degrees of anxiety or peace felt

about their experiences (Bandura, 1986). Self-efficacy has since been studied and identified as an influential factor on how individuals feel, think, motivate themselves, and enact behaviors that increase or decrease their self-efficacy (Pajares, 1997). In addition, self-efficacy has been linked as a significant component in how individuals choose activities to engage in, the effort to put forth, and their level of persistence (Pintrich & Schunk, 2002). Individuals will choose an activity to complete, whether they will achieve it or not, based on their belief that they can carry out said task, which suggests that self-efficacy is a mediator for all types of behavior (Senler, 2016).

Teacher self-efficacy has been defined as a teacher's belief in their ability to organize and complete activities and tasks related to teaching within a specific context (Tschannen-Moran et al., 1998). Current research identifies teacher self-efficacy as significantly associated with teaching behavior and performance (Senler, 2016), and teacher instructional strategies used within a classroom (Holzberger et al., 2013; Morris-Rothschild & Brassard, 2006; Tschannen-Moran et al., 1998; Wolters & Daugherty, 2007). Teachers with higher levels of efficacy are more likely to utilize a various amount of teaching methods (Weiner, 2003) and various teaching materials (Cousins & Walker, 2000; Weiner, 2003). Teacher self-efficacy has also been linked with greater commitments to teaching (Coladarci, 1992), such as desires to improve teaching (Weiner, 2003), and committing longer periods of time to work with more difficult students while exhibiting tolerance toward student errors (Fuchs et al., 1992; Gibson & Dembo, 1984). On the other hand, teachers with low self-efficacy have been found to exhibit lower job satisfaction (Ashton, 1984; Klassen et al., 2009) and become more easily burnt out (Skaalvik & Skaalvik, 2014), when compared with teachers with higher levels of self-efficacy. Therefore, teacher self-efficacy is significantly related to student achievement (Ashton & Webb, 1986;

Bandura, 1993; Goddard et al., 2000), student motivation (Midgley et al., 1989); as well as teacher motivation (Senler & Sungur-Vural, 2013) and success (Ham et al., 2015).

Factors Influencing Teacher Self-Efficacy

There are three factors associated with teacher self-efficacy identified in the research: teacher locus of control, attitude toward teaching, and teacher anxiety. The concept of locus of control is based on Social Cognitive Theory and is described as an individual's attribution and beliefs of how or why events occur within their lives (Senler, 2016). There are two dimensions of locus of control: internal and external. When one encompasses an internal locus of control, they believe that they are in control of events that happen to them. On the other hand, external locus of control refers to one's belief that external factors to themselves have control over what happens to them. Therefore, it has been identified by Vickers et al. (1983) that internal locus of control is related with handling, while external locus of control is related with defending. A teacher's locus of control refers to beliefs and perceptions of their control over students' performances (Rose & Medway, 1981). Research has found teacher locus of control to be related to student achievement (Paneque & Barbetta, 2006; Murray & Staebler, 1974; Weiner, 1985) and student perceptions of their classroom environment (Sadowski et al., 1986; Sadowski & Woodward, 1983). In addition, teacher locus of control has been associated with teacher tenure (Sadowski, 1993), self-efficacy (Chu, 2011; Paneque & Barbetta, 2006; Parkay et al., 1988), anxiety (Pigge & Marso, 1990; Smith, 1997), psychological empowerment (Wang et al., 2013), self-concept (Chu, 2011; Thomson & Handley, 1990), job satisfaction (Bein et al., 1990; Sünbül, 2003), teaching performance (Sadowski et al., 1986; Sadowski & Woodward, 1983), and job attitude (Bedel, 2008; Cheng, 1994; Smith, 1997). Therefore, locus of control appears to be a

significant factor when it comes to teacher self-efficacy and likely significantly influences their performance and relationship with students in the classroom.

Teacher attitude toward teaching has also been identified as a significant factor of teacher self-efficacy. Adopting a positive attitude toward any profession one chooses is an important consideration when reviewing performance (Senler, 2016). In a classroom, a teacher's attitude toward teaching will significantly influence how they teach (Turkmen, 2013). Pigge and Marso (1997) identified that a teacher's attitude toward teaching is related to the teacher's motivation and enthusiasm in addition to their students' attitudes and achievements. These results are comparable to the research discussing teacher anxiety as a third significant factor of teacher self-efficacy. Teacher anxiety affects performance and effectiveness (Thomas, 2006). Teachers with higher anxiety often avoid trying new teaching methods and materials (Thomas, 2006) and they experience burnout at faster rates (Byrne, 1994). In addition, anxious teachers have a negative effect on their students' anxiety levels by raising student anxiety (Doyal & Forsyth, 1973), resulting in students performing poorly (Koran & Koran, 1981). Through the lens of Bandura's (1986) Social Cognitive Theory, anxiety and self-efficacy are negatively related through thoughts of failure.

Teacher locus of control, attitude toward teaching, and teaching anxiety were all observed and compared through a study conducted by Senler (2016). They found that teaching anxiety is negatively associated with teacher self-efficacy, which indicates that teachers who experience anxiety about their teaching will have low confidence in their ability to teach effectively. In addition, they found that attitude toward teaching was positively associated with teaching self-efficacy determining that when teachers have more positive attitudes toward teaching, they have heightened levels of self-efficacy in their teaching. When comparing locus of control to attitude

toward teaching, they found a positive relationship demonstrating that teachers who believe they are responsible for student performance and outcomes are likely to have a positive outlook on teaching. Additionally, they found that internal locus of control was negatively associated with teaching anxiety indicating that teachers with a greater sense of internal locus of control were more likely to experience less teaching anxiety. Finally, they observed that attitudes toward teaching were negatively associated with teaching anxiety, determining that teachers with negative attitudes toward teaching would likely have heightened levels of anxiety regarding their teaching. Senler (2016) demonstrated the importance of these factors on teaching self-efficacy and the positive interplay of relationships between teachers and their effects on student performance and outcomes.

Teacher Self-Efficacy with Students from Culturally Diverse Backgrounds

According to the National Center for Education Statistics, in 2017-2018, 89% of public elementary school teachers and 64% of secondary school teachers were White females (National Center for Education Statistics, https://nces.ed.gov/programs/coe/indicator_cge.asp). Meanwhile, the number of White students in public schools are predicted to decrease while the number of students of other races/ethnicities is projected to increase. Twelve percent of Black students and 9.4% of Hispanic students across the country are enrolled in special education services, and only the 8.5% of White students receive those services (Barshay, 2019). As they were completing their study, Gershenson and colleagues (2015) wrote that the expectations a teacher holds about a student's success directly affects that student's success in school. Teachers of all ethnicities held expectations and implicit biases of their students, which influenced students' level of achievement (Gershenson et al., 2015). They also commented that it is not the fault of the teachers because implicit biases are not unintentional, but instead a representation of how people

organize intricate information (Gershenson et al., 2015). While these social heuristics people use to categorize others are often completed subconsciously, it is important to recognize the adverse consequences some of these biases have on students' well-being.

Further, The Colorado Department of Education (CDE) reports that African American and Native American students in Colorado are 2.2 times and 1.82 times more likely to be identified with an intellectual disability, respectfully. In addition, it was reported that African American students are 2.2 times more likely to be suspended for more than 10 days or expelled, and that Native American students are 1.87 times more likely to be identified with an emotional disability. In addition, the United States Department of Education reports that, nationally, Black students are suspended and expelled three times more often than White students, and students with a disability are twice as likely to be suspended from school when compared to their nondisabled peers (School Climate and Discipline: Know the Data, https://www2.ed.gov/policy/gen/guid/school-discipline/data.html). With these statistics, it is apparent that students from minority backgrounds are often observed to perform, in disproportionate percentages, differently from their same age, White and able-bodied peers. Thus, it is important to explore teacher efficacy with culturally diverse backgrounds as it is apparent there is a discrepancy between general education teacher cultural backgrounds and the cultural backgrounds of their students.

Chu (2011) discussed teacher self-efficacy with culturally and linguistically diverse (CLD) populations through outcome efficacy and personal efficacy. Outcome efficacy is defined in the literature as the extent to which a teacher attributes a student's ability to learn because of external factors, such as that student's home environment, and family background (Gibson & Dembo, 1984). Personal efficacy, on the other hand, is defined as the extent to which a teacher is

confident in their ability to shape a student's environment to create a positive learning experience (Chu, 2011). Outcome efficacy and personal efficacy are, therefore, compared to external and internal locus of control, respectively. When considering CLD populations, Chu (2011) explained that teachers with personal efficacy are more likely to believe that they can use their students' multicultural backgrounds to make a meaningful learning environment; whereas teachers relating with outcome efficacy often do not feel able to help CLD students feel as a part of the classroom community.

Culturally Responsive Teaching (CRT) knowledge and skills are identified as important when working with CLD students in a classroom, and as a skill base that efficacious teachers often hold (Boyd, 2003). Teacher self-efficacy has been identified as an explanatory concept that teachers use to attribute success or failure of their students (Ashton & Webb, 1986). Therefore, CRT personal efficacy is a teachers' perception that they are able to provide culturally responsive classroom instruction and interventions (Siwatu, 2007). Too many educators are attributing student school failure to the student's cultural background, a student's access to resources, and a student's ability to complete class assignments (Gay, 2021, p. 8-12). CRT in the classroom is important for CLD students because the fundamental goal of CRT is to support academic success, cultural connection, and internal locus of control of culturally diverse students (Gay, 2021). Research continues to show that CRT in a multicultural classroom is the best practice for teaching and learning of students from CLD backgrounds (Cartledge & Kourea, 2008; Gay, 2021).

Teacher efficacy and the perceptions held about student outcomes of students from CLD backgrounds is directly influenced by that teacher's ability to understand their own preconceived notions about diverse groups and how their notions influence the expectations they hold about a

student (Wheeler, 2007). Teachers who have low efficacy are more likely to have lower expectations for their students from CLD backgrounds (Chu, 2011). Chu (2011) conducted a study on special education teachers' CRT efficacy beliefs about teaching students from CLD backgrounds. They found that lower teacher efficacy related to teacher attributions of student outcomes from the students' demographic characteristics. About 61% of teachers reported they were uncertain if using a student's native language within instruction would improve that student's learning outcomes. According to previous research, teachers with higher levels of self-efficacy reported they understood that using a student's native language and valuing their culture within the classroom has a positive impact on that student's English language acquisition (Paneque & Barbetta, 2006). These results determine that supporting CLD student culture and language within the classroom is important for that student to have positive learning outcomes. However, many teachers feel underprepared and unable to promote these positive learning experiences for students from CLD backgrounds, which may lead to implicit biases they hold against this population of students.

Teachers often hold implicit biases against students of color in their classrooms. Hinojosa and Moras (2009) found heightened levels of racial bias and low levels of tolerance in teachers when compared to similarly educated non-teachers. They found that teachers were more likely to favor laws that were against inter-racial marriage and teachers reported they would not live in a neighborhood that was half populated with African American people. Another study found that teachers stereotypes were held regardless of the race or ethnicity held by the teacher. White and African American teachers reported that their African American students were less competent, had more difficulties with school adjustment, and had less educational prospects in the future (Pigott & Cowen, 2000). There is strong predictive validity between implicit bias and

behavior (Greenwald & Farnham, 2000; Rudman & Glick, 2001), implicit bias and judgment (von Hippel et al., 1997), and implicit bias and social interaction (Sekaquaptewa et al., 2003). These studies demonstrate that these biases can be subconsciously entrenched in these teacher's cognitive or affective schemas, which will directly influence the quality of these students' education (Clark & Zygmunt, 2014). Teachers' awareness of the implicit biases they may hold is the beginning stage to combating these implicit biases. However, teachers also experience cognitive overload, time pressures, and stressful environments that are often catalysts for the activation of implicit bias (Boscardin, 2015). Paired with lower levels of teacher efficacy in working with diverse student populations and students with exceptional needs, there is a large space for implicit biases to be enacted.

Teacher Self-Efficacy with Students with Exceptional Needs

There is sufficient evidence backing the importance of working with students with exceptional needs in the general education classroom. Blackorby and Wagner (2005) found that students with disabilities who spend more time in a general education classroom are more likely to have had higher scores on achievement tests, had less absences, and were able to perform similar to grade levels when compared to their peers who were excluded from instruction. In addition, Demeris et al. (2007) found that neurotypical students receiving instruction in the same classroom as students with disabilities had no negative effects on their achievement scores and may have instead experienced increases in their mathematics and reading scores. Thus, to keep students with exceptional needs in the classroom, teachers need to be able to use inclusive practices and they need to have efficacy in implementing these practices.

According to a thematic review by Finkelstein et al. (2021), there is not an agreed-upon definition of inclusive teacher practices. However, an inclusive classroom is one where

the teacher is able to implement instructional support for individual students, account for and facilitate social/emotional/behavioral development, physically organize their classroom in a way to account for and facilitate such development, hold skills in determining student progress overtime, and collaborate with other teachers as they work together to build their skills to facilitate the learning of all students (Finkelstein et al., 2021). Artiles et al. (2006) identified four ways a school can transform their culture to become more focused toward inclusive classrooms. First, it is important that there is a diverse student population that is present and represents the spectrum of ability that can exist within a student population. Second, they identify it is important to increase the student body, administration, and staff acceptance of all students. Third, student participation in a larger variety of domains of activity is important to create an inclusive school culture. Fourth, with all the other variables in place, an increase in student achievement can be observed across all populations. While these themes found within the research on inclusive practices are beneficial, it has been noted in research that teachers' often have low levels of self-efficacy in creating and facilitating an inclusive classroom. The research identifies a few reasons why this might be.

One reason is that general education classrooms often have students that operate on different levels of learning. For example, the Individuals with Disabilities Education Act (IDEA) articulates that a school has a responsibility to place students in the least restrictive environment for learning, which is usually the general education classroom (Dixon et al., 2014). However, these classrooms may also have students who are gifted and talented who may miss out on learning opportunities if a teacher is focused on a student with a learning disability instead. In other words, in order for teachers to meet student needs, they need to be able to adjust the curriculum and instruction for multiple groups of students. Teacher efficacy is an

important indicator of if a teacher is able and willing to differentiate instruction in their classroom. High levels of teacher self-efficacy relate with a strong understanding of how to differentiate instruction for diverse learning groups. Low levels of teacher self-efficacy were related to whole group instruction (Peebles & Mendaglio, 2014), lack of differentiation (Dixon et al., 2014), and more referrals of students to special education (Soodak & Podell, 1993).

Another reason teachers may have low self-efficacy in hosting an inclusive classroom is that they do not feel prepared to work with students with differing abilities. For example, Avramidis and Norwich (2002) found that although teachers typically held positive beliefs toward implementing inclusive practices in the classroom, they did not feel confident teaching students with severe learning difficulties and behavioral/emotional disorders. These were also related to a lack resources, support, and teacher training (Avramidis & Norwich, 2002). Pre services teachers' reports of lack of preparation is an international finding as teachers from the United Kingdom (Hodkinson, 2005), Australia (Jobling & Moni, 2004), Canada (Moore-Hayes, 2008), Mexico (Forlin et al., 2010), and the United States (Forlin & Chambers, 2011) all identify lack of preparedness and low self-efficacy in teaching students identified with a disability. Teacher self-efficacy in working with diverse learner populations was influenced by pre-service teachers' ability to gain further instruction and experience in working with these populations.

A third reason teachers may experience low efficacy with diverse learners is that they have not had enough field experience with these populations. Specht and Metsala (2018) identified the important variables to consider when predicting pre-service teachers' self-efficacy for inclusive practice in the classroom. These variables were gender, inclusion-related beliefs, and experiences with individuals with disabilities. Overall, they found that teachers with student

centered beliefs and believe that student ability is more malleable than fixed, had higher levels of efficacy in implementing inclusive practices. In addition, Specht et al. (2016) found that teachers who had friends with disabilities would use more inclusive strategies in their classroom when compared to their peers without friends with disabilities. Peebles and Mendaglio (2014) investigated the effectiveness of direct experience with students with exceptional needs on teacher self-efficacy. They found that participants were able to experience statistically significant gains of self-efficacy after participating in an inclusion course and gaining more experience within the field. These results are similar to the findings of Burton and Pace (2009) who also found that utilizing a combination of inclusion coursework and direct experience had a positive effect on pre-service teacher self-efficacy for working with diverse learners.

Classroom management strategies are among the most important skills for teachers to hold when working with diverse populations. Poznanski et al. (2018) identifies the use of classroom management strategies as vital in fostering academic, social, and behavioral achievement for students with mental health and learning difficulties. The school environment is where children are most often affected by mental health difficulties as about one in five children experience mental health concerns (Merikangas et al., 2010) or disadvantaged home environments (Howell, 2004). It has been suggested that teachers in early childhood and primary school are likely to host at least one child, every year, who experiences mental health or learning difficulties. Disruptive behavior has been identified as one of the most commonly reported concerns with these students each year (Merikangas et al., 2010). Therefore, promoting teacher training and overall knowledge on student capabilities in a general education classroom is imperative when working with populations with diverse learners.

Implicit Bias

Implicit Attitude Development

Implicit biases are unconscious thoughts and feelings about an individual based on external characteristics, such as, race, age, gender, ethnicity, and appearance (McGinnis, 2017). Implicit biases can be activated by a myriad of identities perceived in others and can be easily and negatively formed against those who are perceived as different due to external factors (i.e., age, race, body type, etc.) (Staats, 2016). People naturally categorize themselves and those they closely identify with as in their own group (in-group) and categorize others they do not identify with as in other groups (out-group). This categorization is a result of implicit attitudes, which are thought to be outside of conscious awareness, making it difficult to monitor (Baron, 2015).

Ratner and Amodio (2013) conducted a study to determine if ingroup member processing has advantages over outgroup member processing on mere category distinctions. The researchers separated the participants into groups based on their results from a Numerical Estimation Style Test (NEST) and then showed them faces of individuals labeled as having the same numerical estimation style (ingroup) or as having a different numerical estimation style (outgroup). They found that faces of ingroup members were more easily processed than faces of outgroup members. These findings demonstrate that a person is more likely to unconsciously ascribe positive attributes to an easily recognized face than to one they are not often exposed to. The researchers concluded that this early bias in face processing is likely contributing to prejudice and discrimination of outgroup members (Ratner & Amodio, 2013). While these biases are thought to naturally occur, there are environmental factors that influence how individuals perceive others.

Environmental factors (Baron, 2015; Costello & Hodson, 2012) and societal representations of one's own culture (Baron, 2015; Rudman, 2004) appear to play a significant role in the development of implicit attitudes. System Justification Theory proposes that minoritized persons often unconsciously rationalize their lower standing in society through internalizing society's negative view of their own group members (Jost & Banaji, 1994). Further, System Justification Theory suggests that implicit attitudes, or biases, are often unconsciously formed and performed through developmental stages (Jost & Banaji, 1994), can begin to develop as young as the first year of life, and are thought to continue to increase throughout development and into adulthood (Baron, 2015). Children are able to determine the beliefs of the adults around them without realizing, so when adults hold implicit biases or negative attitudes towards outgroup members, it is more likely that children will inherently adopt these beliefs. Social Dominance Orientation (SDO) was found to correlate with outgroup members being regarded as beings lesser than human, most often by attributing animalistic characteristics to these outgroup members, which is an action identified as dehumanization. SDO was measured in parents and caregivers to children through a 14-item scale developed by Sidanius et al. (1994) and based on the social dominance theory. They found SDO to correlate with the act of regarding outgroup members as beings lesser than human, most often by attributing animalistic characteristics to these outgroup members. These results were also demonstrated in studies that found high levels of SDO to be a strong predictor of dehumanizing immigrants (Hodson & Costello, 2007), refugees (Esses et al., 2008), and enemy war victims (Jackson & Gaertner, 2010). In addition, Costello and Hodson (2012) found that the level of SDO in White parents strongly predicted their respective children's level of dehumanization toward Black children. Another study conducted by Perry and colleagues (2020) assessed the

effect of White parents having racial socialization conversations with their children. Parents often are fearful of holding these conversations, so the researchers also measured nonverbal communication of tenseness during these conversations. They found that when parents have a conversation about racial differences with their children, these conversations reduced the children's implicit attitudes and decreased parents' implicit anti-Black attitudes. Parental influence is key in determining how children will perceive individuals identified as outgroup.

Implicit Bias versus Explicit Bias

In contrast to implicit bias, explicit biases are conscious thoughts and feelings about another group of people, with "conscious" thoughts as the key distinguisher between implicit and explicit bias (Daumeyer et al., 2019). In addition, implicit attitudes will be more sensitive to affective experiences than explicit attitudes (Phelps et al., 2000). Estimates of implicit prejudice, instead of explicit prejudice, positively covaried with the activation of the emotional centers of the brain when White participants were shown photos of Black faces (Phelps et al., 2000). Considering developmental factors paired with emotional experiences, implicit biases are emotional, unconscious responses to stimuli that are considered to be outside of the norm. Explicit attitudes on the other hand are thought to be more consciously processed (Rudman, 2004; Rudman et al., 2001) and predict discriminatory behavior over and above implicit attitudes (Burke et al., 2017). Explicit and implicit attitudes are only weakly correlated (Burke et al., 2017) often due to the social desirability bias (Kopera et al., 2015).

The social desirability bias is the tendency for an individual to provide socially acceptable opinions or answers, even if the individual does not agree with such opinions or answers (Grimm, 2010). This tendency results in the possibility of over-reporting or under-reporting of responses on surveys to questions that seem more socially undesirable. When

participants have a personality trait that encourages them to seek external approval, they are more likely to fall subject to the social desirability bias than to provide wholly truthful answers. Social desirability is more likely to occur in scenarios where a person is asked questions that pertain to controversial topics, such as implicit bias. Additionally, social desirability bias is thought to appear most in studies that use survey methodology to gather data. Grimm (2010) suggested that a social desirability scale should be administered when conducting a study that can result in socially desirable responses from participants.

Self-report measures alone are not sufficient in measuring implicit bias because implicit biases often lie outside of conscious awareness (Kopera et al., 2015). Kopera et al. (2015) conducted a study where they measured explicit and implicit attitudes towards people with mental illnesses from medical students (non-professionals) and psychiatrists and psychotherapists (professionals). They were interested in the difference of the implicit and explicit attitudes held by those in the medical field who had little to no experience with patients with mental illnesses and those with years of experience with these patients. They found that both professionals and non-professionals had favorable self-reports of explicit attitudes towards individuals with mental illness. However, each group also held negative implicit attitudes towards patients identified with mental illnesses. These findings have been replicated in different aspects of research where explicit and implicit attitude parameters are differing (Baron, 2015; Daumeyer et al., 2019). Each study found that explicit and implicit attitudes differ, often since people are either unable or not willing to consciously recognize the biases they may hold. Therefore, measuring implicit and explicit attitudes together will produce a more accurate representation of a person's true conviction.

Detrimental Effects of Implicit Biases on Students

Major et al. (1998) discussed the act of coping with negative stereotypes about intellectual performance and stated that being identified with a negative stereotype directly affects one's level of self-efficacy and causes significant discomfort for members of that group. Whether identified in a positive or negative light, when one is categorized by their ethnicity rather than their individual value, they may begin devaluing their worth. Major et al. (1998) stated this as the process of disidentification. This process allows one to de-identify with the parts of themselves that have been branded in the stereotypic category and they underestimate the quality of their work when it involves using those skills. Further, the individual will begin to disengage and lose motivation to engage in their studies (Major et al., 1998). This de-identification is brought on often by the teacher in the classroom. When negative stereotypes are activated in the classroom by the teacher, in an authoritarian position, it can have detrimental effects on the student and their peer relationships.

Teachers hold a position of leadership in the classroom, and their actions toward individual students have a significant influence over how those students are perceived by their peers. Bandura and colleagues (1975) conducted a study measuring student behaviors toward others who are negatively identified by an individual from a leadership position. This study observed intelligent, undergraduate students who adopted a dehumanizing stance against a group of people they had no previous knowledge of or connection with. These undergraduate students were set up to over-hear a research assistant's discussion with the experimenter, both of which held a perceived level of authority, about another group of students from a different university who they categorized as "animals". After overhearing this conversation, the participants felt justified in delivering more shocks to the group of students from the separate

university without having any previous engagement with those individuals. In the same experiment they changed the label of the other students to “nice” instead of “animal” and they found that the participants delivered less shocks to the “nice” group. While this study demonstrated that just a single descriptive word can activate an implicit bias against an unknown group, it also demonstrated that when a negative descriptive is given by an authoritarian figure, this bias can result in aggressive tendencies depending on the circumstances, such as being a part of a collective group with the same mindset (Bandura et al., 1975). The findings from this study can be applied to K 12 classroom environments. When a teacher targets a student and identifies them as a “troubled” or “at-risk” child, those identifiers can be static and directly affect that student’s social, personal, and educational goals.

Power was discussed as the only investigated social-structural factor that contributes to dehumanization. Studies such as Lammers and Stapel (2011) have found that participants who scored higher on the Personal Sense of Power Scale, were more likely to ascribe dehumanized terms (e.g., childish, irrational, unmannered) to fictitious members of low-status, other groups; and, in medical decisions, they recommended more painful but effective treatments. Gwinn et al. (2013) demonstrated that students who were assigned to a higher position in a partnership rated their lower-status partner as having subhuman traits. Dehumanization is often a result of implicit biases, and those biases can be activated in anyone by the slightest negative association (Haslam & Loughnan, 2014).

The Importance of a Positive Student and Teacher Relationship

Bronfenbrenner’s Ecological Systems Theory identifies three dimensions of the relational continuum and sense of belonging in a classroom. Bronfenbrenner (1979) emphasized the importance of a positive relationship between student and teacher and stated that

development occurs through the interplay between person and environment. In a classroom, the teacher usually dictates the environmental expectations and holds influence over the students in this way; so, establishing a positive relationship between a student and teacher would foster beneficial development for the student. The three dimensions he discussed are affect, power, and reciprocity. Relationship development occurs through how one feels about the other, the influence one has over the other, and the reciprocity of those interactions. Therefore, Bronfenbrenner suggested that when a teacher has a positive affect toward a student and shares the power in the classroom, the student will reciprocate interactions and become more engaged and motivated (Bronfenbrenner, 1979). In a multicultural classroom, it is imperative that the students feel this affect, sense of agency, and reciprocity so that they are comfortable to progress in their studies. However, when implicit biases and animosities present themselves, it can be difficult to create a positive classroom environment.

Ibrahim and El Zaatari (2020) applied Bronfenbrenner's Ecological Systems Theory to a classroom in a school in the United Arab Emirates (UAE). The researchers branded the relationships between the teachers and students as "negative", so they interviewed students and teachers independently to understand the root of these classroom animosities. They found that teachers were under stress to progress the students through the curriculum, and they focused on curriculum progression over effortful relationship building to foster growth and development. The students did not feel psychologically supported by the teachers, and in response, were disrespectful and disengaged during class. Ibrahim and El Zaatari identified the negative behaviors of the teachers toward the students in class, such as shouting or embarrassing the students, which resulted in negative affect and an over-insertion of power that the students responded to with disrespect, further destabilizing the relationship (Ibrahim & El Zaatari, 2020).

Though it can hardly be considered the fault of the teachers or students for these grievances, it is important to note that these classrooms demonstrate an example of how the imbalance of affect, power, and reciprocity can contribute to the disrepair of a classroom environment.

One strategy to improve the affect, power, and reciprocity in a classroom is conducting teacher-led self-affirmation activities with the students. Binning and colleagues (2019) conducted a longitudinal field experiment that assessed how self-affirmation exercises, led by general education teachers, would improve students' school trust and behavioral conduct. These students participated in activities that allowed them to periodically affirm their core personal values, through guided journaling activities, in sixth, seventh, and eighth grade. The researchers found that the students in the treatment group had significantly lower rates of discipline incidents and higher levels of school trust when compared to the control group of students. This study demonstrates that when students are able to validate their core beliefs within a classroom setting and by the instruction of their teacher, they are more likely to have positive experiences within the school environment.

Attention Deficit/Hyperactivity Disorder Overview

Attention Deficit/Hyperactivity Disorder (ADHD) is the most common neurodevelopmental disorder among school-age children that affects about 5% to 10% of children around the world and about 80% of those children have symptoms that persist into adulthood (Sagiv et al., 2013). It is characterized by high levels of hyperactivity, inattention, and impulsivity that are developmentally inappropriate (Chimiklis et al., 2018). These inappropriate levels cannot be explained by an intellectual disability, through symptoms of a comorbid disorder, or as a result of an inadequate learning environment (American Psychiatric Association,

2013) and the presence of ADHD symptoms can add significant stressors on parents, educators, and children (Moreau & Waldie, 2016).

Attention-Deficit/Hyperactivity Disorder (ADHD) also has high levels of comorbidity with other neurodevelopmental disorders, such as oppositional defiant disorder, conduct disorder, and developmental dyslexia (American Psychiatric Association, 2013), which can cause an increased need for attention and intervention that subsequently enhances distress levels in the normal parenting process. Parents' understanding of ADHD symptoms is also an area of concern because lower levels of education on the underlying mechanisms of ADHD have led to increased levels of distress in parents (Harrison & Sofronoff, 2002). Harrison and Sofronoff (2002) stated that parents with children with ADHD report feeling less skilled and feel less satisfaction in parenting when compared to their peers with neurotypical children. Additionally, parents with children with ADHD tend to view their children's misbehavior as intentional rather than as a result of incompetence. This misinterpretation then causes the parents to have a lower threshold of tolerance for their child's behavior. This can create a hostile environment within the home for the child and parent/s. Therefore, in the diagnosis of ADHD, it is important to educate the parent/s on the underlying mechanisms involved in ADHD. An area of significant deficit exhibited in those with ADHD that has been empirically studied and used at the core of many interventions, is the topic of self-regulation.

Teacher Efficacy with Attention-Deficit/Hyperactivity Disorder Student Populations

Many studies have shown that teachers feel ill-prepared with insufficient knowledge on implementing classroom management strategies for students with mental health needs (Stormont et al., 2011). More specifically, teachers have identified that dealing with persistent disruptive behaviors in the classroom was not taught to them by their college courses (Meister &

Melnick, 2003). Greenberg et al. (2013) conducted a study on classroom management strategies taught to preservice teachers in their education programs. They found that 84% of the programs devoted no more than 25% of the courses to classroom management strategies. In addition, preservice teachers were only taught about half of the classroom management strategies that are evidence based (Greenberg et al., 2013). When working with students with Attention-Deficit/Hyperactivity Disorder, it is important that classroom management strategies are implemented to offer regulation and structure (Poznanski et al., 2018). However, when teachers do not have sufficient knowledge of ADHD characteristics, treatment, and behavior outputs, in addition to classroom management strategies to promote a stable classroom environment for these populations, they often have lesser than positive views on students with ADHD.

Teacher's report feeling underprepared to use classroom management strategies (Greenberg et al., 2013). Early education teachers reported that they felt they were prepared to work with neurotypical students in the classroom and not students who display persistent disruptive behaviors (Meister & Melnick, 2003). In particular, it was found that teachers exhibit gaps in their knowledge on recognizing effective directions, positive reinforcement skills, and assessment on on-task behavior (Poznanski et al., 2018). These are damaging to the classroom environment as children with ADHD often exhibit an inability to respond to their environment in an appropriate manner (Barkley et al., 2006). Therefore, classroom management strategies suggested by research are both antecedent- and consequence-based strategies (DuPaul et al., 2011). Working with populations with ADHD has been shown to be related to negative perceptions about this population and to require more knowledge about this disability in order to hold a stable and inclusive classroom. Therefore, there has been an identified negative bias

against students who identify with ADHD in the classroom, which leads to the importance of combating implicit biases in the classroom.

The presence of Attention-Deficit/Hyperactivity Disorder in children has also been related to negative relationships with family members, peers, and teachers (Barkley et al., 2006). In addition, ADHD often coincides with higher levels of substance use, school attrition, academic underachievement, and other comorbid mental health disorders. Anderson et al. (2012) found that teachers currently working in the field have less than favorable attitudes towards students with ADHD, even though they have pre-existing knowledge about the disorder. Children with ADHD are often more likely to have difficult relationships with their peers and be socially rejected (Hinshaw, 2002). It was also found that teachers are more likely to perceive children with ADHD as unintelligent and see these children with unfavorable personalities and behavior (Batzle et al., 2010). While children with ADHD typically have lower grades, earn lower scores on standardized tests, are more often absent from school, and are more often held back a grade (Barbaresi et al., 2007), they are able to succeed if they have access to the right supports in the right environment. Even though teachers may become more knowledgeable about the disorder through direct experience with students in their classroom, they still lose confidence in their ability to manage the associated behaviors (Ohan et al., 2008) and they continue to develop negative perceptions about students with ADHD (Poznanski et al., 2018). There has not been a direct effect of increased teacher efficacy as they gain more knowledge on students with ADHD, but there are correlational studies that demonstrate a relationship between these two. Sciutto et al. (2000) found a correlation between teacher self-efficacy and ADHD knowledge. Legato (2011) furthered Sciutto et al. (2000)'s work and found that ADHD knowledge and self-

efficacy had a positive correlation where increased ADHD knowledge could be associated with higher self-efficacy.

It is important for teachers' self-efficacy and knowledge about working with Attention-Deficit/Hyperactivity Disorder populations to be increased as it could lead to better identification and management of diagnosed students (Poznanski et al., 2018). Teachers are often the first to notice age-inappropriate behaviors in the classroom and therefore have an important role in the identification and diagnosis of students with ADHD (Ward et al., 2022). It has been found that teachers' knowledge of ADHD has a statistically significant correlation with that teacher's positive perception of their ability to work with that population of students and create an inclusive environment within the classroom (Bussing et al., 2002; Ohan et al., 2008; Sciutto et al., 2000). In addition, as teachers' knowledge about ADHD increases, their negative perception about this population decreases (Bradshaw & Kamal, 2013). Therefore, if teachers are able to receive training to increase their knowledge of ADHD, that can lead to improved identification of students with diverse needs, more appropriate inclusion of diverse learners in the classroom, and more encouraging perceptions of students with ADHD; thus diminishing implicit biases that may come out against students with ADHD.

Combating Implicit Biases

Research suggests three strategies to promote positive interplay between the student and classroom environment are proposed. First, multiple studies cite the importance of *awareness* of one's own implicit biases and the effects they have. The application of practicing awareness is demonstrated in Pedersen's multicultural training paradigm. Pedersen (1994) proposed a model for developing multicultural awareness that is used to enhance teachers' multicultural competencies in the classroom. This paradigm includes three components: developing awareness

of self and others, developing knowledge and information about young children of color with disabilities, and developing skill competencies for working with individuals from other groups. This model encourages educators to become aware of their own unconscious biases as well as recognize the sociopolitical realities that are present in society. As an educator, it is one's duty to explore all judgments made at the expense of a student because, as noted above, negative affect toward a student's ability to achieve can have severe ramifications for that student's future.

Another suggestion to reduce prejudice in classrooms is the practice of meta humanization. Pavetich and Stathi (2020) conducted a study on meta-humanization as a way to reduce prejudice between groups. Meta-dehumanization consists of a group's self-perception as qualifying as less-than-human due to the dehumanization they experience. In return, this group projects dehumanizing qualities onto the perpetrators, and thus the cycle of animosity begins. However, meta-humanization is the act of perceiving one's own group as human with dignified qualities and subsequently they project more humanized qualities to other groups (Pavetich & Stathi, 2020). The concept of meta-humanization acting to reduce prejudice works with the self-categorization perspective, which states that ingroup members who consider themselves to be similar to outgroup individuals will attribute more positive qualities to those outgroup members. This research demonstrated, across three studies conducted examining groups who historically hold negative stereotypes against each other, that instilling self-perceptions of humanization in these groups can significantly reduce dehumanizing characteristics held against other groups. Meta-humanization is an important perspective which is used to interrupt the cycle of resentment and propagation of intolerance (Pavetich & Stathi, 2020). As the current study pertains to classroom environments, it could be beneficial to incorporate multicultural cooperative interventions that focus on the humanizing aspects of individuals from all groups.

Further, it could be hypothesized that if teachers are encouraged to practice meta-humanization, it could activate positive affective tendencies toward their students, intuitive shared power in classroom activities, and constructive reciprocity between students and teacher. Finally, it is hypothesized that the effects of educators practicing meta-humanization could encourage students who feel targeted by implicit stereotypes to be proud of their individualized strengths rather than resorting to deindividuation strategies that limit their opportunities for progress.

The third strategy for promoting a positive relationship between student and environment in the classroom is the practice of empathy and promoting it across groups. Similar to the self-categorization perspective cited above, empathy is the ability to adopt the perspective of another person and, sometimes, experience the emotional distress that may accompany difficult situations (Stephan & Finlay, 1999). Through Stephan and Finlay's (1999) literature review on the effects of empathy, they found that lack of empathy is related to antisocial behavior while the presence of empathic reasoning is related to prosocial behavior, and it can be "enhanced through training" (pg. 732). In order to facilitate positive classroom environments in a multicultural classroom, it could be beneficial to implement intergroup relations programs that focus on developing empathy. Stephan and Finlay cite a few strategies. First, they suggested that reading information about another group's experiences or hearing an outgroup member describe their experiences could facilitate empathic views; however, this may be more beneficial for those with high levels of dispositional empathy (Batson et al., 1997). Secondly, they discussed group facilitators explicitly teaching empathy as a virtue, because they argued that empathy can be taught (Barak, 1990; Erera, 1997; Pinzone-Glover et al., 1998). Thirdly, they discussed role playing exercises as a way to activate empathy. Weiner and Wright (1973) demonstrated in third graders that role-playing exercises diminished stereotype ideologies the students held against

each other. Overall, empathy has been demonstrated as a positive quality to possess for cooperative classroom environments and should be considered when developing a collaborative environment in a multicultural classroom.

Justification For the Current Study

Many studies have addressed teacher implicit bias toward populations of students in their classroom, but few studies that directly measure primary and secondary teacher implicit bias against students with Attention-Deficit/Hyperactivity Disorder in the United States. One study measured teacher's ratings on children with ADHD's behavior, intelligence, and personality (Batzle et al., 2010). Participants, including 294 teachers from kindergarten to 12th grade, were provided with a vignette of either a male or female students with no label, an ADHD label, or an ADHD with stimulant medication label. They were required to rate that student's personality, IQ, and behavior on a 7-point Likert scale. The researchers found that teachers had unfavorable views of children with the ADHD label and the ADHD with stimulant medication label when compared to their results of children with no label. This study demonstrated that teachers are likely to have lower expectations of students provided with labels. Batzle and colleagues (2010) utilized vignettes of students to gather only explicit, or consciously held, beliefs about students with ADHD. The current study will be evaluating teacher's implicit, or unconsciously held beliefs, in addition to explicit beliefs. Further, the current study will be analyzing teacher self-efficacy and how that influences their implicit biases toward students with ADHD.

Another study that measured primary teacher attitudes toward students with ADHD and anxiety in the classroom was conducted in Dublin, Ireland (Nolan, 2017). Nolan (2017) examined whether primary school teachers demonstrated a stigmatizing attitude or negative bias toward students with ADHD or anxiety in their classroom. Thirty-six teachers were assessed

using the Implicit Relational Assessment Procedure (IRAP). The results determined that teachers did not have stigmatized attitudes toward students with ADHD or anxiety in the classroom. Additionally, they found that the longer teachers were working in schools, the lower their stigmatizing scores. While these are optimistic results, studies are still needed to be conducted with schools in the United States and with larger populations of teachers across school settings and levels. Further, more studies are needed with assessments that do not require more than one response at a time such as studies that utilize the Go/No-Go Association Task (GNAT) to measure implicit biases.

Jackson and colleagues (2014) conducted a study measuring implicit biases using the GNAT. They were interested in assessing implicit bias training to improve attitudes toward women in STEM. Similar to the current study, Jackson and colleagues (2014) created their own personalized version of the GNAT to fit their research questions. However, in addition to the computerized version, they also administered a paper-version of the GNAT, which they found to have higher predictive validity. Valuable information was gathered from this study as they were able to administer the GNAT to 234 participants. Their results indicated that men did have fewer positive attitudes toward women in STEM. After training, there was a significant increase in men's paper GNAT scores indicating more favorable implicit associations toward women in STEM, but there was no change in their regular, computer-administered GNAT scores. The researchers suggest this is because the computerized version of the GNAT is more sensitive to personalized measures of implicit associations, than to more traditional implicit measures. Due to the limitations of the current study to access more participants, the computerized version of the GNAT will be administered, and this limitation will be noted in the results.

Kopera and colleagues (2015) also used the GNAT to measure implicit stigma of mental illness in mental health professionals and medical students. They also measured explicit bias to determine if their outcomes were directly a result of subconscious or conscious biases held. Kopera and colleagues (2015) administered this study in Polish at a university in Warsaw to 29 professionals and 28 non-professionals. The researchers found that both professionals and nonprofessionals self-reported positive explicit attitudes towards individuals with mental illness, but their implicit attitudes were indicative of negative bias towards these individuals. This study demonstrates the importance of measuring both implicit and explicit biases to gather data that accurately represents the level of bias held toward a population of individuals. The current study will be utilizing similar research methods in measuring both implicit and explicit bias to observe bias toward individuals with a mental disorder in primary and secondary school settings in the United States.

It is important that teacher implicit biases toward students with Attention-Deficit/Hyperactivity Disorder in the classroom are observed and evaluated in conjunction with teacher levels of self-efficacy. Students with ADHD already experience negative relationships with their parents, peers, and teachers, which can result in negative academic outcomes. However, teachers are also experiencing cognitive overload, time pressures, and stressful environments that often result in the activation of implicit bias (Boscardin, 2015). With teachers reporting low levels of self-efficacy with students with ADHD (Stormont et al., 2011) and negative views of students with ADHD (Anderson et al., 2012; Batzle et al., 2010), these students are at a great risk of receiving more negative feedback and subsequently academic underachievement. Therefore, the current study will use the GNAT to measure implicit biases

alongside an explicit bias measure and a demographic questionnaire to assess the level of implicit biases held by teachers toward students within ADHD in the classroom.

CHAPTER III

METHODOLOGY

The purpose of the study is to provide further information about the implicit biases held toward students with ADHD within the classroom and the influential role of teacher self-efficacy. The current study answered the following three research questions through the appropriate statistical analyses:

Research Questions

Q1 Do teachers hold more implicit biases toward students identified with ADHD than neurotypical students in their classroom?

Q2 Is there a statistically significant relationship between teacher explicit and implicit attitudes toward students identified with ADHD in the classroom?

Q3 Is there a relationship between teacher efficacy and implicit biases they hold toward students identified with ADHD in the classroom?

Participants

Participants included were general education teachers who work with kindergarten through twelfth grade students. School counselors, special education teachers, pre-service teachers, principals, vice principals, speech language pathologists, secretaries, interventionists, and occupational therapists who are involved with schools were not included in the analysis. 40 participants were recruited. While a linear regression requires of 10 observations per variable (Bobbitt, 2021), the current study evaluated eight variables and was going toward enough participants to satisfy this requirement. Meanwhile, paired samples t-tests do not require a

minimum sample size (Bobbitt, 2021). Participants were recruited nation-wide through convenience and snowball sampling.

The researcher solicited participants through mutual acquaintances, social media advertisements, and teacher listservs. Mutual acquaintances were sent an email with a hyperlink for participants to access the test materials. The mutual acquaintances were instructed to send this study out to persons they know in the teaching profession. A copy of the email that was sent to mutual acquaintances may be found in Appendix C. Social media advertisements were posted on the researcher's personal Facebook page and other Facebook groups (e.g., Said No School Psychologist Ever, Teachers Supporting Teachers, and Bored Teachers). Teachers Supporting Teachers and Bored Teachers Facebook groups denied the post to become public. The researcher also posted this study to Dissertation survey groups, such as Dissertation Survey Exchange - Share Your Research Study; Survey Exchange/Survey Group/Survey Participants; SurveyCircle/Survey Panel - Post Survey, Find Participants, Get Responses; Survey Exchange; and Survey Sharing - Survey Exchange/Swap - Find More Survey Participants. Further, the researcher posted the study on Reddit pages such as r/schoolpsychology and r/AskAcademia, but both posts were flagged and denied being public. A copy of the message posted on these sites may be found in Appendix C. A message was also sent out through American Association of Educators (AAE) twice that sent emails to teachers nationwide. A copy of the email sent out to the AAE listserv may be found in Appendix C. Sampling bias was a possible threat to external validity that was considered. This threat occurs when participants in the study significantly differ from the more general population. Because convenience and snowball sampling methods do not result in the complete representation of general education teachers around the country, there was a considerable threat to external validity. However, this was beyond the scope of the study and

this limitation in sampling was addressed in the Discussion section. There was one possible threat to internal validity identified that would occur as a result of these sampling methods. This threat is identified as social interaction and refers to the interaction between participants from different groups that can influence the outcome. Convenience and snowball sampling likely resulted in participant teachers who attend the same school discussed the test with each other. However, this was considered unlikely as participation was confidential and the order of measures given was intentional to gain the most accurate information. Therefore, it was determined to keep the order of the measures given consistent for each participant.

Once a participant volunteered for the study, they were sent access to the study materials through email in the form of a hyperlink. When they clicked the link, the form appeared, and they were required to click a box indicating they understood the scope of the study and the possible advantages and disadvantages of participating. The consent form may be found in Appendix D. Once they consented, participants were presented with the demographic questionnaire, followed by the GNAT (implicit attitude measure), TALDS (explicit attitude measure), and finished with the Teacher Efficacy Scale-Short Form. When considering the influence of peer reactions when completing these questionnaires, a threat to explicit bias was identified. The Hawthorne effect is the phenomenon of participants altering their behavior because they know they are being studied. Participants may feel the need to try to answer "correctly" as they believe their counterparts think they should answer. This effect is similar to the social desirability bias considered in the research on implicit bias. The researcher addressed this threat by ensuring participants understood their data is anonymous throughout administration and data analysis. The survey measures can be found in Appendix A. The GNAT

administration was also curated to elicit the most accurate representation of teacher implicit biases.

Measures

All participants were asked to complete the Teachers' Attitudes Towards Learners with Disability Scale (TALDS), the Teacher Efficacy Scale – Short Form (Hoy & Woolfolk, 1993), the Go/No-Go Association Task (GNAT; Nosek & Banaji, 2001), and a demographic questionnaire.

Demographic Questionnaire

The demographic questionnaire was completed first. This questionnaire included questions asking for age, gender identity, the state in which they practice, what type of school they are employed in (e.g., private, public, or charter), which grade they teach, how long they have been teaching, what degree they currently hold (i.e., Master's, Bachelor's, Doctorate, other), on average how many students they have taught with ADHD, whether they have ever been diagnosed with ADHD themselves, and whether they have a person close to them who has ever been diagnosed with ADHD. If participants do not qualify for the study criteria through the demographic questionnaire, the test will be discontinued. A copy of the demographic questionnaire can be found in Appendix A.

Teachers Attitudes Towards Learners with Disability Scale (TALDS)

The Teachers' Attitudes Towards Learners with Disability Scale (TALDS) was developed by Bassey and colleagues (2020) to measure teacher explicit attitudes towards students with disabilities in the classroom. This scale was created through the lens of the Three Component Theoretical Framework, which identifies attitudes as characterized by direction, intensity, and target (Bailey, 2004). Attitude was also described to have three components, a

cognitive component, an affective component, and a behavioral intent. The researchers utilized the Three-Component Theoretical Framework and the three dimensions of attitude in the formation of their scale (Bassey et al., 2020). These components and dimensions are scored on a 6-point Likert scale ranging from 1 = Very Strongly Disagree to 6 = Very Strongly Agree for positive items and negative items are reverse coded with 6 = Very Strongly Disagree and 1 = Very Strongly Agree. An exploratory factor analysis (EFA) and an internal consistency analysis were conducted to determine the overall validity and reliability of the TALDS. The result of the EFA yielded a three-factor solution with a collective variance of 57.33%, with factor 1 (21.845%) named *affective attitudes*, factor 2 (21.102%) named *cognitive attitudes*, and factor 3 (14.785%) named *behavioral attitudes*. Content validity of the TALDS was examined next.

Content validity of the TALDS was examined and resulted in a final 36 items, with 18 items positively worded and 18 items negatively worded (Bassey et al., 2020). An Exploratory Factor Analysis (EFA) was conducted and was able to identify the items that fell into the distinctive factions with 10 items measuring affective attitudes, 10 items measuring cognitive attitudes, and 10 items measuring behavioral attitudes. In addition, internal consistency was determined through Cronbach's Alpha and was deemed internally consistent for all three subscales (affective [α= .938], cognitive [α= .938], and behavioral [α= .860]). Further, the overall instrument (α= .849) received an alpha higher than the minimal acceptable benchmark of .70 respectively. The current study will use this survey to measure explicit attitudes of teachers toward students with additional learning needs in the classroom.

For the purpose of the current study, the TALDS was altered before test administration. The first alteration included a reduction of the Likert scale options from six options to five options (e.g., 1 = Strongly Agree, 2 = Agree, 3 = Neither Agree nor Disagree,

4 = Disagree, 5 = Strongly Disagree). The Likert scale was reduced to five options in order to increase soundness of the TALDS for the proposed population (Johnson & Morgan, 2016). In addition, the TALDS was normed on a Nigerian population of teachers and therefore the language used within the TALDS was more appropriate for that population. The current study was conducted with teachers in the United States; thus, language was altered to better represent local communication standards. Further, questions were altered to better reflect the variables used within the current study. Originally, the TALDS referred to students as "special learners", "students with disabilities", and "normal learners". These were changed to reflect "ADHD" and "neurotypical" students as they more closely align to the study at hand. A revised copy of the TALDS can be found in Appendix A.

Teacher Efficacy Scale - Short Form

The Teacher Efficacy Scale was originally developed by Gibson and Dembo (1984) and then adapted by Woolfolk and Hoy (1988, 1990). The short form of the Teacher Efficacy Scale includes five personal and five general teaching efficacy items, which were selected based on their higher levels of factor loadings from previous research (Hoy & Woolfolk, 1993). Respondents were expected to rate their level of efficacy on a six-point Likert scale with one equaling "strongly agree" and six equaling "strongly disagree". Teachers with higher ratings were expected to have higher teacher efficacy. Reliability was measured through alpha coefficients with .77 for general teaching efficacy and .72 for personal teaching efficacy. A multitrait multimethod analysis was also performed and supported both the convergent and discriminant validity of this scale (Gibson & Dembo, 1984; Woolfolk & Hoy, 1988, 1990). Convergent and discriminant validity were analyzed through three traits of teacher self-efficacy: *verbal ability*, flexibility, and *teacher efficacy*. These three traits were identified in previous

research (Bandura, 1977) as present in effective teachers who hold higher levels of teacher efficacy. A positive correlation ($r = .42$, $p < .001$) was found between these three traits, which met the criteria for convergent validity. *Teacher efficacy*, *verbal ability*, and *flexibility*, also all meet criteria for discriminant validity. This means that the questions measuring those traits were able to differentiate between the constructs measured. Convergent and discriminant validity are important aspects of construct validity that ensure the questionnaire questions are measuring what they are supposed to measure.

For the purpose of the current study, the Teacher Efficacy Scale – Short Form was altered before test administration. The alteration included a reduction of the Likert scale options from six options to five options (e.g., 1 = Strongly Agree, 2 = Agree, 3 = Neither Agree nor Disagree, 4 = Disagree, 5 = Strongly Disagree). The Likert scale was reduced to five options in order to increase soundness of the Teacher Efficacy Scale – Short Form for the proposed population (Johnson & Morgan, 2016). With revisions, the Teacher Efficacy Scale yielded a Cronbach's Alpha of .466, which is lower than preferred. A copy of the revised Teacher Efficacy Scale – Short Form can be found in Appendix A.

Go/No-Go Association Task

The GNAT is a variation of the Implicit Associations Task (IAT) created by Harvard University. Nosek and Banaji (2001) created the GNAT as a measure of implicit social cognition that does not rely on time sensitivity to complete association tasks. (Nosek & Banaji, 2001). The authors argued that when participants are forced to answer a question in a time sensitive manner, they are more likely to make a mistake, causing more than one explanation for their errors in responding. Further, they argued that the response indication is easier for the GNAT because the instructions are more simplistic. When a participant believes a term belongs in a

category, they press the spacebar. When the participant believes a term does not belong in a category, they do not press any keys. This allows for the associations to be assessed by the degree to which the participant believes this item belongs in a category or not (Nosek & Banaji, 2001).

Nosek and Banaji (2001) used Signal Detection Theory (SDT) to inform the measurement of the implicit associations held by the participant between the target category and the attribute (Nosek & Banaji, 2001). In SDT, bias (the statistic, β) and sensitivity (*d'*) are indexed separately and calculated through error-rates. Bias and sensitivity are considered response strategies in the speed-accuracy tradeoff as the GNAT records how quickly the participant responds to item pairings that are more familiar than to those that are not. When participants respond quicker to an association, that marks an implicit association they hold with that stimulus. For example, Nosek and Banaji (2001) piloted their program to test fruit and bugs with positive and negative stimuli. They found that participants had faster responses when fruit and positive words were paired and when bugs and negative words were paired, than when fruit and negative words were paired, and bugs and positive words were paired. According to SDT, these participants more easily associated fruit with positive words and bugs with negative words, meaning they implicitly believed fruits are good and bugs are bad. Nosek and Banaji (2001) argue that bias is conceptually independent from sensitivity and therefore the participant response strategy does not dim the measure of importance. Nosek and Banaji (2001) demonstrate the validity and reliability of the GNAT through multiple studies (Nosek & Banaji, 2001).

Nosek and Banaji (2001) conducted six experiments to measure the reliability and validity of the GNAT on measuring implicit attitude associations. The experiment most similar

to the current study was their final experiment where they measured implicit attitudes towards culturally diverse groups. This sixth experiment was also the only study that had enough participants to test internal reliability. They found an average split-half reliability of r = .20, which presents a modest reliability of this implicit measure. Although this is not an ideal reliability result, it was sufficient at the time this study was conducted. Measuring reliability for the GNAT has proven to be difficult, but not impossible. Williams and Kaufmann (2012) conducted more recent reliability tests on the GNAT and identified beneficial methods for testing for reliability. They found that if each block of the GNAT runs at least 30-40 items per block, that will be met with "acceptable" reliability (r > .60 - .70). 80-90 trials per block found better results with r>.80 reliability. Split-half estimates were found to underestimate the reliability of full-length blocks. Utilizing pilot data to determine the reliability of different block lengths is suggested and will be implemented within the current study (Williams & Kaufmann, 2012).

Williams and Kaufmann (2012) also stated that implicit measures are beneficial for reducing response bias while maintaining face validity, however they did not assess validity within this study. Boldero and colleagues (2007) conducted validity tests on the GNAT and found that the GNAT metric (d') has convergent validity between GNAT-assessed implicit and explicit personality, when systematic variance is controlled. They also found preliminary evidence for the predictive utility of the GNAT, determining that the GNAT is a promising method for assessing implicit attitudes. Another study conducted by Sturge-Apple and colleagues (2015) on parent implicit attitudes toward physical punishment found that their GNAT distinguished between positive and negative implicit attitudes towards using physical discipline. Construct validity of the GNAT-Physical Discipline as an assessment tool for

implicit attitudes toward physical discipline was found along with convergent validity of the GNAT-Physical Discipline with mother's reports of physical discipline. In addition, they found that the GNAT Physical Discipline was able to discriminate physical discipline from other forms of discipline. In a third study conducted by Teachman (2007) on implicit fear of spiders found evidence of convergent and discriminant validity. In addition, they identified predictive validity of the GNAT through conducting a behavioral avoidance task in addition to using the GNAT spider fear task in accordance with questionnaire measures and self-reported anxiety scales. These findings suggested that the GNAT, when run appropriately, possesses adequate validity.

Procedures

At the beginning of the GNAT administration, participants were presented with a definitions page defining words they should understand before beginning test administration. The definitions page can be found in Appendix B. Then, the participants were presented with two practice blocks to orient them to the task. These blocks required them to classify objects with no evaluative category used (i.e., blue and sweater) and then classify an evaluative category with no objective category used (i.e., nice and swirl). These practice blocks had a response deadline of 1000 msec. Practice blocks each had 20 practice trials. If participants did not complete the practice blocks with reasonable precision, the test was discontinued. After the practice blocks, the test blocks began to be administered. Per recommendations from Nosek and Banaji (2001), the response deadline for participants to click the target category stimuli was set to 675 msec, which is directly in the middle of the recommended deadline of 500-850 msec. To increase reliability of the GNAT, it was recommended that the participant is presented with 80-90 trials per block (Williams & Kaufmann, 2012). The participants for the current study were presented

with 80 trials per block. The block lengths were the same length of time. Implicit attitude to ADHD students in the classroom was assessed by a four-block GNAT counterbalanced. First, the word “ADHD” was paired with positively valanced words (e.g., capable, friendly, honest, admired, hopeful) and the word “Neurotypical” was paired with negatively valanced words (e.g., chaos, failure, fault, lonely, nuisance). These words showed one at a time and the participant was required to click the spacebar if the word was positively valanced or “ADHD” shows up, and to click nothing if “Neurotypical” or a negatively valanced word appeared on the screen. Then in the next block, participants were asked to click the spacebar whenever they saw the word “Neurotypical” or negatively valanced words, and to click nothing when the word “ADHD” or positively valanced words appeared on the screen. In the third test block, the participants were directed to click spacebar for “Neurotypical” and positively valanced words, and to click nothing for “ADHD” and negatively valanced words. Finally, for the fourth block, participants were directed to click the spacebar for “ADHD” and negatively valanced words, and to press nothing for “Neurotypical” and positively valanced words. The program marked how quickly the participants clicked the spacebar to identify the target and evaluative categories in milliseconds. The quicker the response, the more closely the participant identified that target category with the evaluative (valanced) words. The valanced words were chosen from a word bank of positively and negatively valanced words rated by participants in a study conducted by Janschewitz (2008). A visual representation of block format is outlined in Table 1.

Table 1

Format of Go/No-Go Association Task Blocks

Block	Task Requirement
Block 1	Press Spacebar for Positive Words & ADHD
Block 2	Press Spacebar for Negative Words & Neurotypical
Block 3	Press Spacebar for Positive Words & Neurotypical
Block 4	Press Spacebar for Negative Words & ADHD

Once participants completed the study. They were presented with a "Thank You!" screen and the program closed out. The data was gathered on PsyToolKit (Stoet, 2010; Stoet, 2017) and collected by the researcher.

Data Collection

Data was collected through the PsyToolKit program (Stoet, 2010; Stoet, 2017). Once participants completed the surveys and implicit association task, their data was stored and ready to be reviewed by the examiner. G-Power analyses indicate that 90 participants are sufficient with a medium effect size of 0.3 ($\alpha = 0.5$; Ashford et al., 2019); however, due to difficulty recruiting participants, 40 participants satisfied the sample size.

Data Analysis

Research Questions

Q1 Do teachers hold more implicit biases toward students identified with ADHD than neurotypical students in their classroom?

Q2 Is there a statistically significant relationship between teacher explicit and implicit attitudes toward students identified with ADHD in the classroom?

Q3 Is there a relationship between teacher efficacy and implicit biases they hold toward students identified with ADHD in the classroom?

Research question one was answered through a one-sample t-test (matched pairs). Research question two was answered with a Pearson correlation. Research question three was answered with a linear correlation model. The alpha coefficient was set at .05 to determine statistical significance.

Research Question 1

A one-sample t-test with matched pairs was run to answer research question one and two to account for the differences between the variables measured (e.g., implicit biases against students with and without ADHD; the difference in scores between implicit and explicit attitudes). There are five assumptions to consider when running a t-test (Maverick et al., 2021). First, the scale of measurement used for collected data should follow a continuous or ordinal scale. Second, the data collected must represent a randomly selected portion of the population of interest. Third, a normal distribution of data should be observed when plotted. Fourth, a reasonably large sample size should be used. Fifth, there should be a homogeneous, or equal, variance. Each of these assumptions was considered and met through data analyses. For Research Question 1, implicit bias was measured through response times on the GNAT. In accordance with SDT, bias (the statistic, β) and sensitivity (*d'*) are measured through response times of the participants as they match the target category (ADHD students) with the stimuli (positive-valence or negative-valanced words). Previous studies found that when a participant makes a quicker response to a target category and stimulus (e.g., 727 msec; Bassett & Dabbs Jr., 2005), they hold an implicit attitude about that category. When a participant demonstrates a slower response (e.g., 781 msec; Bassett & Dabbs Jr., 2005) to a target category paired with a stimulus, they do not hold that implicit bias. For research question 2, explicit attitudes were measured by teacher responses to the TALDS; teachers with higher scores may demonstrate

lower negative attitudes towards students with disabilities. Implicit attitudes were measured by response times in the GNAT outlined above. Descriptive statistics on participant responses were calculated.

Research Question 2

The second research question aimed to determine if there was a statistically significant relationship between teacher explicit and implicit attitudes towards students identified with ADHD in the classroom. The null hypothesis stated that there is no statistically significant relationship between these attitudes, while the alternative hypothesis suggested that there is a statistically significant negative relationship between teacher explicit and implicit attitudes towards students with ADHD in the classroom. A positive, significant relationship would indicate that explicit and implicit attitudes reported were similar, while a negative, significant relationship would determine the attitudes were different. The TALDS questionnaire was used to measure explicit bias in general education teachers and consisted of 28 questions (see Appendix A). The scale's internal consistency was measured through Cronbach's alpha.

The first assumption of a Pearson's correlation requires that the variables measured are on a continuous scale. The implicit bias test was measured in milliseconds while the explicit bias questionnaire was measured from 1 - 140. The second assumption requires that the two variables be paired, where each participant has two values for each variable. Each participant was represented by one score on the implicit bias measure and one score on the explicit bias measure. The third assumption assessed linearity between the two variables measured, the fourth assumption observed significant outliers, and the fifth assumption determined there should be bivariate normality. Preliminary analyses were conducted to demonstrate linearity with both

variables normally distributed, as assessed by Shapiro-Wilk's test. Further, any outliers observed were excluded from the analysis.

Research Question 3

The third research question was answered through a linear regression model to demonstrate the relationship between teacher efficacy and teacher-held implicit biases toward students with ADHD in the classroom. The linear regression model controlled for years teaching, personal experience (degree obtained), license held, ADHD familiarity, and level of teaching (e.g., primary and secondary levels). The Teacher Efficacy Scale-Short Form and demographic questionnaire provided the data results for this research question. Dummy coding was applied to the following control variables: personal experience (degree obtained), license type, other diagnosed (whether teachers knew someone diagnosed with ADHD), and the level they teach (K-5 or 6-12). Table 3 displays how the variables were coded for the third research question.

There are five assumptions that must be met when running a linear regression (Vadapalli, 2020). The first assumption is there must be a linear relationship that exists between the dependent and independent variables. This assumption was tested through the production of scatter plots to determine linearity of the data. The second assumption is that the residuals are independent of each other, meaning there is no correlation between the error terms. A Durbin-Watson (DW) statistical test was conducted to test this assumption. A third assumption of a linear regression model is the assumption of homoscedasticity. A scatterplot that shows residuals versus the fitted value was created to test this assumption. If the residuals on the scatterplot have a prominent pattern, then homoscedasticity is present in the data. Finally, the fourth assumption is the normal distribution of error terms. This assumption was tested through

a Q-Q plot to see if the data points on the graph demonstrate a straight line. If a straight line is presented, then this assumption has been met. The fifth and final assumption observes outliers. If outliers were present, they would have been removed from the data analysis. These assumptions were monitored and evaluated as the researcher analyzed the data collected.

The third research question involves implicit biases as the dependent variable and teacher efficacy as the independent variable. Implicit biases were measured by response times on the GNAT and teacher efficacy was measured through teacher responses in the teacher efficacy scale. The higher the score of teacher responses, the higher their sense of efficacy. The quicker the response times of the participants on the GNAT, the more likely an implicit bias is present. Descriptive statistics on participant responses were calculated.

Table 2

Research Question 3 Variables Coded For SPSS

Variable	Multiple Choice	Dummy Code
Years_Teaching	>1-10 Years	0 0
	11-20 Years	0 1
	20+ Years	1 0
Pers_Experience	Bachelor's Degree	1 0 0
	Master's Degree	0 1 0
	Doctorate Degree	0 0 1
	Other	0 0 0
License_Type	Temporary License	0 0 0 0 0
	Provisional License	1 0 0 0 0
	Initial License	0 1 0 0 0
	Professional License	0 0 1 0 0
	Alternative License	0 0 0 1 0
	Teacher Certificate	0 0 0 0 1
Level_Teaching	Elementary (K-5)	1 0
	Secondary (6-12)	0 1
	Other	0 0
You_Diagnosed	1 = Yes	N/A
	0 = No	
Other_Diagnosed	Yes	1 0
	No	0 1
	Unsure	0 0

CHAPTER IV

RESULTS

The following chapter reviews the results gathered from data analyses conducted. Implicit biases, explicit biases, and teacher self-efficacy were evaluated to investigate the relationship between general education teachers and students with ADHD in the classroom. General information about the sample gathered will be presented followed by the results from the statistical analyses. Demographics for the sample of participants (n = 40) are listed in Table 3.

Table 3

Sample Demographics

Age	***n (%)***
18-25	5 (12.5)
26-35	11 (27.5)
36-45	13 (32.5)
46+	11 (27.5)
Gender	
Male	4 (10.0)
Female	32 (80.0)
Non-Binary	3 (7.5)
Other	1 (2.5)
State Employed	
Colorado	27 (67.5)
Louisiana	10 (25.0)
Texas	2 (5.0)
Massachusetts	1 (2.5)
Type of School Employed	
Private	9 (2.25)
Public	27 (67.5)
Charter	4 (10.0)
Grade Taught	
Elementary (K-5)	20 (50.0)
Secondary (6-12)	20 (50.0)
Years' Experience Teaching	
>1-10 Years	19 (47.5)
11-20 Years	10 (25.0)
20+ Years	11 (27.5)
Highest Level of Education Completed	
Bachelors	18 (45.0)
Masters	19 (47.5)

Table 3, continued	
Highest Level of Education Completed	***n (%)***
Doctorate	2 (5.0)
Other	1 (2.5)
License Type	
Temporary	1 (2.5)
Provisional	0 (0.0)
Initial	7 (17.5)
Professional	21 (52.5)
Alternative	1 (2.5)
Teaching Certificate	10 (25.0)
Estimated Students with ADHD Taught	
1-50	30 (75.0)
51-100	3 (7.5)
101-150	1 (2.5)
>151	6 (15.0)
Personally Diagnosed with ADHD	
Yes	12 (30.0)
No	28 (70.0)
Someone Close Diagnosed with ADHD	
Yes	24 (60.0)
No	12 (30.0)
Unsure	4 (10.0)

Research Question 1

Q1 Do teachers hold more implicit biases toward students identified with ADHD than neurotypical students in their classroom?

The first research question aimed to determine if teachers exhibit more implicit biases towards students identified with Attention-Deficit/Hyperactivity Disorder compared to neurotypical students. The null hypothesis stated that there's no significant difference in teacher bias towards these two groups, while the alternative hypothesis posited that teachers' implicit

bias toward students identified with ADHD is significantly higher than implicit bias toward neurotypical students. A paired-samples t-test was used to determine whether there was a statistically significant mean difference between the potential implicit bias held by general education teachers, toward students with ADHD in the classroom when compared to neurotypical students. There are five assumptions to consider when conducting a t-test, as outlined by Maverick and colleagues (2021). First, the scale of measurement applied to the gathered data should adhere to a continuous or ordinal scale. Second, the collected data must represent a randomly chosen subset of the target population. Third, when plotted, the data should exhibit a normal distribution. Fourth, it's crucial to employ a sufficiently large sample size. Fifth, there needs to be uniformity, or equal variance, among the data sets.

Through testing assumptions, four outliers were detected that were more than 1.5 box-lengths from the box's edge in a boxplot. Inspection of their values revealed that one outlier was extreme. A Shapiro-Wilk test of normality was conducted, and Normal Q-Q Plots were created. A Shapiro-Wilk test of normality is recommended with small sample sizes (<50 participants) and when the examiner is not confident visually interpreting Normal Q-Q Plots. When all four outliers were included, the Shapiro-Wilk normality assumption was not met ($p < .01$). When only the extreme outlier was excluded, the Shapiro-Wilk normality assumption was still not met ($p=.01$). When all outliers were excluded, the Shapiro-Wilk normality assumption was met ($p=.34$). Nevertheless, the disparity scores between the ADHD and neurotypical responses exhibited a normal distribution, confirmed through visual examination of a Normal Q-Q Plot that included all outliers. Subsequently, the paired samples t-test was conducted under three conditions: including all outliers, excluding only the extreme outlier, and excluding all outliers. All other assumptions of a paired samples t-test were met.

When the analysis was run with all outliers included, participants clicked faster when instructed to focus on Neurotypical/Positive and ADHD/Negative (M = 572.871, SD = 44.169) as opposed to focusing on ADHD/Positive and Neurotypical/Negative (M = 573. 630, SD = 49. 688). The Neurotypical/Positive and ADHD/Negative trials elicited a mean increase of -.758 msec, 95% CI [-9.82, 8.30] in the speed of selection compared to the ADHD/Negative and Neurotypical/Positive trials. The different trials did not elicit a statistically significant difference in response times between ADHD/Positive and Neurotypical/Negative; and ADHD/Negative and Neurotypical/Positive trials, $t(79) = -0.167$, $p < .434$.

When run with only the extreme outlier excluded, participants clicked faster when instructed to focus on ADHD/Positive and Neurotypical/Negative (M = 571.289, SD = 45.352) as opposed to focusing on Neurotypical/Positive and ADHD/Negative (M = 573.195, SD = 44.355). The Neurotypical/Positive and ADHD/Negative trials elicited a mean increase of 1.91 msec, 95% CI [-5.53, 9.34] in the speed of selection compared to the ADHD/Negative and Neurotypical/Positive trials. The different trials did not elicit a statistically significant difference in response times between ADHD/Positive and Neurotypical/Negative; and ADHD/Negative and Neurotypical/Positive trials, $t(78) = 0.510$, $p < .306$.

When run with all outliers excluded, participants clicked faster when instructed to focus on ADHD/Positive and Neurotypical/Negative (M = 568.5804, SD = 44.07147) as opposed to focusing on ADHD/Negative and Neurotypical/Positive (M = 573.9405, SD = 45.04585). The Neurotypical/Positive and ADHD/Negative trials elicited a mean increase of 5.36 msec, 95% CI [-1.21, 11.93] in the speed of selection compared to the ADHD/Negative and Neurotypical/Positive trials. The different trials did not elicit a statistically significant difference

in response times between ADHD/Positive and Neurotypical/Negative; and ADHD/Negative and Neurotypical/Positive trials, $t(75) = 1.624$, $p < .054$.

All three analyses resulted in a significance value greater than .05. Therefore, the null hypothesis was retained for the first research question. There was not a significant difference in response times when general education teachers were told to focus on ADHD/Positive and Neurotypical/Negative; and ADHD/Negative and Neurotypical/Positive trials. Table 4 displays the results and descriptive statistics from this section.

Table 4

Research Question 1 Results and Descriptive Statistics

n	Neurotypical/Positive and ADHD/Negative		Neurotypical/Negative and ADHD/Positive	*p*
80	*M* = 572.871	<	*M* = 573.630	.434
	SD = 44.169		*SD* = 49.688	
79	*M* = 573.195	>	*M* = 571.289	.306
	SD = 44.355		*SD* = 45.352	
76	*M* = 573.941	>	*M* = 568.580	.054
	SD = 45.046		*SD* = 44.071	

Research Question 2

Q2 Is there a statistically significant relationship between teacher explicit and implicit attitudes toward students identified with ADHD in the classroom?

The second research question aims to determine if there's a statistically significant relationship between teacher explicit and implicit attitudes towards students identified with ADHD in the classroom. The null hypothesis states that there is no statistically significant relationship between these attitudes, while the alternative hypothesis suggests that there is a statistically significant negative relationship between teacher explicit and implicit attitudes

towards students with ADHD in the classroom. A positive, significant relationship would indicate that explicit and implicit attitudes reported were similar, while a negative, significant relationship would determine the attitudes were different. The TALDS questionnaire was used to measure explicit bias in general education teachers and consisted of 28 questions (see Appendix A). The scale had a high level of internal consistency, as determined by Cronbach's alpha of 0.813.

A Pearson's product-moment correlation was run to assess the relationship between explicit and implicit biases held by general education teachers toward students with ADHD in the classroom. Forty participants were recruited. The first assumption of a Pearson's correlation requires that the variables measured are on a continuous scale. The implicit bias test is measured in milliseconds while the explicit bias questionnaire is measured from 1 - 140. The second assumption requires that the two variables be paired, where each participant has two values for each variable. Each participant was represented by one score on the implicit bias measure and one score on the explicit bias measure. The third, fourth, and fifth assumptions ensure a linear relationship is present between the two variables, there are no significant outliers, and there should be bivariate normality. Preliminary analyses showed the relationship to be linear with both variables normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$), and there was one outlier that was excluded from the final analysis. There was no statistically significant correlation between explicit and implicit biases held by general education teachers toward students with ADHD in the classroom, $r(39) = .145$, $p = .378$, where explicit bias results statistically explained 3% of the variation in response times on the GNAT, measuring implicit bias. The relationship between explicit and implicit bias results was not statistically significant. Therefore, we cannot reject the null hypothesis and

cannot accept the alternative hypothesis - there is a statistically significant negative relationship between teacher explicit and implicit attitudes towards students with ADHD in the classroom.

Research Question 3

Q3 Is there a relationship between teacher efficacy and implicit biases they hold toward students identified with ADHD in the classroom?

The third research question aimed to investigate if there's a relationship between teacher efficacy and their implicit biases towards students with Attention-Deficit/Hyperactivity Disorder in the classroom. This relationship is analyzed while controlling for factors such as years of teaching experience, personal experience (degree obtained), license type, level of teaching (Elementary [K-5] or Secondary [6-12]), whether the participant is diagnosed with ADHD, and whether they personally know someone diagnosed with ADHD. The null hypothesis suggested that there would be no relationship between teacher efficacy and implicit biases towards students with ADHD, while the alternative hypothesis proposed that there would be a statistically significant relationship between these variables.

The first assumption of a linear regression to consider is the presence of a linear relationship between the dependent and independent variables. To assess linearity, a scatterplot of teacher self-efficacy against implicit bias with a superimposed regression line was plotted. Visual inspection of these two plots indicated a linear relationship between the variables. The second assumption involves the independence of residuals, indicating no correlation between error terms. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.102. A third assumption is observed homoscedasticity. There was homoscedasticity, as assessed by visual inspection of a plot of standardized residuals versus standardized predicted values. The fourth assumption pertains to the normal

distribution of error terms, which was assessed through a Q-Q plot. Residuals were normally distributed as assessed by visual inspection of a normal probability plot. Finally, the fifth assumption tested the presence of outliers; there were no outliers observed. A summary of the multiple regression analysis was included in Table 5.

Table 5

Summary of Multiple Regression Analysis

Variable	*B*	*SE*	*β*	*t*	*p*
(Constant)	765.669	64.700		11.834	<.001
Teacher efficacy	-3.954	1.584	-.359	-2.496	.018
Years teaching	21.787	8.620	.456	2.528	.017
Pers experience	-14.872	9.089	-.255	-1.636	.112
License	-13.704	5.605	-.395	-2.445	.020
You diagnosed	10.566	14.975	.120	.706	.486
Other diagnosed	-28.162	9.439	-.469	-2.984	.005
Level teaching	-9.278	9.690	-.142	-.957	.345

A linear regression established that teacher self-efficacy could statistically significantly predict implicit bias held. In SPSS, all control variables were entered at once with the variable of interest. None of the variables were removed from the model. The prediction equation was:

Implicit bias = 765.669 + -3.954*self-efficacy + 21.787*YearsTeaching + -14.872*PersExperience + -13.704*License + 10.566*YouDiagnosed + -28.162*OthDiagnosed + -9.278*LevelTeaching.

Average teacher self-efficacy statistically significantly predicted implicit bias held, $F(7, 32) = 2.931$, $p = .017$ and the entire model accounted for 25.7% of the explained variability in implicit bias with adjusted $R^2 = 25.7\%$, a medium size effect according to Cohen (1988).

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Discussion of Findings

The current study investigated the challenges teachers face when dealing with students diagnosed with Attention-Deficit/Hyperactivity Disorder, and the widespread perceptions of unpreparedness and negative attitudes about working with neurodiverse students among educators (Sagiv et al., 2013; Smith et al., 2006; Stormont et al., 2011). These challenges spilled over into students' social and academic domains (Barbaresi et al., 2007; Harrison & Sofronoff, 2002; Hinshaw, 2002), and are further exacerbated by implicit biases (Kahneman, 2011), stressing the importance of addressing both teacher efficacy and implicit biases to bolster support structures for students with ADHD in educational environments. The purpose of the study is to provide further information about the implicit biases held toward students with ADHD within the classroom and the influential role of teacher self-efficacy.

Research Question 1

Q1 Do teachers hold more implicit biases toward students identified with ADHD than neurotypical students in their classroom?

The first research question resulted without a statistically significant result, which indicated that implicit bias toward students with ADHD in the classroom was not found within the sampled general education teachers. The current study findings aligned with the research conducted on a population of teachers in Ireland (Nolan, 2017), which found no evidence of stigmatized attitudes in teachers toward students with a disability label. However, the findings of the current study do not align with Batzle et al. (2010), a study conducted on a population of

teachers in the United States, which found that teachers had unfavorable views of children with ADHD labels compared to those without labels. The disparity between these results is likely due to the sample size retained for the current study. Batzle et al. (2010) surveyed around 294 teachers, while Nolan (2017) surveyed 36 teachers, which is a similar sample size to the current study, highlighting the importance of reaching a larger population for studies involving implicit bias. With a smaller sample size, it is difficult to generalize the results to a larger population (Tipton et al., 2016). In addition, Batzle et al. (2010) only surveyed teachers in western Washington State and their population were primarily Caucasian women, which might not reflect results from diverse school districts across the country. Further, Batzle et al. (2010) cited an article (Jerome et al., 1994) that stated teachers in the United States and Canada had very little training in working with students with ADHD, which Batzle and his colleagues believed why the teachers in their study had unfavorable views toward students with ADHD. More recently, teacher trainings on working with students with ADHD have been developed and spread awareness and education about the disorder, which likely lessens the negative implicit bias it once held (Ward et al., 2022). The results of the third research question also shed light on the results from the first research question.

Research Question 3

Q3 Is there a relationship between teacher efficacy and implicit biases they hold toward students identified with ADHD in the classroom?

The third research question provided significant insights into the dynamics of teacher-student interactions with high levels of self-efficacy correlating with lower implicit biases. This finding aligns with existing literature on teacher self-efficacy, which consistently demonstrates its influence over teaching behavior and, subsequently, student outcomes (Senler, 2016). For instance, previous studies have found that teacher self-efficacy influences instructional strategies,

commitment to teaching, and student achievement (Goddard et al., 2000; Holzberger et al., 2013; Tschannen-Moran et al., 1998). Social Cognitive Theory (Bandura, 1986) focuses on the construct that explains how an individual's belief about their ability to complete a task directly impacts the effort put forth on and perseverance through completing a task. Teachers with high self-efficacy were found to utilize diverse teaching methods (Weiner, 2003) and materials (Cousins & Walker, 2000; Weiner, 2003). Further, teachers with lower self-efficacy were found to experience lower job satisfaction than their counterparts (Ashton, 1984; Klassen et al., 2009) and became more easily burnt out (Skaalvik & Skaalvik, 2014). Therefore, this suggests that teachers who do not feel efficacious working with students with alternative learning needs may have negative thoughts about neurodiverse students in their classrooms due to the higher likelihood of teacher burnout. The findings from the third research question confirm that teachers with higher self-efficacy experience less implicit bias toward neurodiverse students in their classroom. As the sample size of this study was smaller than would be preferred for an implicit bias study, it is likely that teachers who participated are all teachers exhibiting higher teaching self-efficacy, which resulted in lower implicit biases reported.

The control variables also provided valuable insight into the relationship between teacher self-efficacy and implicit biases. Specifically, the relationship between years teaching and implicit bias was a clinically significant positive linear relationship, such that as years teaching increased, implicit bias increased. This finding was unexpected. It is hypothesized that most of the teachers sampled were within their first 10 years of teaching and many of them held at least a master's degree. It may be assumed that this population of teachers may have spent more time gaining education and training before starting their teaching career, so those within their first 10 years of teaching were likely to have lower implicit biases, while those that have been teaching

longer may not have had an as extended educational career. This hypothesis further highlights the importance of teacher trainings on lower implicit biases. Another significant correlation was a negative association between license type and implicit bias. Most teachers sampled held a professional license, and the second largest group held a teaching certificate. The significant correlation explained that within the sample, teachers with a license or certificate had less implicit bias than those holding a temporary license. This result may have occurred due to the training and experience needed to hold these license types when compared to those who are just starting their career with a temporary license. Finally, the other diagnosed variable was found to have a significant relationship with implicit bias. This relationship demonstrated that teachers who personally knew someone diagnosed with Attention-Deficit/Hyperactivity Disorder were less likely to hold implicit biases toward students with ADHD in their classrooms.

In the context of students with ADHD in the classroom, understanding teacher biases is crucial, especially considering the potential negative impact on students' academic outcomes. With teachers reporting low self-efficacy and negative views towards neurodiverse students, addressing implicit biases becomes paramount. Studies on implicit bias development indicated that biases are often unconscious and can be triggered by external characteristics such as race, age, gender, ethnicity, and disability status (Derbyshire & Keay, 2024; McGinnis, 2017). In addition, people naturally categorize themselves and others into in-groups and out-groups, leading to implicit attitudes that may not align with consciously held beliefs (Baron, 2015; McGinnis, 2017). Environmental factors and societal representations also play significant roles in shaping implicit biases, with System Justification Theory proposing that biases are formed and performed unconsciously through developmental stages (Jost & Banaji, 1994; Rudman, 2004). Therefore, the current study's utilization of the GNAT alongside explicit bias measures and

demographic questionnaires aligns with the broader literature's emphasis on understanding and mitigating biases towards students with ADHD in educational settings. Kopera et al. (2015) utilized the GNAT to measure implicit bias alongside two explicit measures, further highlighting the importance of measuring both implicit and explicit biases.

Research Question 2

Q2 Is there a statistically significant relationship between teacher explicit and implicit attitudes toward students identified with ADHD in the classroom?

The second research question aimed to investigate whether there is a significant disparity between teacher explicit and implicit attitudes toward students diagnosed with ADHD in classroom settings. The results revealed no statistically significant correlation between explicit and implicit biases. While explicit biases are conscious thoughts and feelings about others, implicit biases are emotional, unconscious responses to stimuli (Daumeyer et al., 2019; Phelps et al., 2000). Previous studies have shown that explicit and implicit attitudes are weakly correlated, with explicit attitudes often influenced by social desirability bias (Burke et al., 2017; Kopera et al., 2015). Thus, it is likely that, in the current study, any implicit bias held by teachers was not also compounded by overt biases. This finding is in line with existing literature on implicit attitude development and bias formation.

Implications

The results from the current study provide insight into the relationship between teachers and their perceptions and experiences teaching students with ADHD. Results indicated that the teachers sampled had lower implicit biases, lower explicit biases, and higher teacher self-efficacy. The sample also included teachers primarily within their first 10 years of teaching, those with a master’s or bachelor’s degree, those with a professional license, who have not been personally diagnosed with ADHD, and who personally know someone who has been diagnosed

with ADHD. The link between teaching experience, teacher self-efficacy, and implicit bias was demonstrated and suggested that those with more experience (e.g., master's degree) my have had more training and explicit instruction, leading them to hold less implicit biases toward students with diverse learning needs. These implications may encourage teachers to seek out further education and training opportunities for working with students with ADHD.

School administrators may also want to consider these implications when they are working with teachers with higher levels of burnout who work with students with diverse learning needs. For example, when they are planning for the upcoming year, and assigning teachers and students to classrooms, it would be necessary for them to review the teacher's educational degrees and license types to help decide which teacher would be best suited for an inclusion classroom (i.e., one that may receive push-in support from special education teachers to work with students with diverse learning needs). A general education teacher with a master's degree or higher may work well with students at differing learning levels and may be able to utilize a variety of materials to accommodate their students. Further, school psychologists and other mental health providers in schools may be able to target interventions for classrooms with teachers with bachelor's degrees or teachers who have a temporary license over a professional license. If a teacher that may be perceived to have lower self-efficacy is placed in a classroom with students with diverse learning needs, a school psychologist may offer more check-ins with that teacher or collaborate with the school administration team to ensure supports are put into place for the students in that classroom. Special education teachers may also want to decide that they can provide pull-out support for students when they are in a teacher's classroom that may not be as efficacious in providing alternative learning materials or teaching methods. Finally, if one is employed to train teachers, they may be interested in the personal experience of the

teachers they are training to cater more intensive, hands-on trainings for teachers with less experience and more consultation and problem solving for teachers with more experiences and higher teaching self-efficacy.

Lastly, teachers may be interested in this research to review the potential presence of implicit biases they may hold and the risk factors associated with implicit biases. The research demonstrates that becoming aware of implicit biases is the first step to overcoming implicit biases (Poznanski et al., 2018). Teacher self-efficacy significantly influences the relationships between teachers and students within the classroom (Ibrahim & El Zaatari, 2020). When teachers do not feel efficacious in their classroom, and are working with students with diverse learning needs, contentious relationships and negative biases can form between teachers and students. Therefore, maintaining awareness of the impacts of implicit bias may give teachers the power and conscious awareness of the influence their behaviors and teaching methods have on groups of students with diverse learning needs.

Limitations

The current study encountered barriers to accessing participants for a study of this nature. One hypothesis as to why teachers did not want to participate in the study is that teachers are often overworked and underpaid, leading to burnout and decision fatigue (Tipton et al., 2016). Therefore, requesting teachers to complete a study that requires them to answer questions and complete a mentally tasking activity, such as a GNAT, can discourage teachers from wanting to complete the study. There were many participants that started the study and discontinued it after finishing the GNAT portion. Future studies may consider the order of activities presented to teachers and how many activities they have planned for teachers to complete in one session.

Another hypothesis for incomplete assessments is that teachers may be uncomfortable answering questions about potential implicit biases they may hold. While the study ensured confidentiality of results, the topic of implicit bias is sensitive and there is a culture of fear around discrimination in schools that teachers are likely not interested in participating in (Agalday & Yigit, 2022). While quantitative results indicated low levels of fear from administrators, colleagues, and legal processes, qualitative findings suggested that teachers experience these fears more prominently. Overall, the study provided evidence of a culture of fear in schools. Ginsberg and Lyche (2008) tracked news stories about schools from 1980-2007 and found that the stories became increasingly more negative over the years, which can negatively impact how the public views education staff and faculty. In addition, in July 2011, an essay was released about "The Atlanta Scandal" where 178 school principals, teachers, and other staff were caught misreporting results of the state standardized test (Martel, 2011). It was concluded that the school personnel were victims of systematic failures that pressured them to produce higher test scores. This essay further shed light on the culture of fear in schools surrounded by solidarity and being of the same mindset. Teachers or staff members who are seen as outsiders or who have a different point of view than the majority faced the possibility of ostracization or termination. Further, another study explored "cancel culture" and the fear Americans face to risk their job or education if they voice an unpopular opinion (Mattox, 2022). Therefore, it may be more difficult for teachers to discuss their experiences, especially negative experiences, even when they are assured their answers are confidential.

Similarly, the Social Desirability Bias also likely influenced the responses of participants in this study on implicit bias and teacher efficacy. Social Desirability Bias refers to participants' instinct for self-preservation; they are more likely to overreport or underreport certain aspects of

their experiences to appear acceptable to an outside observer (Krumpal, 2013). Therefore, participants of the current study may have either discontinued the study or overreported levels of teaching self-efficacy to preserve their portrayal and representation of teachers.

The lower number of participants may also have influenced the results of the third research question investigating the effect of teacher self-efficacy on implicit bias. The first research question investigating implicit bias on its own resulted in no statistically significant differences in response times between ADHD and neurotypical trials, meaning that none of the teachers that participated held implicit biases toward students with ADHD. However, due to the small sample size, this result cannot be generalized to the larger population of teachers. Meanwhile, through testing the third research question, all participants reported a higher level of teacher self-efficacy, which resulted with lower implicit biases linked with higher teacher self-efficacy. If there were a larger number of participants, there may have been more variability in the results, and there may have been some teachers with lower teacher self-efficacy that held an implicit bias, or teachers with high self-efficacy reported and a high level of implicit bias. It can be suggested that a larger sample size may have provided more variability within the data set, providing alternative conclusions.

Finally, while the Teacher Self-Efficacy Scale Short Form was found to be reliable in previous research, the current study resulted in a lower reliability value than anticipated. A low reliability value of 0.466 was yielded and is lower than the recommended 0.7 or higher Cronbach's alpha. This low Cronbach's alpha likely impeded the results of the study and influenced the results of the data from the homogenous sample.

Future Directions

Future studies would benefit from collecting data from a larger sample size. There are a few ways to ensure a larger sample size that were not attainable for the current study; performing a mixed methods study in which the examiner surveys and interviews teachers may allow the examiner to lessen the Social Desirability Bias and gain rapport with the participants. This way, participants may feel more comfortable providing accurate information to a person rather than a computer screen (Agalday & Yigit, 2022; Krumpal, 2013). The teachers who participated in the current study are mostly teachers within their first 10 years of teaching and they reported higher levels of teaching self-efficacy. It would be beneficial to explore how they were trained, how they are supported in their schools, their experiences with students, and what exactly makes them feel so efficacious in their work. Gathering further information on efficacious teachers' experiences may greatly benefit and inform training and support procedures in districts with higher teacher turnover rates.

Further, future research may be interested in conducted a post hoc analysis to explore the relationship between the level of education and training a teacher has undergone and implicit bias toward students identified with ADHD. Exploring the data from teachers who received a Master's degree or higher with a matched sample of teachers in their career for a longer period of time, but with only a Bachelor's degree, and the level of implicit bias held by these populations. This study would provide insight into the effectiveness of educational institutes to provide adequate training an experience and compare the experience of teachers who have opted to remain in the field and receive trainings from their respective districts.

Finally, the current study contributes to our understanding of the complex interplay between teacher efficacy, implicit biases, and effective classroom practices for diverse student

populations. By addressing these factors and promoting teacher training and awareness, educators can create more inclusive learning environments that support the academic success and well-being of all students (Poznanski et al., 2018). Jackson et al. (2014) conducted a study on implicit biases using the GNAT, showing the effectiveness of implicit bias training in improving attitudes towards certain groups. Thus, a future study has sufficient evidence to conduct implicit bias training to improve attitudes toward neurodiverse students in the classroom.

Conclusion

The current study delved into the challenges teachers encounter when working with students diagnosed with ADHD, echoing previous research by Sagiv et al. (2013), Smith et al. (2006), and Stormont et al. (2011) which revealed prevalent perceptions of unpreparedness and implicit and explicit attitudes among educators. These challenges extend to students' social and academic domains, as highlighted by Harrison and Sofronoff (2002), Hinshaw (2002), and Barbaresi et al. (2007), and are exacerbated by implicit biases, as observed by Kahneman (2011), emphasizing the need to address both teacher efficacy and implicit biases to enhance support structures for students with ADHD in educational environments. The research highlighted the impact of teacher self-efficacy on implicit biases, underscoring the importance of understanding these dynamics in teacher-student interactions and their implications for student outcomes. While the sample size was smaller than preferred, it was concluded that teachers with higher levels of teaching self-efficacy hold less implicit biases toward neurodiverse students. In addition, the study's findings regarding teachers' explicit and implicit biases toward students with ADHD in classroom settings showed no statistically significant correlation, contrary to previous studies, indicating a complex relationship between these attitudes.

The study faced limitations, including barriers to participant access and potential influences of social desirability bias on responses, suggesting future research should employ larger sample sizes and mixed methods approaches to mitigate bias and gather more comprehensive data. Exploring the experiences and training of teachers exhibiting high self-efficacy may provide valuable insights for improving support procedures in schools, while implicit bias training could be a promising avenue for enhancing attitudes towards neurodiverse students in the classroom, building on previous studies by Jackson et al. (2014) that demonstrated the effectiveness of such interventions. Overall, by addressing teacher efficacy and implicit biases, educators can foster more inclusive learning environments that support the diverse needs of all students, contributing to their academic success and well-being.

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APPENDIX A

STUDY SURVEYS

Teachers' Attitudes Towards Students With Disabilities Scale (TALDS)

***Note:** Highlighted words were changed by the researcher from the original wording to represent more relatable words for a United States population and online administration. **(This note is only for the dissertation committee and IRB personnel. This note will not be displayed for participants.)**

Instructions: When considering the inclusion of learners with a disability to the regular school programs with the neurotypical and ADHD learners, rate the extent to which you agree or disagree with the statements below. "Neurotypical" refers to the typically functioning learners in your classroom. These students will rarely need help and they are well-adjusted within your classroom environment. "ADHD" refers to learners you are aware have a diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD) or learners that you believe experience significant symptoms of ADHD. Symptoms of ADHD include inattentiveness, hyperactive behaviors, and impulsive behaviors that are above and beyond age appropriate.

You are expected to choose one option for each item. A key to the rating is provided below.

1 = Strongly Disagree

2 = Disagree

3 = Neither Agree nor Disagree

4 = Agree

5 = Strongly Agree

Items:

1. The academic progress of all students in an inclusive classroom is plausible.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
2. Students with ADHD would experience rejection from other classmates in an inclusive classroom
    - Strongly Agree

- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

3. Students with ADHD are less intelligent than normal children.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
4. Segregating ADHD learners from a regular classroom would reduce the cost of modifying the physical environment of the school for inclusion.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
5. It is better for students with ADHD to be taught in special schools.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
6. Students with ADHD have more difficulty than others in reaching the same personal achievements.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
7. ADHD and neurotypical learners should be integrated into the same classroom if the curriculum is individualized.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree

8. Learners with ADHD cannot adapt to a competitive learning environment with normal students.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
9. Inclusion facilitates socially appropriate behavior amongst all students.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
10. The inclusion of ADHD learners could hinder the progress of other classmates.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
11. It hurts me when other students bully students with ADHD in the classroom.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
12. I get upset when ADHD students are unable to keep up with the regular classroom curriculum.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
13. It is none of my business if I am unable to understand students with ADHD.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree

- Strongly Disagree

14. It bothers me each time I see ADHD learners struggle to cope with the use of learning resources.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
15. I feel irritated seeing ADHD learners struggling to get along with lessons in regular classrooms.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
16. I get frustrated adapting the curriculum to meet the individual needs of students in an inclusive classroom.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
17. It is very exciting that students with ADHD are included in regular classrooms.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
18. I am comfortable seeing ADHD students in the same classroom with other students.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
19. I am always excited each time ADHD learners attempt to answer questions in class.
    - Strongly Agree
    - Agree

- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

20. I am willing to encourage ADHD learners to participate in inclusive classroom social activities.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
21. I would never modify the physical environment of my classroom to accommodate ADHD learners in a traditional classroom.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
22. I don't mind adjusting my communication techniques to carry both ADHD learners and other students along in a lesson.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
23. I am not willing to adopt individual assessment practice for inclusive education to thrive.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
24. I don't mind using teaching methods and instructional aids designed for ADHD learners.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
25. I would not assist students with ADHD when they need extra support.

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

26. I will respond to questions of both ADHD and neurotypical learners politely.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
27. I am not excited about teaching in an inclusive classroom with neurotypical and ADHD students.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
28. I will not adopt the curriculum to meet the individual needs of all students regardless of their health status.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree

Teacher Efficacy Scale (Short Form)

***Note:** Highlighted words were changed from their original wording to reflect more inclusive verbiage and online administration. **(This note is only for the dissertation committee and IRB personnel. This note will not be displayed for participants.)**

A number of statements about organizations, people, and teaching are presented. The purpose is to gather information regarding the actual attitudes of educators concerning these statements. There are no correct or incorrect answers. We are interested only in your frank opinions. Your responses will remain anonymous.

INSTRUCTIONS: Please indicate your personal opinion about each statement by choosing the appropriate response after each statement.

KEY:

1 = Strongly Disagree

2 = Disagree

3 = Neither Agree nor Disagree

4 = Agree

5 = Strongly Agree

1. The amount a student can learn is primarily related to that student's family background.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
2. If students aren't disciplined at home, they aren't likely to accept any discipline.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
3. When I really try, I can get through to most difficult students.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree

- Strongly Disagree

4. A teacher is very limited in what they can achieve because a student's home environment is a large influence on that student's achievement.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
5. If parents would do more for their children, I could do more.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
6. If a student did not remember information I gave in a previous lesson, I would know how to increase their retention in the next lesson.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
7. If a student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect them quickly.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
8. If one of my students couldn't do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.
   - Strongly Agree
   - Agree
   - Neither Agree nor Disagree
   - Disagree
   - Strongly Disagree
9. If I really try hard, I can get through to even the most difficult or unmotivated students.
   - Strongly Agree

- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

10. When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on their home environment.
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree

Demographic Questionnaire

Please answer the following questions to the best of your ability. Your answers will remain anonymous.

1. What is your age?
    - 18-25
    - 26-35
    - 36-45
    - 46+
2. What is the gender you identify with?
    - Male
    - Female
    - Non-Binary
    - Other: (please specify)
3. What state do you currently teach in?
    - Colorado
    - Louisiana
    - Other: (please specify)
4. What type of school are you currently employed in?
    - Private
    - Public
    - Charter
    - Other: (please specify)
5. Which grade do you currently teach?
    - Elementary (K-5)
    - Secondary (6-12)
6. How many years have you been a general education teacher?
    - >1-10 years
    - 11-20 years
    - 20+ years
7. What is the highest level of education you have completed?
    - Bachelors
    - Masters
    - Doctorate
    - Other: (please specify)
8. What license do you currently hold?
    - Alternative

- Bachelor's degree
- Other: (please specify)

9. How many students do you estimate you've had with significant ADHD symptoms?
10. Have you ever been diagnosed with ADHD?
    - Yes
    - No
    - Unsure
11. Do you have a person close to you who has been diagnosed with ADHD?
    - Yes
    - No
    - Unsure

APPENDIX B

DEFINITIONS PAGE

These words will be helpful to know as you complete this task. Your responses will be based on whether you understand the definitions of the following words:

ADHD refers to learners you are aware have a diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD) or learners that you believe experience significant symptoms of ADHD. Symptoms of ADHD include inattentiveness, hyperactive behaviors, and impulsive behaviors that are above and beyond age appropriate.

Neurotypical refers to the typically functioning learners in your classroom. These students will rarely need help and they are well-adjusted within your classroom environment.

APPENDIX C

RECRUITMENT EMAILS

Email For Mutual Acquaintances

Hello _____!

Thank you very much for agreeing to send this survey out to your teacher friends. My study is assessing the level of implicit biases teachers may hold toward students with Attention-Deficit/Hyperactivity Disorder in their classrooms, and how their level of teaching efficacy influences implicit biases. Implicit biases are unconsciously held beliefs that can result in negative interactions between teachers and students. Teacher efficacy on the other hand is the level of confidence a teacher has in their ability to make a change within their classroom. Basically, I am wondering if teachers feel efficacious (or capable) of working with students who may be significantly disruptive in the classroom and if there are non-conscious negative thoughts held about students with disruptive behaviors in the classroom. I hope to gain information to add to the literature and provide more evidence to advocate for teachers and the resources and support they need within the classroom. This study will take about 30-45 minutes to complete and all answers will remain completely anonymous. Teachers do not have to put their name on any part of this document. If they begin the study and decide they want to quit, they are welcome to discontinue at any time with no consequence. The hyperlink below will take whoever would like to participate to the consent form. There, they may gather more information about the study. If they still agree to participate, choose "I understand" and the study will begin!

If anyone you reach out to has any questions or concerns about the research Institutional Research Board (IRB) approval for this study or anything else, please encourage them to contact me. My email is laurie.landrieu@unco.edu and my phone number is (970) 351-1394.

Again, thank you very much for your help!

Sincerely,

Claire Landrieu

School Psychology Doctoral Candidate

University of Northern Colorado

(970) 351-1394

Facebook Message and Email to Teacher Listservs

Hello Teachers!

I hope your school years are going as well as they can! My name is Claire Landrieu and I am a doctoral candidate of school psychology. I am conducting a research study on implicit biases toward students with ADHD and how teacher efficacy may influence implicit bias. Implicit biases are unconsciously held beliefs that can result in negative interactions between teachers and students. Teacher efficacy on the other hand is the level of confidence a teacher has in their ability to make a change within their classroom. Basically, I am wondering if teachers feel efficacious (or capable) of working with students who may be significantly disruptive in the classroom and if there are non-conscious negative thoughts held about students with disruptive behaviors in the classroom. I hope to gain information to add to the literature and provide more evidence to advocate for teachers and the resources and support they need within the classroom. This study will take about 30-45 minutes to complete and all answers will remain completely anonymous. You do not have to put your name on any part of this document. If you begin the study and decide you want to quit, you are welcome to discontinue at any time with no consequence. The hyperlink below will take you to the consent form. There, you may gather more information about the study. If you still agree to participate, choose "I understand" and the study will begin!

If you have any questions or concerns about the research Institutional Research Board (IRB) approval for this study or anything else, please contact me. My email is laurie.landrieu@unco.edu and my phone number is (970) 351-1394. I appreciate your time and consideration and I look forward to getting your input!

Sincerely,

Claire Landrieu

School Psychology Doctoral Candidate

University of Northern Colorado

(970) 351-1394

APPENDIX D

CONSENT FORM

Project Title: Implicit Bias Toward Students with ADHD and the Influential Role of Teacher Efficacy
Researchers: Laurie Claire Landrieu, MA
Phone Number: (970) 351-2831
Email: land6318@bears.unco.edu
Department: School Psychology

Purpose and Description: Thank you for your interest in our research project! This project involves recognizing possible implicit (i.e., unconscious) associations held about students with ADHD in the classroom. The purpose of this study is to raise awareness of possible implicit associations held to help improve student and teacher relationships and understanding. The research tells us that recognition of potential biases is the first step to improving relationships between groups of people. The results of this study will be used to work toward improving better student outcomes and gaining better understanding of the mental health and well-being of students with ADHD in a general education classroom.

Participant Eligibility: You can participate in this study if you are over the age of 18 and are currently a general education teacher for kindergarten through twelfth grade. If you are not a general education teacher, you cannot participate in this study. Online surveys and test administration will be sent out pending IRB approval and last approximately 15-30 minutes. Data will be collected through PsyToolkit and participants will be designated an identification number associated with their information and survey answers. The identification number will be the only identifying information pairing that participant has with their answers. Questions in the surveys will ask about explicit (i.e., conscious) associations you may hold about students with disabilities in the classroom, and your level of self-efficacy (i.e., self-esteem) in your position as a teacher. Then, you will be presented with a demographic questionnaire asking questions regarding your age, gender, the state in which you teach, the grade you teach, the type of school you are in, the degree you currently hold, and your experiences with individuals diagnosed with ADHD.

Compensation: Upon completion of the study, the participant will have the option of entering in their email to be put in the running for one of four $25 Amazon gift cards. The participant will click a link that would take them to a separate survey and they may enter their email there so that there is no link of their email to their survey responses.

Benefits and Risks: There are no direct benefits from participating in this study. However, participating would provide a better understanding of how teachers perceive students with ADHD in their classroom and if there are ways we can improve student and teacher relationships in the classroom. By answering the survey questions, participants may also have a better understanding of themselves.
Our research team foresees minimal risks associated with involvement in this survey. However, you may experience personal discomfort when completing the survey questions. If you feel uncomfortable, you can stop completing the surveys and implicit association test at any time.

Confidentiality: No names will be collected for this study and all surveys and test answers will be deidentified associated only to a number. Your survey and test responses will be stored on the secure PsyToolkit server under a password-protected account accessible only by restricted personnel. This includes the study's primary investigator who has completed the human subjects CITI Training. Survey and test responses will be used as data for research purposes only. Any report of the research that is made available to the public will not include information by which individual participants could be identified.
Steps will be taken to protect participants' confidentiality, however it is possible that a confidentiality breach may occur and data could be stolen, lost, or otherwise compromised. In order to prevent a confidentiality breach, several steps to protect confidentiality will be taken.

Please feel free to contact the researcher at (970) 351-2831 if you have any questions or concerns about this research. Participation is voluntary. You may decide not to participate in this study. You may, alternatively, decide to stop and withdraw from participating at any point in time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please proceed by clicking next if you consent to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, Research Compliance Manager, Office of Research & Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO 80639; (970) 351-2831.

APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

Date: 11/30/2022

Principal Investigator: Claire Landrieu

Committee Action: **IRB EXEMPT DETERMINATION – New Protocol**

Action Date: 11/30/2022

Protocol Number: 2209044197

Protocol Title: Implicit Bias Toward Students With ADHD and the Influential Role of Teacher Efficacy

Expiration Date:

The University of Northern Colorado Institutional Review Board has reviewed your protocol and determined your project to be exempt under 45 CFR 46.104(d)(702) for research involving

Category 2 (2018): EDUCATIONAL TESTS, SURVEYS, INTERVIEWS, OR OBSERVATIONS OF PUBLIC BEHAVIOR. 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) if at least one of the following criteria is met: (i) 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; (ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or (iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by 45 CFR 46.111(a)(7).

You may begin conducting your research as outlined in your protocol. Your study does not require further review from the IRB, unless changes need to be made to your approved protocol.

As the Principal Investigator (PI), you are still responsible for contacting the UNC IRB office if and when:

- You wish to deviate from the described protocol and would like to formally submit a modification request. Prior IRB approval must be obtained before any changes can be implemented (except to eliminate an immediate hazard to research participants).
- You make changes to the research personnel working on this study (add or drop research staff on this protocol).
- At the end of the study or before you leave The University of Northern Colorado and are no longer a student or employee, to request your protocol be closed. *You cannot continue to reference UNC on any documents (including the informed consent form) or conduct the study under the auspices of UNC if you are no longer a student/employee of this university.
- You have received or have been made aware of any complaints, problems, or adverse events that are related or possibly related to participation in the research.

If you have any questions, please contact the Research Compliance Manager, Nicole Morse, at 970-351-1910 or via e-mail at nicole.morse@unco.edu. Additional information concerning the requirements for the protection of human subjects may be found at the Office of Human Research Protection website - http://hhs.gov/ohrp/ and https://www.unco.edu/research/research-integrity-and- compliance/institutional-review-board/.

Sincerely,

Nicole Morse
Research Compliance Manager

University of Northern Colorado: FWA00000784