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Effects of Under-Diagnosis of ADHD in Female Students

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Senior Capstone
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Abstract

The number of students with Attention Deficit Hyperactivity Disorder (ADHD) is increasing in the United States; but there is a shortfall in the under-diagnosis of female students with ADHD. This senior capstone examines the effects of the under-diagnosis of ADHD in female students through the use of extensive literature review and questionnaires posed to local school elementary teachers. The findings indicate that female students with undiagnosed ADHD do not only suffer academically, but also socially and mentally throughout their life. Although assessed through the same process and criteria, female students with ADHD display symptoms far different from those of their male counterparts. With more appropriate professional development to teachers in ADHD and creating gender-specific ADHD criteria for assessment, the under-diagnosis of female students with ADHD will decrease.

Introduction and Background

Attention Deficit Hyperactivity Disorder is one the most common disorders in the United States. It is estimated that the United States has 1.46 to 2.46 million school-aged children diagnosed with ADHD (U.S. Department of Education, 2008, p. 1). ADHD did not become popular until the 1990s; it was the most researched disorder then (HelloLife, 2009). Today, there is still on-going research for ADHD because there are areas that remain uncertain or unanswered. For instance, there is still research being done on the causes of ADHD, the effects of stimulant medication, and cures (HelloLife, 2009). There is also a need for extended research because it's been considered a male-dominant disorder, but some disagree. Gender calls for more research that involves more females. Currently, the American Psychiatric Association criteria for ADHD is based off of males with ADHD. More extensive research on female counterparts can potentially change the idea of it being a male-dominant disorder. More female research can lead to updating the criteria to be gender specific. With the popularity of ADHD disorder, there is controversy that surrounds it. It's believed that boys are being over-diagnosed, but the controversy should also include that girls are being under-diagnosed. In the past 8 years, there has been an increase of diagnoses by 42% (Holland & Riley, 2018). Perhaps the diagnoses are going to the wrong children.

Since educators are one of the first to recognize disorders in children, it is critical to know why female students with ADHD are undiagnosed, and what effects female students face when remaining undiagnosed. Research regarding under-diagnosis of female students is extremely important. When females go undiagnosed, they are missing out on their right to receive support and resources that can improve their quality of life. There is evidence that females with ADHD predominantly have inattentive symptoms (Attention-Deficit/Hyperactivity

Disorder, 2018). Inattentive symptoms include difficulty with organization, distractions, staying on task, and following directions (Attention-Deficit/Hyperactivity Disorder, 2018). These symptoms are hard to identify because the child isn't acting out in a visible way. It is much easier to recognize the "bouncing off the walls" and more noticeable symptoms which are most common among young boys. The ADHD symptoms that female students have are detrimental to their academic performance, social lives, self-esteem, and can develop other disorders (Quinn, 2005, p. 580). In addition to having ADHD, female students are likely to develop depression, anxiety, obsessive-compulsive disorder, tics, Tourette's, eating disorders, and learning disabilities (Quinn, 2005, p. 580). If female students with ADHD remain undiagnosed, the likelihood of them developing other disorders becomes much greater than if they were treated. Through a study, it was found that clinic referred girls had "severe attentional and intellectual impairment across all IQ scales..." (Arnold, 1996, p. 559). If this is the result of females who are diagnosed with ADHD, imagine the degree of attentional and intellectual impairment in females who are not clinical referred.

Struggling academically, lacking relationships with peers, and feeling different and not knowing why can take a toll on a child. These struggles and the development of future disorders can be avoided if teachers know how to identify ADHD symptoms in their female students. The findings from this research will be valuable to elementary and secondary teachers as well as future teachers. Educators knowing the variety of ADHD symptoms can help reduce the under-diagnosis of female students and create a more accurate representation of females with ADHD. When teachers know how to recognize ADHD symptoms in female students, those students will be able to have an equitable education and receive the additional support they deserve.

The primary research question that will be answered is: *How does the under-diagnosis of ADHD affect female students?* They related secondary questions that will be guiding the research study are: *What are the consequences of not being diagnosed with ADHD in female students? What causes female students to be under-diagnosed with ADHD? Are they more in tune to have comorbidity than male counterparts? If so, why? How do local school districts currently diagnose students for ADHD? If female students are diagnosed with ADHD, how do school districts support them in their academics? How can girls with ADHD thrive in the classroom according to teachers?*

The idea of the primary research question came from being a Human Development minor with interest in the ADHD disorder. After learning about the disorder and the prevalence of diagnosis between males and females, it sparked curiosity. The result of the primary question and secondary questions also came from being a prospective elementary teacher. Knowing the answers to these specific questions will be beneficial in a future career of teaching. The answers to these questions will allow me to accurately identify the symptoms of ADHD in female students, provide appropriate resources, properly alter the classroom and curriculum to meet their needs, and potentially decrease the number of undiagnosed females.

Literature Review

This section will cover the general information regarding ADHD: the definition, the symptoms, the criteria for diagnosis, the diagnosis process, and the treatment options. The section will also discuss the history of ADHD and how it developed into the disorder it is today. The known gender differences will be examined as well as current teacher knowledge and classroom approaches for ADHD. The last piece of information reviewed in the section are the identified long-term effects in females who have ADHD.

ADHD is a neurodevelopmental disorder that hinders the ability to pay attention, control impulsiveness, and/or can cause over activity (Attention-Deficit/Hyperactivity Disorder, 2018). ADHD is typically diagnosed during childhood and is lifelong. There are three forms of ADHD: inattentive type, hyperactivity-impulsive type, and combined. Generally, someone who has inattentive type will have difficulty with organization, following directions, is easily distracted, and has a hard time focusing on detail (Attention-Deficit/Hyperactivity Disorder, 2018). Someone who has hyperactive-impulsive type will be moving more than normal, has a difficult time sitting still, speak a lot, interrupt others, and may have a lot of accidents (Attention-Deficit/Hyperactivity Disorder, 2018). Someone who has combined ADHD will display both types of symptoms equally (Attention-Deficit/Hyperactivity Disorder, 2018).

The symptoms of ADHD are presented in the table below. The table is broken down into the three areas of inattention, impulsivity, and hyperactivity that make up ADHD. The predominantly hyperactive-impulsive type will require the individual to show four or more symptoms that are listed (Brock, 1997). Six or more symptoms are required for predominantly inattentive, and both separate requirements must be met for combined ADHD (Brock, 1997).

Table 1
DSM IV Criteria for Attention-Deficit/Hyperactivity Disorder

-
- A. Either (1) or (2):
- (1) six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:
- Inattention*
- (a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
 - (b) often has difficulty sustaining attention to tasks or play activities
 - (c) often does not seem to listen when spoken to directly
 - (d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
 - (e) often has difficulty organizing tasks and activities
 - (f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
 - (g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
 - (h) is often easily distracted by extraneous stimuli
 - (i) is often forgetful in daily activities
- (2) six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:
- Hyperactivity*
- (a) often fidgets with hands or feet or squirms in seat
 - (b) often leaves seat in classroom or in other situations in which remaining seated is expected
 - (c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
 - (d) often has difficulty playing or engaging in leisure activities quietly
 - (e) is often "on the go" or often acts as if "driven by a motor"
 - (f) often talks excessively
- Impulsivity*
- (g) often blurts out answers before questions have been completed
 - (h) often has difficulty awaiting turn
 - (i) often interrupts or intrudes on others (e.g., butts into conversations or games)
- B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.
- C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).
- D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
- E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by an other mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Note. From the American Psychiatric Association (1994, pp. 83-85).

ADHD has specific criteria in order to determine if someone has the disorder. Aside from displaying the symptoms, the individual must have ADHD behavior before 7-years-old and show symptoms for at least six months (Brock, 1997). The child must also show symptoms of ADHD in at least two settings (Brock, 1997). For instance, the child will show symptoms at home and at school. Along with these requirements, there must also be proof of symptoms, such as a teacher or counselor providing evidence (Brock, 1997). The causes of ADHD tend to revolve around pregnancy and genetics. The causes can be from brain injury, alcohol and/or tobacco use while pregnant, premature delivery and low birth weight, as well as exposure to environmental dangers while pregnant (Attention-Deficit/Hyperactivity Disorder, 2018). An environmental danger can

be the exposure to lead or chemicals. There is also no research that validates myths of ADHD being caused by bad parenting, eating excess sugar, watching excess amounts of TV, or life factors like socioeconomic status (Attention-Deficit/Hyperactivity Disorder, 2018).

Diagnosing ADHD can be difficult because there isn't one specific test. In diagnosing, there will be a medical exam to make sure the symptoms aren't signs of something else. Symptoms of ADHD can also be indicators of a learning or language problem, a mood disorder, a psychiatric disorder, seizure disorder, vision or hearing problems, Tourette's, medical problems, sleep disorders, thyroid issues, substance abuse, or brain injury (Mayo Clinic, n.d.). In addition to a medical exam, there will also be a collection of information such as family medical history, personal medical issues, and school records (Mayo Clinic, n.d.). The information can indicate if there is evidence at school that exhibits ADHD, and what is causing the symptoms. Gathering information from the child's teacher, parents, or coaches is another aspect of diagnosis. Getting this information generally comes from interviews from medical or mental health professionals (Brock, 1997). Then, it's required to make sure that the child meets the DSM-5 criteria for ADHD, and there is a rating scale that is done. A rating scale compares the child's behavior to his or her peers who are the same age (Brock, 1997). The rating scale is then scored and interpreted by mental health professionals (Brock, 1997). After diagnosing ADHD, it is common for individuals to have comorbidity. Comorbidity is having at least two conditions coexisting with the initial diagnosis (Comorbidities, n.d.). People with ADHD are most likely to be comorbid with anxiety, depression, autism, learning disabilities, obsessive-compulsive disorder, conduct disorder, substance abuse, tics, Tourette's, and eating disorders (Quinn, 2005). One of two children who have ADHD is comorbid with a conduct or behavioral problem, and

one of three children who have ADHD is comorbid with anxiety (Attention-Deficit/Hyperactivity Disorder, 2018).

The treatment of ADHD involves medication, therapy, or both. There is quite a bit of controversy surrounding the idea of using stimulant medication on children to treat ADHD. Medication is used to balance brain chemicals, and can be taken for short-term or long-term assistance (Mayo Clinic, n.d.). Although taking medication is said to improve performance and behavior, parents remain reluctant about their children taking them. Some common reasons are that parents don't believe that their child has ADHD, they don't want their child to be labeled at school, and they believe that therapy will be better than medication (Oatis, n.d.). Some parents also prefer to manage symptoms holistically rather than medicating. A big concern for parents is mainly interference of development (Oatis, n.d.). Because the child is typically diagnosed around the time of puberty, parents are afraid that medication will affect their child's overall development.

Therapy is an important part of treatment and there are several forms of it to choose from. There is behavioral therapy, psychotherapy, family therapy, parenting skills training, and social skills training (Mayo Clinic, n.d.). Behavioral therapy works on the child's behavior, and provides behavior changing strategies for teachers and parents (Mayo Clinic, n.d.). Psychotherapy is for children to express themselves and their issues, and learn how to manage their symptoms (Mayo Clinic, n.d.). Psychotherapy also helps with other conditions that the child may have, including anxiety and depression. Family therapy is beneficial because it works on reducing stress within the family and teaches them about ADHD (Mayo Clinic, n.d.). Parenting skills training is for parents to learn about their child's behavior and how to manage it; while

social skills training is for the child to learn how to manage their behavior and develop appropriate social behavior (Mayo Clinic, n.d.).

History of ADHD

The history of ADHD begins in the 18th century thanks to Scottish Physician Sir Alexander Crichton (Lange, Reichl, Lange, Tucha, & Tucha, 2010). In the second of three books he had written, Crichton (2010) mentions observing clinical cases of mental illness where attention plays a role. Crichton (2010) describes an alteration of attention, “the incapacity of attending with a necessary degree of constancy to any one object...and this facility is incessantly withdrawn from one impression to another” (Lange et al, 2010, p. 242). In other words, Crichton noted that these people had difficulty paying attention during tasks and were distracted by external things. In the 19th century, there were children’s books created that seemed to expose the first descriptions of ADHD. These books, *Fidgety Phil* and *Johnny Look-in-the-air*, were written by German Physician Heinrich Hoffman (Lange et al, 2010). Some of these descriptions include not being able to sit still, having difficulty listening and following direction, and being easily distracted (Lange et al. 2010).

The first treatment of ADHD was done in 1937 by Bradley, a medical director in Rhode Island (Lange et al. 2010). Bradley (2010) conducted multiple examinations on brain abnormalities, and through that discovered positive effects of stimulant medication (Lange et al. 2010). They noted that there were improvements in school performance, interest in tasks, worked quickly, and saw a decrease in physical activity (Lange et al. 2010). This was the beginning in treating children with stimulants.

The most used book in psychology is the Diagnostic and Statistical Manual of Mental Disorder, also known as the DSM. In the first two versions of the DSM book, there was only

minimal brain dysfunction to represent neurodevelopmental abnormalities (Lange et al. 2010). The category was too broad and later became multiple labels: learning disability, language disorders, dyslexia, and hyperactivity (Lange et al. 2010). It wasn't until 1980 when the DSM-III titled the disorder to be called Attention Deficit Disorder with or without hyperactivity (Lange et al. 2010). It was through that inattention was the sole disorder and that hyperactivity was less essential. Seven years later in 1987, the disorder was revised to what it is now, ADHD. "The symptoms of inattention, impulsivity, and hyperactivity were combined into a single list of symptom..." (Lange et al. 2010, p. 252). The most current manual is the DSM-5 that has the most up to date criteria.

Gender Differences in ADHD

ADHD is typically perceived as a male-dominant disorder, but this is a misconception. ADHD doesn't skip females; it is just displayed differently. The symptoms are shown differently, there are different experiences of comorbidity, and females commonly have inattentive type. Comorbidity in males are more likely to be conduct disorder, aggression, delinquency, and acting outwardly (Quinn & Wigal, 2004). Females with ADHD are most likely to experience depression, substance abuse, eating disorders, and social problems (Stewart & Hinshaw, 2008). Females have "greater cognitive and attentional impairment and may be rejected more by their peers" (Quinn & Wigal, 2004, p. 4). A woman who wasn't diagnosed until her 30s realized that her ADHD was shown through insomnia, high stress, inability to focus during group conversations, and was considered a day dreamer (Stewart & Hinshaw, 2008). She also experienced years of depression and also severe postpartum depression (Stewart & Hinshaw, 2008). Most comorbidity may be identified before its rooting issue.

The common symptoms among females who have ADHD include forgetfulness, lack of organization, and low self-esteem (Quinn, 2005). If females are the hyperactive-impulsive type, it will be seen through talkativeness and emotional reactivity rather than physical activity (Quinn, 2005). Symptoms are difficult to identify in females because of gender roles and they try harder to hide them. Females try to compensate for their difficulties, like taking more time to study and asking for help (Sigler, 2005). Females also tend to be “people pleasers” to fit in and mask their differences (Sigler, 2005).

Gender roles play a part in differences as well. Females with ADHD feel as though they are failing to meet their gender role that society expects (Quinn, 2005). Sadly, females can begin to feel this pressure at 8-to-9-years-old (Quinn, 2005). Girls and women feel pressure to keep up appearances, stay organized, have self-control, and other societal expectations (Sigler, 2005). There may also be evidence that females display symptoms of ADHD at different times than their male counterparts. Puberty and the academic change of middle school tend to bring out the inattentive symptoms in females (Quinn, 2005).

There were 18 studies of clinic-referred samples found that compared boys and girls with ADHD. These studies noted that the symptoms of boys and girls were similar in behavior and emotion (Soffer, Mautone, & Power, 2008). Shared similarities include struggling with impulsivity, academic performance, and peer interactions; however, the boys still showed more hyperactivity, conduct disorder, and peer aggression (Soffer, Mautone, & Power, 2008). This reveals that the girls whose symptoms were recognized are similar to those of boys with ADHD. So, rather than looking at the girls who are clinic-referred, it is important to look at community samples where undiagnosed females remain. There was another analysis done on these 18 samples along with 20 others that compared boys and girls with ADHD. This analysis found that

the participating girls showed less hyperactivity, less externalizing symptoms, more internalizing symptoms, and lower intellectual functioning (Soffer, Mautone, & Power, 2008). It was also noted that females with ADHD show their aggression in relationships. This includes gossiping, excluding others from a group, and rejecting friendships (Soffer, Mautone, & Power, 2008). These findings show a slight better representation of females with ADHD, but not quite.

Teacher knowledge of ADHD

Teachers are one of the first to recognize ADHD behaviors in children. In the classroom, children are working on multiple tasks, faced with academic challenges, experience peer interaction, and are expected to cooperate. Teachers are the first to notice if a student is struggling with these aspects. Because of this, it's suspected that teachers are knowledgeable of ADHD. Unfortunately, this is not completely true. In a national survey of 550 teachers, a majority of them reported that they have received very little to no training in ADHD (Quinn & Wigal, 2004). Only 10% of schools from the survey claimed to have provided substantial training for their teachers (Quinn & Wigal, 2004). The lack of teacher knowledge on ADHD could be a major reason why female students are going undiagnosed. It is said that 4 in 10 teachers reported having a difficult time recognizing ADHD in female students (Quinn & Wigal, 2004). There are even teachers who say that they don't report suspicions of ADHD when noticed (Quinn & Wigal, 2004). Possibly, if teachers were trained on ADHD, they would be more confident identifying ADHD symptoms and giving referrals. 63% of the 541 parents who took part in the survey claim that teachers "play a very important role in helping children with ADHD" (Quinn & Wigal, 2004). There are clear problems when teachers aren't receiving training for ADHD, but parents are relying on them to help their children.

Although there are teachers who are not specifically trained in ADHD, teachers do provide alterations to curriculum and the classroom to accommodate their students with ADHD. Alterations are made through a lesson and in the classroom environment. When introducing a lesson, the teacher can review prior knowledge, set expectations regarding behavior and learning, provide simple instruction, and tell the students what materials are needed (U.S Department of Education, 2008). Doing so will help students stay organized and on task. When conducting the lesson, teachers can provide students with technology assistance, helpful materials to foster learning and understanding, and have the student work with another student who is known for setting positive examples (U.S. Department of Education, 2008). Teacher should also restate instructions, continually evaluate the student, ask the student exploratory questions, divide work into smaller sections, and give extended time to complete work (U.S. Department of Education, 2008). These strategies will assist the student in completing work, encourage participation, reduce frustration, and monitor their learning. To help with transitioning to a new task, some teachers give warnings in advance that the lesson is ending, and preview the upcoming lesson (U.S. Department of Education, 2008). Teachers do this to give the student time to prepare for transition without it being abrupt. Other strategies that teachers use in their classroom are helping students develop time management skills and study skills. Students work best when there is a schedule and structure. Teachers can use timers, have visible calendars, and a daily schedule of class activities (U.S. Department of Education, 2008). Student skills that are helpful for those with ADHD include adaptation of instructional worksheets, drawing visuals such as Venn diagrams to understand concepts, checklists for materials, organization, and note-taking (U.S. Department of Education, 2008). Checklists and organization skills are a great way for students

to stay on track and not forget materials or assignments. Adaptation, note-taking, and visual techniques are helpful for focusing and learning.

Behavioral interventions also take place in the classroom. Teachers use behavioral intervention through keeping the class free from distractible objects, give immediate praise for appropriate behavior, give specific examples of praise, and have parent-teacher conferences (U.S. Department of Education, 2008). These strategies help assist the child in developing appropriate behaviors and interrupt inappropriate ones. Teachers also use different classroom management styles to promote positive behavior and help students manage their own behavior. A few of these management styles are behavioral contracts, using tangible rewards, a token economy system, and Positive Behavioral Interventions and Supports, or PBIS (U.S. Department of Education, 2008). Behavioral contracts help students with ADHD help accountable for inappropriate behavior. Behavioral contracts also promote classroom involvement because contracts are created between the student and teacher. Tangible rewards and economy systems are great motivators for students with ADHD to stay on task, manage behavior, participate in class, and improve self-esteem. PBIS is very popular among school districts. It is a method to improve behavior and skills and eliminate inappropriate behavior through collaboration of the school, families, and community (U.S. Department of Education, 2008).

When a teacher has a student with ADHD, it is most effective if they collaborate with the child's parents and other faculty such as other teachers, school counselors, and special education teachers (U.S. Department of Education, 2008). Through collaboration with others that are in the student's life, a specialized program can be designed for the student. Options that can be pursued are Individualized Educational Program (IEP), assistance through the Individuals with Disabilities Education Act (IDEA), and the 504 plan. An IEP is a program that meets the child's

specific needs for him or her to be successful in school (Understood, n.d.). IDEA is a law that provides services for students with disabilities who attend public schools (Department of Education, n.d.). IDEA has requirements to meet, and isn't always something guaranteed. The 504 plan also provide support and accommodations to students with disabilities, but is not tailored with individualized instruction (Understood, n.d.). 504 plans are set in place to avoid discrimination and provide the same education that their peers receive.

ADHD Long-term in Females

There are several strategies and programs that assist students with ADHD to succeed in school and in life. Unfortunately, girls are not benefiting from the services and resources that could be making a difference in their life. Females with ADHD who are undiagnosed suffer through childhood, adolescences, and adulthood. In education, females with ADHD are more likely to repeat grades than their male counterparts (Quinn & Wigal, 2004). If females were diagnosed and received the available help, the retention rate would decrease. Inattentive symptoms affect academics tremendously because it involves difficulty of executive functioning. These functions involve planning, regulation, working memory, and self-motivation (Barkley, n.d.). When a child with ADHD is having difficulty with these executive functions, performing well and enjoying school will be an ultimate struggle. Children who remain untreated for ADHD are likely to not develop appropriate social skills, emotional regulation, and have low impulse control (Williams, 2015). This sets undiagnosed females up for continuing difficulties in the future. In adolescence, it is likely for females with undiagnosed ADHD to engage in at risk behavior more than males (p. 580). At risk behaviors that are most common are substance abuse and promiscuity. Substance abuse is 3 to 4 times higher of a risk when not treated for ADHD (Williams, 2015). These behaviors move into adulthood and promote development for more

disorders. The longer females go without diagnosis and treatment, they more at risk for developing depression, anxiety, and eating disorders (Stewart & Hinshaw, 2008). Struggles that were experienced in childhood and adolescence transform into similar struggles in adulthood. For instance, instead of them struggling with school performance and peer relationships, females are going to struggle with work performance and develop marital problems (Williams, 2015). It is also said that adult women with ADHD have greater psychological distress, but their psychiatric symptoms caused them to develop effective cognitive strategies (Quinn, 2005, p. 582). Because these women with ADHD aren't receiving the support and resources, they have developed these strategies to cope. Unfortunately, if women are diagnosed with ADHD, it's when they are adults and they recognized their symptoms (Sigler, 2005). These women are led to a diagnosis because they experienced stress and difficulty raising children and dealing with job and home responsibilities (Williams, 2015).

It is unfair for females with ADHD to go through all parts of life without proper diagnosis and support. Through research, there are flaws found in the American Psychiatric Association criteria for ADHD. "That is, if you have five symptoms, you have ADHD. If you have six or more, you do" (Sigler, 2005, para. 13). Another flaw in the criteria is that the person must be showing symptoms from an early age (Sigler, 2005). This isn't the case for females. It's been proven that females with ADHD have majority inattentive symptoms that are hard to distinguish at young ages. ADHD criteria only fits the stereotypical symptoms of a young boy who bounces off the walls and can't sit still. There is an injustice in the American Psychiatric Association ADHD criteria that excludes female-dominant symptoms. This could also be a result of there being very little research involving females with ADHD.

Methods and Procedures

The subject participants in the research study are elementary teachers and school psychologists from schools in Monterey County. I selected 7 schools from two school districts that are far in distance. I did this to gather information from varying locations. I selected these particular schools because they have fewer resources than the wealthier districts that surround them. I wanted to find out how these teachers accommodate their students with the potential of some resources not being available. After selecting 7 schools from the two districts, I randomly selected 40 teachers to reach out to via email. The teachers involved in the study are 3rd through 8th grade educators.

The material used in the research study is a questionnaire of five questions (See Appendix A). I used this approach because a questionnaire is less time consuming for teachers. They are able to complete the questions when they have free time or over the weekend. Also, this is the time of year when teachers are preparing for standardized testing and leaves them with little time to do other things. The answers that I received from teachers helped answer my questions regarding how they identify ADHD symptoms among students, how they accommodate students with ADHD in their classroom, and which strategies work and which do not work with students who have ADHD. I also planned on asking questions to school psychologists. The answers that I planned on receiving would have helped answer how schools accommodate their students with ADHD, how students are diagnosed with ADHD, and what causes female students to be undiagnosed. Unfortunately, none of the school psychologists responded.

Results Findings, and Discussion

This section will analyze and answer the secondary research questions that are stated in the Introduction and Background. The secondary research questions are answered from both peer-

reviewed articles and field research findings. The Discussion section will be expressing thoughts and opinions which are supported by the results of the questionnaires completed by local teachers and findings through literature.

After extensive research, the results have confirmed that female students are greatly affected when undiagnosed with ADHD. *What are the consequences of not being diagnosed with ADHD in female students?* Research revealed that females who remained undiagnosed had higher risks of developing comorbidities and participating in risky behaviors. Females who are undiagnosed with ADHD have a higher chance of developing depression, anxiety, peer problems, low self-esteem, substance abuse, and eating disorders (Stewart & Hinshaw, 2008). “The most common diagnosis of a woman before she receives her ADHD diagnosis is depression...” (Sigler, 2005, para. 12). When females are not diagnosed at an appropriate age, they are more likely to develop more disorders and it becomes a lifelong struggle. Since female students display symptoms like difficulty focusing on tasks, easily distracted, and lack of organization, it’s easy for them to fall behind academically. When a child is diagnosed with ADHD, these symptoms can be corrected. Unfortunately, for undiagnosed female students, they will continue these behaviors and carry them on into adolescence and adulthood. During school, female students who are undiagnosed are more likely to have to repeat grades than males with ADHD (Quinn & Wigal, 2004). When these females are out of school and enter adulthood, they will begin to experience job performance issues and marital problems (Williams, 2015). Undiagnosed females with ADHD will continue to struggle in life because they never received appropriate treatment or learned how to control impulses, regulate their emotions, and develop social skills (Williams, 2015).

What causes female students to be under-diagnosed with ADHD? The main reason why female students aren’t diagnosed with ADHD is because of stereotypes and gender. When

diagnosing a child with ADHD, there are specific criteria and symptoms that must be met. The child must show symptoms of ADHD by 7-years-old, must display 4 or more symptoms to be predominantly hyperactive-impulsive, and must display 6 or more symptoms to be predominantly inattentive (Brock, 1997). These components of ADHD criteria have shown to not fit how females display ADHD. Research has revealed that it isn't until puberty or middle school when female students show noticeable symptoms of ADHD (Quinn, 2005). Female students are also typically inattentive which is very difficult to identify at younger ages (Quinn, 2005). The criteria that is made for ADHD is also based on the symptoms that are most seen by males with ADHD, since it's considered a male-oriented disorder. When people think of ADHD, they think of a young boy not being able to sit still and is usually disruptive. They don't think of a young girl who is day dreaming, forgetful, or overly talkative. In a study, 85% of teachers thought that female students were more likely to remain undiagnosed because their behaviors didn't resemble "acting out" (Quinn & Wigal, 2004, p. 2). And when female students are diagnosed with ADHD hyperactive-impulsive type, they are to be overly talkative and emotionally reactive rather than reacting physically like boys with ADHD (Quinn, 2005). This goes to show that many symptoms between males and females with ADHD differ.

Other reasons for female students remaining undiagnosed include misdiagnosis, and that females have a tendency to mask their symptoms. Symptoms of ADHD tend to be similar to other disorders and problems. Some of these disorders include learning or language problems, anxiety, depressions, seizure disorders, problems with vision or hearing, and more (Mayo Clinic, n.d.). There are many cases where females are diagnosed with a different disorder when they actually have ADHD. It was found that clinicians are quick to diagnose females with other disorder other than ADHD (Quinn, 2005). It has also been found that female students have a

tendency to hide their symptoms. Most of the time female students don't know why they are struggling in school or in social situations, so they mask their difficulties. Research shows that female students are more likely to spend extra hours studying and will ask for help in order to keep their grades up (Sigler, 2005). To educators, this will only look like a student who is caring about her grades, not a student who is having internal struggles because of ADHD. To cover up social difficulties, female students with ADHD will be often seen as "people pleasers" (Sigler, 2005). This is because they want to fit in with their peers and avoid showing their struggles in public.

Are they more in tune to have comorbidity than male counterparts? Research indicated that female students have an increased likelihood of developing Tourette's syndrome, extreme mood disorders, substance abuse, OCD, and learning disabilities (Quinn, 2005). The likelihood is increased because they are undiagnosed, not receiving treatment, and have more psychiatric symptoms than males with ADHD (Quinn, 2005). Comorbidities that females are least likely to have are conduct disorder, aggression, or other disruptive behavior (Quinn & Wigal, 2004). Female students with ADHD are least likely to be comorbid with these because they are naturally covert rather than overt in behaviors.

How do local school districts currently diagnose students for ADHD? To find results to this question, the goal was to receive information from local school psychologists. After reaching out to six school psychologists via email, no one replied. Through research on the Internet, it was found that there is a multiple step process in diagnosing a child for ADHD. When a child is suspected to have ADHD, there will be a medical exam done, gathering of health history and school records, interviews with people who are close to the child, a rating scale, and checklist of ADHD criteria to compare symptoms (Mayo Clinic, n.d.). There is no research found that

indicates if a school psychologist, general practitioner, or other medical doctor performs different assessments than the other. There is also no evidence of females and males receiving different assessments for ADHD. All children are required to go through the same process and must meet the same criteria provided by the American Psychiatric Association.

If female students are diagnosed with ADHD, how do school districts support them in their academics? The intended research to answer this question was to be through local school psychologists. After not receiving any feedback from school psychologists, results had to be found elsewhere. Through online research, it was found that school districts provide programs and plans for students with disabilities. These programs and plans are IDEA, IEP, and the 504 plan. When creating a plan for a child with ADHD, the teacher, parents, and other faculty will collaborate (U.S. Department of Education, 2008). These three options must be through the school district because they all fall under a government law. An IEP is through the Individuals with Disabilities Education Act, the 504 plan is through the Section 504 of the Rehabilitation Act, and IDEA is a federal law to provide resources and equity in public schools (Understood, n.d.). Obtaining one of these services will provide a student with ADHD equal opportunity and assistance in public education. There was also information found through a third grade teacher and an eighth grade teacher. All of the students that the eighth grade teacher has with ADHD either have an IEP or SST to accommodate them in the classroom (Appendix A). SST stands for Student Study Team. The SST involves the child, parents, teacher, administrator, and special faculty to monitor the child's academics, behaviors, and social-emotional progress (Understanding The Student Team, n.d.). The third grade teacher has a female student diagnosed with ADHD Inattentive type, and has a SST to monitor her behaviors in class (Appendix A).

How can girls with ADHD thrive in the classroom according to teachers? This question was intended to be answered by local elementary teachers. The results from a local fifth grade teacher indicated that in order for their student(s) with ADHD to thrive is through giving signals, standing close by during instruction, and providing reminders (Appendix A). These strategies are used to help the student focus in class and stay on task. It is also beneficial to have a side table to have the students work at to avoid distractions (Appendix A). From an eighth grade teacher, successful strategies included seating the student close to the teacher and away from windows or doors to reduce distraction (Appendix A). This teacher also gives the students short breaks to get refocused and allows students to chew gum or candy to give them something to concentrate on (Appendix A). Another useful strategy used to ensure success in the classroom is the use to IEPs and SST (Appendix A). Implementing an IEP or SST for a student with ADHD provides her with tailored support for academic success. From a third grade teacher, the use of seating and providing breaks was also found effective. The teacher will give the student an item or note to walk over to another class (Appendix A). The teacher also mentioned using a rewards and consequences system to encourage certain behaviors. When the system doesn't work, she will alter it for the student to succeed (Appendix A). The third grade teacher also noted that positive acknowledgement was effective for her students, and negative consequences weren't as effective (Appendix A). To help with behaviors of students with ADHD, the third grade teacher will find ways to turn something negative into something positive. For instance, the teacher has a student with ADHD who acts as the "class clown". She decided to give the student a joke book and have the student rehearse jokes to tell to the class. With this specific student, the teacher noticed immediate reinforcement was most effective; so she gives the student four opportunities throughout the day to perform (Appendix A).

Discussion

After gathering and analyzing information, I believe that female students are suffering immensely from under-diagnosis of ADHD. The evidence cannot be ignored that female students with ADHD are suffering academically, socially, and mentally. Because females exhibit internal struggles, it makes sense that they are more likely to develop comorbidities that include depression, anxiety, eating disorders, and have low self-esteem (Stewart & Hinshaw, 2008). Being naturally covert while having untreated ADHD just increases the outcome of developing more disorders. Female students who are undiagnosed with ADHD have a high chance of never learning to control their impulses, regulate their emotions, and develop appropriate social skills (Williams, 2015). I think that not developing these skills contribute greatly to being comorbid with other disorders. Research shows that depression was the most common diagnosis prior to being diagnosed with ADHD (Sigler, 2005). This supports the idea that undiagnosed females develop an additional disorder. I also believe that female students who are undiagnosed with ADHD carry on their struggles through adolescence and adulthood. Females who are undiagnosed with ADHD that's carried on to adolescence are 3 to 4 times more likely to develop substance abuse (Williams, 2015). When females with undiagnosed ADHD reach adulthood, substance use is most likely to continue; and they will begin to struggle with adult tasks like keeping jobs, maintaining romantic relationships, and parenting (Williams, 2015).

Since completing research and conducting questionnaires, I firmly believe that there is a gender influence on ADHD criteria and what adults think ADHD looks like. The answers received from local elementary teachers confirmed that ADHD is most noticeable in male students (Appendix A). An eighth grade teacher had shared with me that in her two years of teaching, she had only experienced male students with ADHD, 15 of them to be exact (Appendix

A). There has also been evidence found that there is a lack of gender-specific criteria in diagnosing ADHD (Quinn & Wigal, 2004). Female students are more likely to have inattentive symptoms that can often be overlooked. Generally, women are older in age when they are diagnosed because they find themselves struggling with adult tasks or their own child is diagnosed with ADHD (Sigler, 2005). I think that females shouldn't go through life struggling and not knowing why until they later suspect they have ADHD. So much suffering can be avoided if females are diagnosed at an appropriate time.

After finding a study on 550 teachers, I discovered that 4 of 10 teachers had a difficult time identifying ADHD symptoms in girls (Quinn & Wigal, 2004). I think that if teachers are having a hard time recognizing ADHD in females, there should be teacher training to educate them on how to identify gender-specific symptoms. Since there are gender differences when it comes to ADHD symptoms, the American Psychiatric Association criteria should be updated. The ADHD criteria doesn't represent females well because it requires them to have a minimum of specific symptoms and have an onset of 7-years-old (Brock, 1997). The criteria only fits what is common in males because the majority of ADHD studies are done on males. Females have been documented to have symptoms like over talkativeness, being lethargic, and display peer problems like gossiping (Soffer, Mautone, & Power, 2008, p. 16). If the criteria were updated and teachers were trained in ADHD, I believe that female students would be better represented in ADHD.

Through gathering information from local elementary teachers, I found similarities in what strategies work best to ensure success in the classroom. All teachers said that seating helped their students with ADHD (Appendix A). Seating the student(s) with ADHD close to the teacher and near a positive peer is beneficial. I think that seating can help a student with ADHD stay

focused and on task, and motivate them to participate. I also think that having a daily schedule and tangible rewards are strategies that work as well. Not only was a daily schedule and tangible rewards recommended in online research, but also recommended by a local fifth grade teacher. “The schedule would help because the student would have their day broken down into segments, so they could take a break during transitions” (Appendix A).

Recommendation

The recommendations provided are to assist female students who are undiagnosed with ADHD. The first recommendation is to conduct more community samples. Having additional data on the community will help identify females who haven't been diagnosed with ADHD. Collecting data from these undiagnosed females can provide more insight into why they remain undiagnosed. Through this data there may also be a discovery of other symptoms that females experience that are currently unknown. Following this recommendation is updating the American Psychiatric Association criteria for ADHD. There needs to be published documentation of the symptoms, behaviors, and criteria that females with ADHD display. It is important to have the gender-specific criteria documented for the public and professionals to have access to in order to accurately recognize females with ADHD. The last recommendation is to provide training in ADHD for teachers. Previously stated, teachers are one of the first people to recognize disorders and disabilities in children. Teachers need to receive training in ADHD for the reason of being able to provide support for their students and to feel confident in recognizing the disorder. The three recommendations will help reduce the number of female students who are undiagnosed, and will help female students with ADHD succeed academically, socially, and mentally. These recommendations will also educate the population about what ADHD looks in females.

Problems and Limitations

The challenges that were faced while conducting research involved the gathering of data from local schools. The majority of teachers who were asked to participate, declined. Since it is the time of year when teachers are preparing for standardized testing, they felt that they didn't have time to answer the questions. A handful of teachers replied saying that they didn't have experience with students who have ADHD; from others, I never received a response. Of the 40 teachers that I reached out to, 5 agreed to participate. Of the 5 teachers who agreed, 3 submitted the questionnaire. There were also 6 school psychologists whose emails were no longer active, or they were on spring break and never replied back to my request. With the lack of local involvement, I was unable to gather sufficient information on how local school districts assess male and female students with ADHD, and if females are diagnosed differently. Another limitation is that the results and findings from the field research does not represent results and findings nationwide. The field research was limited to two school districts in Monterey County which is a small sample.

There was a limitation of information regarding statistics on females with ADHD. This is because there is very little research on ADHD that involves females as participants. There is an under-representation of females in ADHD studies, not giving accurate statistics on females. Also, most of the research found on females with ADHD only involve older and not school-aged females. Another limitation is that clinical studies are the predominant source of research. Clinical studies include females who are diagnosed with ADHD and have symptoms that are similar to their male counterparts, hence, why they received a diagnosis (Soffer, Mautone, & Power, 2008). I didn't find research or studies on community samples of females who claimed to have ADHD but were not diagnosed. If there was research on that, there would be accurate information regarding symptoms and effects of females who are undiagnosed. Although there are

these limitations that took place, most of the secondary research questions were sufficiently answered. I was able to gather adequate information on the effects of under-diagnosis of ADHD in female students, the comorbidities of female students with ADHD, what happens when female students remain undiagnosed, and what can be done to support female students with ADHD to ensure academic success.

Conclusion

Through various peer-reviewed articles and contacting 7 schools and 40 educators in Monterey County with questionnaires, I found that the under-diagnosis of ADHD in female students greatly impacts their academics, social skills, and their future. When females with ADHD are undiagnosed, they are losing the opportunity to receive school district resources and support in the classroom. If female students with ADHD were recognized at an appropriate age, they would lessen the possibility of being held back a grade and developing additional disorders. They would also be able to develop proper social skills, learn to regulate emotions, and control their impulsiveness (Williams, 2015). It is important for female students with ADHD to be diagnosed for their success in school, and also for the outcome of their future. ADHD symptoms were found to have worsened with age and affects female's careers, child rearing, romantic relationships, and mental health (Williams, 2015).

Collected research from local elementary teachers supports that making alterations in the classroom and curriculum benefits females and males with ADHD. Teachers found success through seating arrangements near the teacher and role models, giving small breaks, easing transitions with timers and schedules, giving signals to refocus, and having a rewards system (Appendix A). Research through articles suggested that district resources for students with ADHD include IDEA, IEP, and the 504 plan. When collecting research through local educators,

the district resources used the most were IEPs and the SST process (Appendix A). Using these resources has confirmed academic success among students with disabilities.

The participating teachers in my research also reported experiencing more male students with ADHD than females (Appendix A). This information can support the popular idea that ADHD is more prevalent in males than in females. Although, through additional findings, it's possible that ADHD may in fact be just as prevalent in females as it is in males. It was shocking to find that a majority of educators from a study of 550 claimed to have very little or no training in ADHD (Quinn & Wigal, 2004). Because teachers are one of the first to recognize a disorder in children, they should be properly trained to do so. This is believed to be one of the reasons why female students with ADHD are undiagnosed. Along with the lack of teacher training in ADHD, the lack of gender-specific ADHD symptoms was found to be another reason for under-diagnosis. Female students with ADHD are likely to be diagnosed if they meet the ADHD criteria that was created from male-dominant studies. Female symptoms are less noticeable than male's; females typically display inattentive behaviors rather than hyperactive. Through updating the American Psychiatric Association's criteria for ADHD, conducting more research focused on females with ADHD, and teaching educators how to recognize female symptoms, the under-diagnosis of ADHD in female students is bound to fall. Female students with ADHD will finally be able to receive the support they deserve and flourish in their education and life.

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Appendix A
Teacher Questionnaire

1. Do you have any students in your class who have ADHD? If so, are they male, female, or both?
2. Do you notice more male or female students who exhibit ADHD behaviors?
3. Have you ever recommended that a child be assessed for ADHD? If so, what led you to recommend him or her?
4. If you have students now or in the past who have ADHD, how did you ensure their success in the classroom?
5. Have you noticed strategies that work best in the classroom for students who have ADHD? Have you noticed classroom strategies that don't work for students who have ADHD?