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## Medication Versus Mindfulness Meditation on Symptoms of ADHD in Adult Women

Maria Skoulidas  
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Maria Skoulidas

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Walden University  
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Abstract

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by

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MS, Walden University, 2017

MA, Loyola University, 2014

MS, Loyola University, 2011

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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## Abstract

A recent spike has occurred in women diagnosed with less common and often overlooked ADHD symptoms. Using the mindfulness to meaning theory as the foundation, this study was conducted to explore how mindfulness meditation (MM) and medication affected three related factors commonly found in women with ADHD, self-concept, risky behaviors, and familial relationships. The research questions were formulated to determine if there was a difference in subscale scores of each variable based on the type of treatment the participant was using, either mindfulness meditation (MM) or prescription medication, to deal with ADHD symptoms. A pre-experimental static group comparison design was used. The target population was women between ages 18 and 65 who were biologically female, had an ADHD diagnosis, and used either MM as a form of treatment, or medication as a form of treatment. Data were collected from 109 women via an online survey and once assessed, it was determined that some surveys could not be used in the final analysis. Ultimately, there were 52 participants in the prescription medicine group and 51 in the MM group (N = 103). An ANOVA analysis was used to examine the data. The study found that women using MM had lower Likert scale scores, than did women using medication. This could imply that MM is an effective treatment option for women dealing with negative symptoms of ADHD. The study's analysis has potential implications for positive social change because it encourages the examination and use of other treatments to assist women in successfully dealing with symptoms of ADHD. For the large number of women that do not want to use medication to treat these symptoms, this study shows that alternative treatments may be an effective approach.

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## Dedication

For my mother, Sophia.

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Dr. Trimble, you are a superpower and a force to be reckoned with. I pray to one day be worthy of your adoration. Dr. Diebold, you are brilliant beyond measure and having had the opportunity to work so closely with you has humbled me. I am honored to call you both my mentors and guiding light through this remarkable process of completing my doctorate.

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Luka, my son and light of my life, I want to become the woman you already think I am. You are my purpose.

Paul, my brother, thank you for always making me believe I was the smartest girl in any room. You gave me the courage to become the woman I am today.

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## Chapter 1: Introduction to the Study

### Introduction

In 1902, British pediatrician Sir George Frederic Still studied an abnormal defect of moral control in children, noting that affected children could not control behavior as a normal child would (Lang et al., 2010). This abnormal defect of moral control in children was later called *hyperkinetic impulse disorder* and was the precursor to the diagnosis of attention-deficit/hyperactivity disorder (ADHD; Lang et al., 2010). In 1968, the second edition of the *Diagnostic and Statistical Manual of Mental Disorders* (2nd ed.; *DSM-II*) was published and included a disorder that resembled ADHD called *hyperkinetic reaction of childhood* categorized by a short attention span, hyperactivity, and restlessness (Lang et al., 2010). Not until 1987 did the American Psychiatric Association formally recognize this disorder as ADHD (Davis & Mitchell, 2019).

ADHD is categorized by common symptom presentation in men, women, and children. These symptoms include distractibility, difficulty focusing, forgetfulness, attention difficulties, hyperactivity, and anxiety (Stenner et al., 2019). Other symptoms commonly associated with ADHD include irritability, anger, and a lack of restraint (Babinski & Waschbusch, 2016; Stenner et al., 2019; Young et al., 2020). Certain symptoms may be more pronounced based on gender.

In the past 5 years, ADHD diagnosis in women, ages 18 to 65, increased by 85% (Hosain et al., 2012; Shoham et al., 2020; Stenner et al., 2019; Young et al., 2020). Although diagnoses are becoming more prevalent, research conducted in 2012 showed that a significant number of women choose to live with ADHD, rather than be properly

diagnosed (Hosain et al., 2012; Stenner et al., 2019). Women tend to have uncharacteristic symptoms of ADHD, making them difficult to recognize even by trained professionals (Babinski & Waschbusch, 2016; Stenner et al., 2019; Young et al., 2020). Common symptoms exhibited by women with ADHD are low self-concept, inattentiveness, being withdrawn, daydreaming, risky behaviors, and familial relationship problems (Babinski & Waschbusch, 2016; Barkley, 2010; Foley et al., 2014; Hirsch et al., 2018; Stenner et al., 2019; Young et al., 2020). In this study, I focused on only three specific symptoms of ADHD found in women: low self-concept, risky behaviors, and familial relationships; these three are among the variables most indicative of an ADHD diagnosis in women (Davis & Mitchell, 2019; Young et al., 2020).

Despite symptoms, women are apprehensive about seeking treatment. Research has shown that women worry about social biases and medication side effects, preferring to find ways to live with ADHD rather than receiving a proper diagnosis (Nguyen et al., 2020). There are interventions and treatment options available, which can be adjusted depending on the severity of symptoms and quality of life concerns (Masuch et al., 2019; Nguyen et al., 2020; Pham et al., 2017). Should medication not be an option, behavioral therapies can be combined and tailored for treatment. Many times, behavioral therapy is coupled with family counseling to treat self-concept, risky behaviors, and familial relationships without prescribing medication (Nguyen et al., 2020; Pham et al., 2017).

In this study, I compared two approaches to symptoms of ADHD—mindfulness meditation (MM) training and medication—on self-concept, risky behaviors, and familial relationships among women 18 to 65 years of age who had been diagnosed with ADHD.

Research conducted by Epstein (2013) and Nguyen et al. (2020) supported MM as a treatment approach for ADHD; however, there is no gender specific research indicating the outcomes of MM for symptoms often found in women. This treatment may be a good treatment option for patients concerned with the effects of taking medication, as it does not have a stigma attached to it nor does it cause negative side effects.

Chapter 1 outlines the research study. I begin the study by describing the topic of ADHD symptoms as they relate to women. The following section gives a description of mindfulness to meaning theory (MMT), explaining its use and application on ADHD symptoms. Further is the problem statement, the purpose statement, and an explanation of the research question and hypothesis. The next section is the nature of the study, the definitions of terms used, assumptions, and limitations. Lastly, the significance of the study, along with its contributions to the field and to society, is discussed, and I provide a summary of all the important topics discussed in this chapter.

### **Background**

Since 1955, scientists have believed that 5% of children and a small number of adults battle ADHD daily (Tatar, 2020). However, research conducted in the past decade has reported that 11% of children ages 4 to 17, and 4.5% of adults ages 18 to 44 have at some point received a diagnosis of ADHD (Epstein, 2013; Tatar, 2020). ADHD is considered a serious neurodevelopmental disorder; its symptoms interfere with daily activities and functional impairments causing detrimental difficulties (Tatar, 2020).

According to Voight (2017), a thorough understanding of functional impairments associated with ADHD can lead to better-targeted therapy. Functional impairments in

ADHD include issues with social relations, daily life, and criminality, as well as academic and occupational functioning (Mohr-Jensen & Steinhausen, 2016; Voigt et al., 2017). Furthermore, researchers have recognized that adults with ADHD have severe impairments in major life activities compared to adults with other psychiatric problems (Potvin et al., 2016). The severity of these impairments can have economic impacts and negative social and interpersonal ramifications (Mohr-Jensen & Steinhausen, 2016; Voigt et al., 2017).

Many times, individuals with severe symptoms of ADHD have difficulty being a part of society, keeping employment, or performing well academically; consequently, they are labeled unreliable (Tatar, 2020). The domino effect of ADHD symptoms left untreated can be harmful, as a lack of employment or education could also translate to retirement in poverty (Deault, 2010; Golden & Gross, 2010; Willis & Burnett 2016). Moreover, studies have found that adults with ADHD have a significantly greater chance of engaging in antisocial and criminal behaviors and of being arrested, convicted, or incarcerated (Deault, 2010; Golden & Gross, 2010; Willis & Burnett 2016). Also, higher rates of personality disorders have been found in adolescents and adults who are struggling with symptoms of ADHD (Nordahl & Rasmussen, 2012; Voigt et al., 2017).

The most common symptoms of ADHD found in men, women, and children are categorized into three sections: behavioral, cognitive, and mood functions (Dekkers et al., 2021; Reats et al., 2012; Tatar, 2020). Children and adults tend to share behavioral symptoms, which include aggression, fidgeting, impulsivity, and repetitive behaviors (Reats et al., 2012; Tatar, 2020). Cognitive and mood features appear as absent-

mindfulness, mood swings, forgetfulness, and difficulty focusing (Dekkers et al., 2021; Reats et al., 2012; Tatar, 2020). Symptoms of depression are often noted, and the prevalence of depression is exceptionally high in people diagnosed with ADHD (Dekkers et al., 2012; Tatar, 2020).

Some of the most common symptoms found in women diagnosed with ADHD are low self-esteem, risky behaviors, and conflict in familial relationships. Self-esteem is the combination of perceptions and values an individual holds true of their own self in comparison to others (Foley et al., 2014; Hirsch et al., 2018). For instance, Foley (2014) and Hirsch (2018) argued that self-esteem is constructed through social interaction with other people, especially family. Understanding the social interaction of attachments is rooted in early family experiences that impact a child's self-esteem (Babinski & Waschbusch, 2016; Davis & Mitchell, 2019; Foley et al., 2014; Hirsch et al., 2018). Inferior self-esteem stems from attachment or identity concerns and can be more of a challenge when it is met with a diagnosis of ADHD (Hirsch et al., 2018; Stenner & Davies 2019).

Risky behavior has also shown to increase when paired with a diagnosis of ADHD (Barkley, 2010; Chimiklis et al., 2018; Young et al., 2020). ADHD, as a biological condition, influences dangerous behaviors and can cause deficits that lead to poor self-control and risky behaviors (Barkley, 2010; Chimiklis et al., 2018; Young et al., 2020). More studies on the topic must be conducted to determine whether treating ADHD symptoms and depression could reduce promiscuous conduct (Barkley, 2010; Chimiklis et al., 2018).

The third common symptom of ADHD in women is complicated relationships with family. A diagnosis of ADHD affects all relationships of a person's life, causing disturbances to family and marital functioning and family environment (Hautamaki, 2018; Johnston & Tuscano, 2015; Syrjanen, 2018). Conflicts in relationships, especially with children, are more prominent in women dealing with symptoms of ADHD. This shift caused by the diagnosis creates a parent-child dynamic in which the non-ADHD person in the relationship feels responsible for everything and the person with ADHD feels like they are underachieving and are constantly being scrutinized (Hautamaki, 2018; Johnston & Tuscano, 2015; Syrjanen, 2018).

For over 50 years, behavioral therapy was one of the only means of symptom treatments for individuals diagnosed with ADHD, as Ritalin was not used for treatment until 1955 (Voight, 2017). Since then, the Federal Drug Administration has recognized variations of prescription medications, like Adderall, as effective treatment options for ADHD (Voight, 2017). However, there have been no new treatments options for those diagnosed with ADHD since the 1970s, even though diagnoses have steadily increased for more than three decades (Stenner et al., 2019; Young et al., 2020).

Medication is an effective treatment often used for ADHD; however, it can cause serious side effects such as anxiety, weight loss, heart palpitations, insomnia, and vomiting (Potvin et al., 2016; Yoshimasu et al., 2018). These side effects are like the symptoms of ADHD making it difficult for a person to function normally (Potvin et al., 2016; Yoshimasu et al., 2018). Reports have shown that, due to the side effects, a statistically significant number of patients stop following treatment regimens that include

taking medication (Graham & Coghill, 2008; Potvin et al., 2016; Stenner et al., 2019; Yoshimasu et al., 2018).

### **Problem Statement**

Diagnoses of ADHD are on the rise and those diagnosed report having trouble handling the symptoms (Deault, 2010; Golden & Gross, 2010; Willis & Burnett 2016). Studies have indicated a correlation between the symptoms of ADHD and a variety of physical and mental health problems, including compulsive eating, bipolar disorder, substance abuse, anxiety, chronic stress and tension, relationships, and low self-esteem (Babinski & Waschbusch, 2016; Deault, 2010; Golden & Gross, 2010). Women with ADHD report struggling with a low self-concept, a high inclination to engage in risky behaviors, and difficulties with family (Babinski & Waschbusch, 2016; Barkley, 2010; Stenner et al., 2019; Young et al., 2020)

Typically, the first form of treatment to help ease ADHD symptoms is medication (Cruz et al., 2015). However, the side effects associated with the medication have led to patient noncompliance, discontinuation of medication, and/or treatment failures (Cruz et al., 2015; Nguyen et al., 2020; Vago & Silbersweig, 2012). Another popular treatment option is behavioral therapy, as it does not cause side effects. Behavioral therapy offers more structure and teaches the patient to redirect patterns that could lead to the manifestation of symptoms (Cruz et al., 2015; Nguyen et al., 2020; Vago & Silbersweig, 2012). Although proven effective and not as harmful, engaging in behavioral therapy is time consuming and requires a trained professional executing the therapy on a weekly basis, making it less desirable for busy patients (Fuller-Thomson et al., 2016).

Furthermore, once treatment is terminated, a significant number of people have reported reverting to old patterns to help deal with their symptoms (Fuller-Thomson et al., 2016).

In the last 15 years, alternative treatments for ADHD symptoms have been steadily increasing, leading to healthier and more productive lives for people living with ADHD (Flores-Ruiz, 2017; Nguyen & Hinshaw, 2020; Nguyen et al., 2020; Vago & Silbersweig, 2012). As an alternative treatment option, MM has been shown to reduce the symptoms caused by ADHD and symptoms brought about by comorbidity (Nguyen & Hinshaw, 2020). Moreover, MM benefits a person's physical health and mental health and has no known side effects.

This study was conducted to address a gap in literature regarding the use MM has on self-concept, risky behaviors, and familial relationships. MMT supports the expectation that individuals with ADHD will struggle to control their symptoms, and medication may not be the best option for all patients (Flores-Ruiz et al., 2017). However, it remains uncertain if MMT, when applied to self-concept, risky behaviors, and/or familial relationships, is a useful treatment option for women diagnosed with ADHD.

### **Purpose of Study**

The goal of this pre-experimental static group comparison design was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among women with ADHD who reported using medicine or meditation to manage their symptoms. A pre-experimental static group comparison design, such as this one, is used to observe a group after a treatment has been applied to

gauge whether the treatment has the potential to cause change (Campbell & Stanley, 1963; Tabuena, 2021). In this case, one group solely used MM to treat symptoms, while the other group solely used medication to treat symptoms. The goal was to measure the differences in scores of MM and medication on self-concept, risky behaviors, and familial relationships for women diagnosed with ADHD.

### **Research Questions**

RQ: To what extent do self-concept subscale scores, risky behavior subscale scores, and familial relationships subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms?

$H_{01}$ : Self-concept subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

$H_{a1}$ : Self-concept subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

$H_{02}$ : Risky behavior subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

$H_{a2}$ : Risky behavior subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

*H*<sub>03</sub>: Familial relationships subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

*H*<sub>a3</sub>: Familial relationships subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

### **Theoretical Frameworks**

Garland's MMT is the theory applied to this research. The theory states that MM is a practice in which a specific technique is taught and then practiced to use when controlling thoughts, perceptions, and experiences (Garland et al., 2017). MM teaches attention and awareness to exist in an emotionally calm and stable state by turning any stressful thoughts into metacognitive states of awareness (Shapiro & Jazaieri, 2014). MMT explains that mindfulness facilitates stress coping by facilitating reappraisal, thereby promoting fluid adaptation and reconstruction of a person's long-term views of the world and themselves (Garland et al., 2017). Reappraisal focuses a person's attention on new information that may have been overlooked or old information reexamined to bring about a more positive outlook (Deault, 2010; Garland et al., 2017; Golden & Gross, 2010).

MMT successfully connects mindfulness to eudaemonic meaning using this idea of reappraisal (Deault, 2010; Garland et al., 2017; Golden & Gross, 2010). In other words, mindfulness generates meaning in life by promoting reappraisal. The practice of MM will help participants access a calmer state of awareness, allowing the brain to

recognize novel information and reassess this information with a more positive approach (Shapiro & Jazaieri, 2014).

For example, data have shown that lack of impulse control leads to many symptoms of ADHD and, over time, MM could make impulses stop surfacing altogether. Research suggests that lack of impulse control has led to dysfunctional relationships and more risky behaviors, which in turn causes poor self-concept (Foley et al., 2014; Stenner & Davies 2019). If MM can help stop impulses from surfacing in the first place, then it can help decrease the difficulties brought about by lack of self-concept, risky behaviors, and poor familial relationships, making it an effective treatment option for ADHD (Deault, 2010; Golden & Gross, 2010).

### **Nature of the Study**

A quantitative research study is consistent with exploring the use of MM to treat symptoms of ADHD in women (Flores-Ruiz et al., 2017; Masuch et al., 2019; Roy, 2019). The participants for the study were from one of 12 ADHD affinity groups on the social media platform Facebook. The targeted groups include female members between ages 18 and 65 who have ADHD and were in the group for support with their symptoms and daily difficulties. Permission was granted by the groups' administrator for a flier to be posted asking for participation in the research study. Half of the participants (51) reported using medication to treat symptoms and the other half (51) reported using MM to treat symptoms. The duration of the treatment was not considered. Active members in each group ranged from 5,000 to 74,000; therefore, there was a good chance the 102 needed participants would be found within these 12 groups.

The research was not limited to one type of medication or a particular dose per day, nor was it limited in the kind of MM used. The same survey, the Weiss et al. (2018) functional impairment rating scale–self-report (WFIRS-S) was given to all the participants via an online platform. Although the WFIRS-S is composed of seven subscales, the only three measured in this study were self-concept, risky behaviors, and familial relationships. Once completed, a score was assigned to each group (self-concept, risky behaviors, and familial relationships) and analyzed to assess the differences in scores of medication and MM on ADHD symptoms (see Weiss et al., 2018). The statistical analysis of the data was calculated using SPSS and Excel.

### **Definition of Terms**

The following terms are defined as they were specifically used for this study:

*Behavioral therapy*: Identifies and helps change self-destructive or harmful behaviors in mental health patients (Flores-Ruiz et al., 2017).

*Effective treatment options*: Treatment options that have been empirically proven to help alleviate ADHD symptoms (Zhang et al., 2019).

*Familial relationships*: All connections that have to do with all family members (Hirsch et al., 2018)

*Mindfulness meditation (MM)*: A type of meditation that involves breathing techniques, guided imagery, and other relaxing processes in which an individual focuses attentively on what the feeling is the moment that it is happening (Babinski & Waschbusch, 2016).

*Mindfulness to meaning theory (MMT)*: Asserts that mindfulness allows one to disconnect from stress evaluations into a metacognitive state of awareness that connects attention to previously unnoticed information, training for a more positive reframing of adverse circumstances (Babinski & Waschbusch, 2016).

*Neurodevelopmental disorder*: The grouping by the medical field of ADHD, meaning the disorder is not just behavioral but is an altering of the brain chemistry of the patient (Stenner et al., 2019).

*Non-gender specific*: When a study demographic includes all genders as participants rather than one alone (Chimiklis et al., 2018).

*Prescription medication*: A medication that is legally given by a medical physician and used to treat ADHD symptoms (Vago & Silbersweig, 2012).

*Reappraisal*: A reframe of a feeling or a stressful circumstance in order to notice overlooked information training for a more positive reframing of negative circumstances (Babinski & Waschbusch, 2016).

*Risky behaviors*: Behaviors that could lead to disease or injury, disability, death, violence, substance abuse, risky sexual behaviors, eating disorders, or social problems (Stenner et al., 2019).

*Self-concept*: A self-constructed belief a person holds about themselves based on the experiences and responses of others (Foley et al., 2014).

### **Assumptions**

This research was based on a few assumptions. First, I assumed that because non-gender specific data has shown that MM is a useful approach in treating ADHD

symptoms, the same would hold true when the study was focused on female participants only. The second assumption was that the chosen participants would respond honestly to all questions posed in the WFIRS-S, as my data relied on self-reporting. A third assumption was that the participants would understand the requirements of the study and all conditions outlined in the consent form before signing it. A final assumption of this quantitative design was that the research was based primarily on a deductive, top-down form of logic and would successfully test the already established theory MMT. Regarding ANOVA, each sample was taken from a normally distributed population and populations had a common variance.

### **Scope and Delimitations**

All the participants were required to be women between ages 18 and 65 who were either taking medication prescribed by a board-certified physician or were using meditation at least once a week to treat ADHD symptoms. The research study was restricted only to these participants. There is a plethora of literature on MM and its effect on ADHD symptoms as they present in men, adolescents, children, or men and women grouped together, but none of the research has been focused on women alone (Babinski & Waschbusch, 2016; Stenner et al., 2019). Additionally, conducting the experiment in this way increased internal validity. The data also have indicated that the balance of self-concept, risky behaviors, and personal relationships is a challenge for women, especially when coming home to chores after a long day at work (Roy, 2019; Stenner et al., 2019). Therefore, the focus of this research was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among

women with ADHD who report using medicine or meditation to manage their symptoms, to determine additional treatment options that could help alleviate some of the negative thoughts and stressors associated with self-concept, risky behaviors, and personal relationships. Moreover, the age requirements for the research were 18 to 65 to include as many women as possible, because the fact that they are women struggling with ADHD was more important than their age at the time of the study. The span in age also made the results applicable to various women and/or situations, giving the results good generalizability (Shoham, 2019; Zhou et al., 2019).

Delimitations of the study include women who did not have symptoms of ADHD. Also, women who had ADHD but were younger than 18 years old or older than 65 years old were excluded. Furthermore, women who had ADHD and were between ages 18 and 65 but were not taking medication or were not partaking in meditation for the symptoms were not allowed to participate. Lastly, women who had ADHD, were between 18 and 65, but were using both medication and meditation to ease symptoms of ADHD were disqualified. The only acceptable participants were women between ages 18 and 65 who were using either medication or meditation to control symptoms of ADHD.

### **Limitations**

The process by which the data were collected depended heavily on honesty. The data collection process required that each participant complete a survey where they were expected to answer the questions truthfully, but there was a chance some would not. Any inconsistencies found were due to a few factors. For example, some of the participants might not have understood what a question was trying to ask, leaving them confused and

guessing the answer. Other participants might have answered the questions based on what they believed was expected, influencing the statistical data analysis and results. To avoid these limitations, participants were asked to respond to every question honestly, take their time in answering, and to ask questions if they were confused. Furthermore, the participants were told the answers would remain anonymous in an attempt to deter any attempts of giving the expected answer.

Another limitation based on using ANOVA was that it is designed to be used with data from a normal distribution (Weissberger et al., 2018). Although the ANOVA statistic is considered reliable, the p-values yielded may not be exact when the data come from non-normal distributions. The analysis of variance typically produces almost precise values, but there is a risk of it being less powerful than an alternative test, especially if those data come with heavier tails (larger possibility of disproportionate values) than the normal (Weissberger et al., 2018).

### **Significance**

Based on the results of this study, physicians who treat women with ADHD may be able to recommend an alternative treatment, such as MM, as a treatment option should the patient not want to or not be able to take medication for symptoms. Research has indicated that a major weakness of medication in treating ADHD is patient discontinuation due to the fear of side effects and dependency; therefore, an alternative option may be effective for patients such as these (Fuller-Thomson et al., 2016). Psychiatrists who specialize in ADHD are also able to offer meditation as an alternative option to medication for patients who prefer a more holistic approach to treatment. At the

discretion of the doctor, medication may still be used as a first line of defense and possibly coupled with meditation.

Psychologists and counselors who work with women diagnosed with ADHD who struggle with self-concept, family relationships, and/or risky behaviors will be able to use the results of this study and apply meditation to treatment plans. Groups facilitated for women struggling with ADHD symptoms could partake in group or guided meditations to help ease the difficulties brought about by ADHD and to create more cohesion among participants. Mental health professionals will be able to recommend meditation, which can be practiced by women with ADHD at home without supervision. With more research, MM could potentially pave the way for more alternative treatments to be examined as standard of care for ADHD.

### **Summary**

Due to side effects and societal biases that come with ADHD treatment options, a large portion of women choose to live with their symptoms rather than obtain help (Davis & Mitchell, 2019). Although there is plenty of research on MM in non-gender specific studies, few studies have been conducted to investigate the usefulness of MM on women alone. Recognizing the need for additional treatment options ADHD symptoms with fewer side effects for, I conducted this study to look at alternative treatment options, specifically MM (see Flores-Ruiz, 2017; Nguyen et al., 2020; Vago & Silbersweig, 2012).

In Chapter 1, I discussed the need for this research experiment by providing background information on ADHD's effect on society, its symptoms as they manifest in

women, potential treatments, and societal biases and side effects that make women apprehensive. The theoretical framework came from Garland's MMT, which indicates that MM trains a person to control impulses and irrational thoughts by facilitating reappraisal (Deault, 2010; Goldin & Gross, 2010). In Chapter 2, I discuss the existing literature on ADHD and medication or behavioral therapy, MMT, MM, and ADHD in women. Literature search strategies and the theoretical foundation are discussed. Connections are made by reviewing literature related to similar circumstances and variables because there is a lack of data on the variables as they are grouped. Chapter 2 closes with a conclusion of all the literature and main themes gathered for the study.

## Chapter 2: Literature Review

### **Introduction**

ADHD is a neurodevelopmental disorder with a spectrum of manifestations, ranging from mild to severe. In the last 30 years diagnoses of ADHD have dramatically increased (Babinski & Waschbusch, 2016; Stenner et al., 2019; Willis & Burnett 2016; Young et al., 2020). Symptoms of ADHD have been linked to a variety of physical and mental health concerns, such as bipolar disorder, anxiety, substance abuse, depression, chronic stress and tension, and low self-esteem (Babinski & Waschbusch, 2016; Deault, 2010; Golden & Gross, 2010). Although ADHD is believed to be more prevalent in the male population, the diagnosis of adult women living with ADHD has dramatically increased in the last decade (Babinski & Waschbusch, 2016).

Research has found an increase in ADHD diagnosis in adult women (ages 25–35), and in the last 5 years ADHD medication use among this group has increased by 85% (Babinski & Waschbusch, 2016; Stenner et al., 2019). However, data show that the willingness of female patients to accept medication as the standard of care for ADHD is low, which has led to an increased interest in the use of alternative treatments (Nguyen & Hinshaw, 2020; Rynczak, 2012; Toomey et al., 2012). Although one of the most effective and sought-after alternative treatments for ADHD symptoms is MM, there is little data to date regarding the outcomes of this treatment for women and ADHD symptoms that benefit most from its implementation (Babinski & Waschbusch, 2016; Barkley, 2010; Stenner et al., 2019; Young et al., 2020). This study was conducted to address a gap in the literature by measuring dependent variable scores among women with ADHD who

report using meditation to manage three common symptoms: self-concept, risky behaviors, and familial relationships.

The goal of this pre-experimental static group comparison study was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among women with ADHD who report using medicine or meditation to manage their symptoms. One group solely used MM to treat symptoms, while the other group solely used medication to treat symptoms. The goal was to measure the differences in scores of MM and medication outcomes on self-concept, risky behaviors, and family relationships.

Most of the literature referring to ADHD focuses on children and adolescent symptomology and treatment, with some research focusing on prevalence in adult men. Little is known or understood about ADHD's presentation based on gender and even less is understood about symptoms in adult women. A review of the literature highlights these factors and the lack of data on alternative approaches for ADHD treatment. The theoretical framework of this study was MMT, which supports the expectation that individuals with ADHD struggle to control their symptoms and medication may not be the best option for all patients (Flores-Ruiz et al., 2017).

In the following chapter, I review the available body of literature related to MMT, as well as the symptoms of ADHD (self-concept, risky behaviors, and familial relationships) in women, and responses to treatment based on MM. Also, I discuss the literature search strategy, theoretical framework, and literature review related to key variables. I close the chapter with a summary of findings.

### **Literature Research Strategy**

The articles chosen for this literature review are all peer-reviewed scholarly articles. The databases used to conduct the search were PsychInfo, Sage Journals, Thoreau, ScholarWorks, and Google Scholar. Key words used to conduct the library search include *attention deficit hyperactivity disorder, history and importance of ADHD, treatments of children, adolescents, adults, causes, genetic link, environmental links, symptom presentation, functional impairment of diagnosis, criminality, discontinuation, comorbid instances, misdiagnosis, alternative treatments, meditation, mindfulness meditation, and mindfulness to meaning theory*. With the guidance of the library, I searched keywords with Boolean operators. A Boolean operator identifies the relationship between words by inserting the words *and, or, and not*.

### **Theoretical Framework Foundation**

#### **Mindfulness to Meaning Theory**

The theoretical framework MMT was created by Dr. Eric Garland (2015). The theory is based on Philip Kapleau's mindfulness meditation theory that indicates MM trains a person to control impulses and irrational thoughts by cognitively reframing an event, therefore reducing the negative emotions associated with that event (Kapleau, 1965; Meppelink et al., 2016). The goal is for the person to master an ability to think in a way that brings about good feelings and reassessments of an otherwise negative situation leading to positive affect (Garland, 2015; Kapleau, 1965). The theory addresses how mindfulness reconfigures structures within working memory and explains how mindfulness is a domain rich in resources that promotes emotion regulation flexibility

leading to a more positive affect for the patient (Garland & Fredrickson, 2019). Garland (2015) discovered that to reach this goal, the core construct of the MMT is focused on decentering, awareness, and reappraisal.

When mastered, the core construct of the MMT leads to a chain of change that promotes long-term increases in positive affectivity, which is an important goal for any form of treatment (Garland et al., 2017). The three constructs work together to allow for the reframing process of negative thoughts. For example, *decentering* refers to the ability to consider multiple aspects of the same situation, allowing for a more positive perspective to appear (Garland et al., 2017). *Awareness* refers to a consciousness of internal or external events or experiences, and through the facility of decentering this awareness can be shifted to a more positive and healthy light (Garland et al., 2017).

Once a person has experienced decentering and awareness, reappraisal appears and identifies how accurate or rational the response was to a situation or, in some cases, to determine if the stressor is important or even worth reacting to (Garland et al., 2017). Garland et al. (2017) emphasized the importance of controlling decentering, awareness, and reappraisal to attain positive affectivity, as this will regulate impulsiveness and inattentiveness, both of which are elements found in people who have ADHD (Kapleau, 1965; Meppelink et al., 2016).

Garland and Fredrickson (2019) emphasized the importance of positive affect, a core component of human nature; the more positive emotions a person exhibits, the healthier that individual becomes. A healthy affect is essential for neurotypical people just as much as for those with mental illness. At the University of Virginia, teenagers

ages 14 to 25 were followed to gauge the predictive power of positive affect across development transition from adolescence to young adulthood (Fredrickson, 2004; Kansky et al., 2016). The study found that positive affect was strongly predictive of life outcomes, such as developing better intimate relationships and friendships (Fredrickson, 2004; Kansky et al., 2016). Participants with higher positive affect reported less conflict in relationships and healthier attachments with friends, which can later help them overcome stressful events and challenges (Fredrickson, 2004; Kansky et al., 2016).

Garland et al. (2017) conducted a post-hoc longitudinal study that helped give more of a foundation to his theory. Garland et al. (2017) compared mindfulness practices versus CBT to model the core construct of MMT (i.e., decentering, awareness, and reappraisal), which Garland claims helps lead to a pleasurable engagement with the environment. Garland et al. (2017) discovered that mindfulness practices do in fact boost the MMT cycle by producing a permanent and stronger increase in decentering and awareness than CBT, supporting the foundational assumption of MMT claiming that MM may stimulate positive psychological processes.

I chose MMT as the theoretical framework for this study because it encompasses the notion that MM benefits people struggling to control symptoms of ADHD, without the side effects or the fears often associated with taking medication (Kessler et al., 2010; Oberle et al., 2012). Thus far, researchers have applied the core concepts of MMT to the general population and drawn promising conclusions regarding its outcomes and its ability to build confidence in its safety among patients (Elder, 2010; Oberle et al., 2012). In this study, I investigated whether this theory's framework could be applied to this

group of women to provide options for treatment of symptoms, which in turn would help with self-concept, family relations, and risky behaviors. This population has often been overlooked, and lack of confidence in standard of care for ADHD is high (Davis & Mitchell, 2019; Elder, 2010).

## **Literature Review**

### **ADHD**

ADHD is a chronic neurological condition that affects millions of children, is most often identified in an individual's elementary school years, and often persists into adulthood (Faraone et al., 2021). ADHD was first mentioned in 1902 by British pediatrician Sir George Frederic Still. Still described ADHD as an abnormal defect of moral control in children who were otherwise intelligent (Faraone et al., 2021). In 1955, the U.S. Food and Drug Administration approved the psychostimulant Ritalin as a means of treatment, but it was not until the 1960s that the American Psychiatric Association formally recognized ADHD as a mental health disorder (Cortese et al., 2016; Faraone et al., 2021). In the 1980s, the diagnosis was named attention deficit disorder with or without hyperactivity, and Ritalin continued to be prescribed to treat it (Faraone et al., 2021). Today, the 5th edition of the *DSM (DSM-5)* identifies two separate attention disorders each with its own set of criteria: attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD).

### ***ADHD Symptomology***

ADHD symptoms typically present in childhood, as early as 6 years old (Cortese et al., 2016; Masuch et al., 2019; Pham et al., 2017). In children, symptoms might

manifest as short attention span, forgetfulness, poor listening skills, inability to focus or sit still, constant fidgeting, excessive talking, acting without thinking, interrupting others, and little sense of danger (Pham et al., 2017). These symptoms can cause significant difficulties in a child's life and often are comorbid with other mental health conditions (Cortese et al., 2016; Masuch et al., 2019; Pham et al., 2017). For example, ADHD can co-occur with anxiety disorders, oppositional defiance disorder, depression, low self-esteem, and learning disabilities (Cortese et al., 2016; Masuch et al., 2019; Pham et al., 2017).

In adults, ADHD might be harder to recognize, as certain symptoms tend to decrease over time, but certain symptoms like inattentiveness tend to remain, as the pressures of adulthood increase (Cortese et al., 2016; Nguyen et al., 2020). Other symptoms present in adulthood are carelessness, a list of unfinished projects, lack of organization, inability to prioritize, misplacing things, forgetfulness, restlessness, irritability, impatience, risky behaviors, and poor relationships (Cortese et al., 2016; Nguyen et al., 2020). As with ADHD in children, these symptoms can occur alongside other conditions, such as depression, personality disorders, bipolar disorder, social anxiety, and obsessive-compulsive disorder (Cortese et al., 2016). Over the years, several different treatments have been approved by the U.S. Food and Drug Administration, but to date, there is no cure for ADHD.

## **ADHD Treatment: Medication and Behavioral Treatment**

### ***Medication Treatment for ADHD***

Treatments for ADHD can help relieve the symptoms and make the condition manageable. Studies have shown that medicine and behavioral therapy are both effective means of treatment for symptoms of ADHD, but a combination of both is often best (Cortese et al., 2016; Masuch et al., 2019; Pham et al., 2017). Medication should not be considered a permanent treatment approach for ADHD, as the side effects can be harmful (Cortese et al., 2016; Masuch et al., 2019). The most used medication for ADHD is a group called stimulants, which work by increasing activity in the brain, particularly in areas that control attention and behavior (Cortese et al., 2016). Although effective, stimulants come with serious side effects, such as an increase in blood pressure and heart rate, loss of appetite, significant weight loss, trouble sleeping, headaches, stomach aches, irritability, anxiousness, and tension (Cortese et al., 2016).

Boland and her colleagues (2020) conducted a systemic review and meta-analysis of literature from large databases to assess the effects of ADHD medication on associated functional outcomes. A literature review was performed, and random-effect meta-analyses were executed for 21 studies that looked at functional outcomes when taking medication to treat ADHD symptoms (Boland et al., 2020 Cortese et al., 2016). Boland and her team discovered a very strong protective effect of ADHD medication treatment when it came to mood disorders, suicidality, criminality, accidents and injuries, educational outcomes, TBIs, and mood disorders (Boland et al., 2020). The team

concluded that medication treatments for ADHD are associated with decreases in the risks of many ADHD related functional outcomes (Boland et al., 2020).

The effects of ADHD medication on suicidal behaviors remains unclear. Zheng et al. (2020) decided to examine the associations between medication treatment for ADHD. The team identified a large cohort of adult patients (47% female patients) using health care claims and compared risk of suicide attempts during months when individuals received prescribed stimulant or non-stimulant medication to months where medication was not being prescribed (Zheng et al., 2020). The researchers discovered that ADHD medication was associated with lower odds of suicide attempts. Similar reductions were found in children to middle-aged adults and in subgroups, including patients who have ADHD with pre-existing depression or substance use disorder (Zheng et al., 2020). The reduction was mainly seen in patients taking stimulant medication; nonstimulant medication was not associated with any statistically significant changes in risk of suicide attempts (Zheng et al., 2020).

Biederman et al. (2019) also discovered that offering medication for patients with ADHD decreases suicidal ideation, which is a common symptom in people struggling with the disease. The aim of this study was to help quantify the protective effects of stimulant treatment on important functional outcomes in ADHD. Biederman et al. (2019) used three independent samples to recruit subjects and conducted a 10-year follow up study of boys and girls with and without ADHD (2019). In the end, the team concluded that stimulants have strong protective effects on functional outcomes in youths into adulthood with ADHD and these outcomes are not moderated by sex (Biederman et al.,

2019). Although medication can be an effective form of treatment for some cases of ADHD, research also supports the significant positive effects of behavioral treatments for symptoms of ADHD.

### ***Behavioral Treatment for ADHD***

In reviewing the literature, few articles were found that support medication as treatment for ADHD. Most research studies conducted in the last 5 years support a non-pharmacological approach and more holistic treatment options for ADHD symptoms, such as forms of behavioral therapy (Faraone et al., 2021). Behavioral therapy is the most common therapy used with ADHD. It involves behavior management, psychoeducation, and uses a system of rewards to encourage the patient to control the ADHD symptoms (Cortese et al., 2016; Faraone et al., 2021). Although behavioral therapy is an effective approach to treating ADHD symptoms, treatment is most successful when coupled with medication (Cortese et al., 2016; Faraone et al., 2021; Masuch et al., 2019; Pham et al., 2017).

Anastopoulos et al. (2018) examined a form of behavioral therapy called cognitive behavioral therapy (CBT). The team wanted to measure the extent to which college students with ADHD continued to benefit from a CBT program beyond the active phase of the program (Anastopoulos et al., 2018). The team used a total of 88 students with diagnosed ADHD that received CBT treatment and maintenance phases that were spread out among two consecutive semesters (Anastopoulos et al., 2018). Results showed the CBT had an immediate positive effect on ADHD symptoms, improvements in executive functioning, and less reported anxiety and depression (Anastopoulos et al.,

2018). The interesting discovery is that these improvements in symptom severity, executive functioning, and educational functioning remained stable for up to 7 months after treatment phases had concluded (Anastopoulos et al., 2018). These results strongly support the use of CBT as an intervention for ADHD.

Solanto et al. (2018) discovered that older adults with ADHD exhibited better functional impairment when undergoing treatment sessions of CBT. The research team hypothesized that older adults would respond less well to CBT than younger adults, given the cognitive expectations of the treatments (Solanto et al., 2018). Eighty-eight adults who had a diagnosis of ADHD were randomly placed in one of two groups. The first group received 12-week CBT intervention targeting executive dysfunction and the second group was a Support group (Solanto et al., 2018). After 12-weeks of treatment and a comparison of the older adults (50 years or more) to the younger adults (50 years or less) the hypothesis was incorrect. Older and younger adults were equally responsive to CBT on measure of attention, especially (Solanto et al., 2018). The data analysis provided evidence that CBT is an effective intervention for older adults when targeting executive dysfunction and attention in relation to ADHD.

Sciberras et al. (2018) discovered that non-pharmacological approaches to ADHD in youth, such as CBT, may improve important domains of functioning and decrease anxiety. They piloted a randomized controlled trial to examine the acceptability of CBT intervention for youth that have ADHD and anxiety (Sciberras et al., 2018). Twelve participants completed the survey before the 10-week session began and after the phases had ceased. Over 67% of participants reported improvements in both child and family

well-being, as symptoms of anxiety and ADHD had significantly decreased in participants (Sciberras et al., 2018). These findings support non-pharmacological approaches to the treatment of ADHD symptoms in children.

A meta-analysis conducted by Nimmo-Smith et al. (2020) included 32 eligible studies with the largest number of studies assessing CBT in adult populations. The team found parallel results to that of Sciberras et al. (2018) and Solanto et al. (2018). Based on the analysis, most of the studies saw significant improvements in ADHD symptoms with CBT intervention (Nimmo-Smith et al., 2020). Additionally, the review recognized data that claimed mindfulness and cognitive redress are effective interventions for the core symptoms of ADHD. However, evidence is not as strong for mindfulness in this case, as there was a small number of research articles included in the review and several limitations that could lead to a high risk of bias (Nimmo-Smith et al., 2020).

Fullen et al. (2020), too, decided to examine existing evidence for psychological treatments of ADHD. Medication is internationally recognized as the first line of treatment for ADHD, however, a recent surge in research to treat ADHD using non-pharmacological interventions indicates a demand for alternative treatments (Anastopoulos et al., 2018; Fullen et al., 2020; Nimmo-Smith et al., 2020). The team conducted a systemic review of the literature to examine what evidence base exists for alternative treatments for ADHD management in adults.

A total of 53 papers were included in the analysis and 92% of studies found a significant positive effect on symptoms of ADHD (Fullen et al., 2020). Fullen et al. (2020) found that the strongest empirical support for alternative treatment of ADHD was

from CBT. Like Nimmo-Smith et al. (2020), Fullen et al. (2020) found significant support for the effectiveness of mindfulness.

### **Limitations in Popular ADHD Treatment Approaches**

Over the years research has uncovered several weaknesses that come with prescribing medication to treat ADHD symptoms with one of the major weaknesses being patient discontinuation (Fuller-Thomson et al., 2016; Graham & Coghill, 2008; Golden & Gross, 2010; Stenner et al., 2019). Patient discontinuation is believed to have to do with comorbidity and misdiagnosis, changes in effectiveness of medication, potential dependency, and fear of withdrawal symptoms (Fuller-Thomson et al., 2016; Graham & Coghill, 2008; Young et al., 2020).

For decades medication has been the first treatment option offered to individuals diagnosed with ADHD, followed by behavioral therapy (Fuller-Thomson et al., 2016; Graham & Coghill, 2008; Golden & Gross, 2010; Young et al., 2020). Graham and Coghill (2008) and Currie et al. (2014) discovered that, at times, medication that is expected to work does not because the patient's body chemistry is not receptive and that as many as 1 in 10 people do not get results from either of the two types of stimulant medications often prescribed. Furthermore, self-reporting has proven unsuccessful since people do not report changes to a physician but discontinue taking the medication which many times leads to withdrawal symptoms or other severe consequences (Currie et al., 2014; Graham & Coghill, 2008; Potvin et al., 2016).

Withdrawal from psychostimulants like the ones used to treat ADHD can lead to several health concerns including suicidal ideation (Potvin et al., 2016; Yoshimasu et al.,

2018). In this case, antidepressants can be prescribed, but these medications also have side effects and long-term use concerns (Otasowie et al., 2014; Schei et al., 2016). Trends in research have shown that efficacy is not an incentive when it comes to taking medication, as patients can be more frightened of the side effects than of the symptoms associated with ADHD, leading to patient noncompliance (Cruz et al., 2015; Nguyen et al., 2020; Otasowie et al., 2014; Vago & Silbersweig, 2012).

Another limitation in treating ADHD with medication in children is that ages 4 to 11 have the highest rate of discontinuation (Toomey et al., 2012). Research claims that the challenging side effects are more difficult for children to handle than for adults causing mothers to stop giving the ADHD medication to their children (Cruz et al., 2015; Elder, 2010; Nguyen et al., 2020). Furthermore, recent studies have shown that misdiagnosis of ADHD is at over 20% in children leading to ineffective treatment plans and medication noncompliance causing parents to make drastic decisions without consulting a physician (Cruz et al., 2015; Elder, 2010; Nguyen et al., 2020; Otasowie et al., 2014; Toomey et al., 2012).

Comorbidities overlooked and many times worsened by ADHD medication is another limitation of using meds immediately before trying to treat any underlying symptoms. According to Nguyen et al. (2020) nearly 81% of the population diagnosed with ADHD have at least one other condition such as anxiety disorder, depression, mood disorder, or substance abuse. ADHD symptoms are worsened by these comorbidities, therefore, initially treating the anxiety or depression could lead to an entirely different and more effective treatment plan (Elder, 2010; Yoshimasu et al., 2018). Furthermore,

treating these additional disorders could lead to more precise diagnoses and more effective treatment plans reinstating trust in physicians and their recommendations.

### **Gender Effect on Diagnosis and Treatment of ADHD**

ADHD has been considered more prominent in boys than girls with statistics showing that adolescent boys are three times more likely than adolescent girls to be diagnosed (Danielson et al., 2018). However, recent findings show the gender ratios of ADHD in boys to girls (10:1) versus the ratio of men to women (2.73:1) (Danielson et al., 2018; Hyde, 2014; Williamson et al., 2015; Zell et al., 2015). This change in ratios from childhood to adulthood might indicate that ADHD expression in males begins earlier in the lifespan and that symptoms are disproportionately more likely to stop when compared to females (Danielson et al., 2018). However, decades of research have shown that ADHD symptoms become less prevalent into adulthood, suggesting the ratio inconsistency might be due to another factor (Danielson et al., 2018; Hyde, 2014).

Nguyen and Hinshaw (2020) decided to further investigate the spike in ADHD diagnoses of female adults when compared to female children and discovered that the slow recognition of girls and women with ADHD is partially due to referral bias. Current diagnostic criteria are more appropriate for males, as they display the more obvious and problematic behavioral patterns commonly associated with ADHD, such as impulsivity or hyperactivity (Nguyen & Hinshaw, 2020). Davis and Mitchell (2019) also discovered that referral bias aside, a large portion of women are still apprehensive about seeking treatment, due to fear of the side effects linked to medication, as well as societal biases associated with an ADHD diagnosis. Nevertheless, there is a large inconsistency in

gender research of men and women with ADHD and very little research on women alone making a comparison limited to the research available.

### ***ADHD in Men***

Symptom presentation in males tends to be the standard measure among physicians for an ADHD diagnosis. Males with ADHD are more impulsive, hyper, physically aggressive, and inattentive (Arnett et al., 2015; Zell et al., 2015). In adulthood, many of these symptoms persist coupled with consequences such as incarceration, unemployment, and reckless behaviors (Arnett et al., 2015; Zell et al., 2015). Men with ADHD have reported symptoms such as distractibility, difficulty focusing, forgetfulness, attention difficulties, hyperactivity, aggression, a lack of restraint and anxiety persisting into adulthood (Babinski & Waschbusch, 2016; Nigg et al., 2020; Stenner et al., 2019; Young et al., 2020). Adult males with ADHD report having trouble following the norms of society (Deault, 2010; Golden & Gross, 2010; Willis & Burnett 2016). Furthermore, research has found that men with access to the stimulant medication Adderall, which is used to treat ADHD, are more likely to abuse it than are women with access to the medication (McCabe et al., 2007; Nordahl & Rasmussen, 2012)

Among college men, the rates of stimulant abuse dramatically escalate to as high as 55% (Clemow & Walker, 2014; McCabe et al., 2007; Voigt et al., 2017). Studies have also found that professional male athletes with ADHD are significantly more likely to abuse Adderall to enhance performance, than are professional female athletes (Clemow & Walker, 2014; McCabe et al., 2007). The abuse of medication such as Adderall has led to an increase in cases of cardiovascular damage and adult male patients have reported

feelings of anxiety and depression with suicidal ideation when discontinuing or running out of Adderall (Deault, 2010; Nordahl & Rasmussen, 2012).

Since medication to treat ADHD has a high potential for abuse in males, other treatment options have been sought out. Amongst those treatment options are mindfulness-based interventions (Muratori et al., 2020). Research has shown that MM can effectively reduce some symptoms of attention deficit hyperactivity disorder (ADHD) in males (Bueno et al., 2015; Hoxhaj et al., 2018; Muratori et al., 2020). One study found that a group of male participants with ADHD who underwent mindfulness interventions for stress reduction experienced a decrease in hyperactive behaviors when compared to a control group (Hoxhaj et al., 2018). Furthermore, the researchers concluded that, in comparison, the experimental group reported an increase in focus and attention (Hoxhaj et al., 2018).

Although more research must be conducted, researchers believe that mindfulness meditation interventions could be a suitable alternative or supplemental option for men struggling with ADHD. Thus far, professionals have been able to identify ADHD symptoms in boys at a young age and recommend alternative treatments early in the lifespan, however, for females with ADHD diagnosis takes longer leading to a slower onset of proper treatment.

### ***ADHD in Women***

Typically, doctors have been trained to identify ADHD symptoms that are external and observable, however, ADHD symptoms in women tend to be internalized and more difficult to detect (Cortese et al., 2016). Cortese et al. (2016) suggests that

ADHD symptoms in adolescent girls include low self-esteem, low self-efficacy, being withdrawn, incessant daydreaming, and issues with interpersonal relationships. In adulthood these symptoms are trailed with chronic lateness, constant change of employment, unhealthy relationships, risky behaviors, and poor self-concept (Cortese et al., 2016; Zell et al., 2015). In medication-treated adult women with ADHD, Otasowie et al. (2014) and Schei et al. (2016) discovered that interpersonal relationships are significantly impaired and self-reporting has shown that these impairments do not get better over time with medical intervention. Unhealthy interpersonal relationships appear to be uniquely connected with distress as defined by anxiety and depressive symptoms (Otasowie et al., 2014; Schei et al., 2016).

Studies claim that low self-concept and unhealthy familial relationships are drastically affected by anxiety and depression and made worse by underlying symptoms of ADHD (Babinski & Waschbusch, 2016; Schei et al., 2016). Research has shown that medication may not be the most effective long-term treatment for these symptoms and a growing number of studies have started looking into alternative treatments for answers (Nguyen & Hinshaw, 2020; Flores-Ruiz, 2017; Nguyen, et al., 2020).

### **Mindfulness to Meaning Theory and ADHD**

The MMT can be applied to people with ADHD using the practice of MM to help them master specific techniques and later apply those techniques to thoughts, perceptions, feelings, and experiences (Kapleau, 1965; Meppelink et al., 2016). The MMT supports the claim that with practice a person will learn to control impulses, inattentiveness, and other symptoms that lead to struggles in daily life (Garland, 2015; Garland et al., 2017).

A plethora of data has shown that lack of impulse control leads to or worsens several symptoms of ADHD and according to the MMT, practicing MM could make it so impulses are easily controlled, eventually leading to less episodes (Garland et al., 2017; Kapleau, 1965; Shapiro & Jazaieri, 2014). Therefore, many researchers are suggesting that MM is a good treatment option for ADHD (Garland et al., 2017; Meppelink et al., 2016; Mitchell et al., 2017; Shapiro & Jazaieri, 2014).

### ***MM Training and the ADHD Brain***

Shapiro and Jazaieri (2014) conducted a study where the practice of MM on individuals with impulse control helped the participants easily access a calmer state of awareness. Being calmer and aware of thought processes allows the brain to recognize novel information and take a second, more positive, look at the circumstances (Shapiro & Jazaieri, 2014). Lack of impulse control leads to many symptoms of ADHD and many struggles in daily life activities, but MM has shown to curb these impulses over time (Meppelink et al., 2016; Mitchell et al., 2017). There are other treatments available to help ease these symptoms, but mastering MM means the participants may be able to control negative behaviors, thoughts, and urges before they occur (Garland et al., 2017; Kapleau, 1965; Shapiro & Jazaieri, 2014).

A study conducted by Modesto-Lowe and colleagues (2015) also acknowledges that there are various treatment options available today to help treat symptoms of ADHD, but MM has shown to be the most effective approach without the negative side effects often associated with other options. The study conducted by Modesto-Lowe et al. (2015) found evidence to suggest that certain meditative practices improve attention and may

restructure the symptoms of ADHD by activating brain regions involved in sustaining and directing attention. These findings support the idea that deliberate sharpening of attention skills with MM may be a powerful approach when treating ADHD (Modesto-Lowe et al., 2015). However, Modesto-Lowe et al. (2015) further suggested that MM may be a useful strategy to eliminate any residual inattention that may persist after pharmacological treatment. Nevertheless, more significant data will be needed to firmly establish efficacy of the relationship between meditation and inattention in ADHD.

Many researchers at the forefront of ADHD research agree that medication can no longer be the first line of defense against debilitating symptoms associated with the brain disorder (Burton et al., 2019; Karponay et al., 2019; Mitchell, 2017). They are advocating for alternative treatments, as these traditional treatments have limitations. Some of these limitations include non-responsiveness to medication, insufficient symptom elimination, fear of addiction or withdrawal symptoms, and intolerable adverse medication effects (Elder, 2010; Karponay et al., 2019). In addition, the scientific world is arguing that relatively few studies have thoroughly investigated the impact of pharmacotherapy on executive functioning, emotion dysregulation, impulsivity, depressive symptoms, or other impairments often observed among adults diagnosed with ADHD (Rynczak, 2012). MM is a treatment option that is easy to learn and execute and comes with a long list of benefits with seemingly no side effects.

Benefits of MM seem promising, as research conducted within the last decade has found statistically significant effects of MM, not only on ADHD symptoms, but also on comorbidities (Burton et al., 2019; Karponay et al., 2019; Mitchell, 2017). Considering

the harmless nature and long-lasting benefits of MM, much of the research is hoping to use it as a first line of defense for ADHD (Mitchell, 2017). Van de Weijer-Bergsma et al. (2012) conducted an 8-week mindfulness training program for adolescents with ADHD and their parents where both groups took part in group guided meditation sessions. The research team discovered that ADHD is categorized in terms of deficits in behavior and brain functions, while mindfulness meditation is categorized in terms of improving these deficits, potentially making it a powerful alternative approach to ease symptoms of the disorder (Van de Weijer-Bergsma et al., 2012). The study suggests that mindfulness meditation practices significantly decrease deficits such as inattentiveness, impulsivity, and hyperactivity. (Rynczak, 2012; Van de Weijer-Bergsma et al., 2012).

Baer (2010) studied 105 adult men and women participants with a lifetime diagnosis of ADHD and administered The Kentucky Inventory of Mindfulness Scale, a self-reporting questionnaire that gauges the effects of mindfulness on ADHD symptoms. He uncovered that MM is not only effective when it comes to improving attention and hyperactivity, but it also strengthens self-awareness and sharpens executive functions within the brain (Baer, 2010; Oberle et al., 2012). Christoff (2008) found that the effectiveness of MM also has to do with the fact that participants tend to remain committed to the end. His research suggests the reason behind this commitment is that MM is easy to execute, can very quickly calm the mind, and shows progress within days (Christoff, 2008; Mak et al., 2018). This quick effectiveness in treatment progress keeps participant morale high leading to more commitment and a greater reward in the end (Christoff, 2008).

Kessler et al. (2010) studied the effects of mindfulness meditation on executive functioning specifically in women diagnosed with ADHD. He suggested it would be beneficial for ADHD treatments to expand beyond core symptoms, and target EF and emotion dysregulation as well (Kessler et al., 2010; Oberle et al., 2012). The aim of his study was to assess the feasibility, treatment acceptability, and preliminary efficacy of a novel intervention on core symptoms of ADHD. He discovered that not only was it effective, but because executive functioning controls many other factors of ADHD, strengthening that part of the brain dramatically increased quality of life for the women participants (Oberle et al., 2012).

Additionally, studies in mindfulness working with non-ADHD samples support its application to ADHD since MM has a significantly positive impact on attention regulation, executive functioning, emotion regulation, self-control, and self-concept, all of which are impairments found in the disorder (Keng, et al., 2011; Mak et al., 2018; Oberle et al., 2012). MM teaches to focus on attention and to redirect that attention once it has shifted, sharpening attentional control abilities (Chiesa, et al., 2011; Christoff et al., 2009; Keng, et al., 2011; Mak et al., 2018). MM teaches a top-down regulation of attention in the brain which has shown to improve attention and executive processes and since poor attentional functioning and executive functioning deficits are core issues with ADHD, treatment approaches that strengthen these should be considered (American Psychiatric Association, 2013; Christoff et al., 2009; Keng, et al., 2011; Mak et al., 2018).

Many studies have measured the impact of MM in beginners and yielded positive results with improvement in attention and self-control within five days of starting the training (Brewer et al., 2011; Taylor et al., 2013; Zeidan et al., 2010) MM also improves emotional regulation (in novices) by teaching patients to observe emotional states of temporary and passing phenomenon and respond to them in a non reactive way (Chambers et al., 2009; Garland et al., 2017; Gratz & Tull, 2010). Therefore, mindfulness as an emotion regulation strategy can help patients resist impulsive urges to act out on emotions, which is a trait implicated in ADHD (Barkely, 2011; Chambers et al., 2009; Rynczak, 2012).

Other studies, like the one conducted by Hozel et al. (2011), suggest that according to neuroimaging mindfulness meditation stimulates neuroplastic change in brain areas that have to do with attentional functioning, a major deficit in ADHD (Cubillo et al., 2010; Korponay et al., 2019). In one experiment, data analysis showed the prefrontal cortex, hippocampus, and amygdala were associated with improvement in emotion regulation after a 2-week MM session (Hozel et al., 2011). These regions are also considered major parts of executive functioning in women diagnosed with ADHD (Holthe & Langvik, 2017; Korponay et al., 2019). Furthermore, neuroimaging has shown improved strength in brain regions that are typically weakened by ADHD simply by practicing noninvasive MM without any of the side effects of medication (Christoff et al., 2009; Karponay, 2019).

In 2019, Karponay et al. used neuroimaging to investigate what effects MM might have on the regions of the brain important in impulse control, attention, and executive

functioning. They concluded that MM could benefit the neurotypical brain and the ADHD brain, as it creates new patterns of thinking and re-working problems, such as lack of control (Hozel, 2011; Karponay et al., 2019; Oberle et al., 2012) MM affects positive change in the prefrontal cortex, which is responsible for impulse control and, if lacking, may lead to risky behaviors (Karponay et al., 2019; Hozel, 2011). Furthermore, the research showed that MM can increase a person's self-awareness, thoughts, and feelings which could potentially lead to a stronger self-concept and healthier interpersonal relationships (Holthe & Langvik, 2017; Karponay et al., 2019).

Attentional and executive functioning deficits in the brain can be strengthened through meditation practices, potentially alleviating core symptoms of ADHD (APA, 2017; Chiesa et al., 2011; Keng et al., 2011; Oberle et al., 2012). MM training has also been found to have a significantly positive impact on attention regulation, executive functioning, emotion regulation, self-control, and self-concept all of which have shown deficits in adult men and women diagnosed with ADHD (Chiesa et al., 2011; Keng et al., 2011; Mak et al., 2018). These studies further help support the argument that an alternative approach to ADHD can yield significant positive results and further investigation could be valuable.

Mitchell et al. (2017) conducted a study using MM as the sole treatment for adults with ADHD, as they recognized the need for more specific data. This study was to assess the feasibility, acceptability, and preliminary efficacy of MM on executive functioning, and emotion dysregulation symptoms in an adult ADHD sample (Mitchell et al., 2017; Oberle et al., 2012). Adults with ADHD were randomized into an 8-week group-based

MM treatment or waitlist group. Mitchell et al. (2017) discovered that treatment achievability (ease) and acceptability by participants were positive and, preliminarily speaking, treatment was effective and caused no side effects, leading to higher morale and compliance.

### **Self-Concept, Risky Behaviors, and Familial Relationships**

Knowledge of ADHD in women is limited today, as many studies have been executed solely on this population. Most of what is known today about women living with ADHD is based on the clinical experience of mental health professionals who specialize in working with women (Holthe & Langvik, 2017). The few things that are known and are of concern is that interpersonal skills are negatively impacted (Babinski & Waschbusch, 2016). This leads to poor relationships with co-workers and friends, but more importantly it puts a strain on familial relationships (Babinski & Waschbusch, 2016; Holthe & Langvik, 2017). Compared to women without ADHD, women diagnosed with ADHD are more likely to have major depressive symptoms, dysphoria, more stress and anxiety, lower self-concept, and self-esteem, and engage in risky behaviors as potential coping mechanisms (Holthe & Langvik, 2017). In recent years, it has become increasingly obvious that the lack of appropriate diagnosis and treatment of ADHD in women is a significant public health concern.

The research question for this study asked to what extent do self-concept, risky behaviors, and familial relationships subscales differ between women aged 18 to 65 who solely use medication to treat ADHD symptoms and women aged 18 to 65 who use MM to treat ADHD symptoms. The goal of this research study was to measure group

differences in scores on instruments that measure the three variables among women with ADHD who reported using medicine or meditation to manage their symptoms.

The use of MM on the three variables chosen for this study, self-concept, risky behaviors, and familial relationships, have been studied for decades. However, there is little to no data on the application of MM on these variables when the participant struggles with symptoms of ADHD. The studies discussed below does show a direct correlation between MM and an increase in self-concept, a decrease in risky behaviors, and healthier relationships. Research suggests that MM could potentially help these same factors in women diagnosed with ADHD, as MM strengthens core symptoms of ADHD that cause severe impairment such as distorted self-concept, impulsiveness, and inattentiveness. Below is discussion of the data used to support this claim.

### ***ADHD and Self Concept***

Parents, mental health providers, teachers, and physicians should be educated in the different clinical presentation of ADHD in girls and women so that the disorder can be identified as early as possible (Guendelman et al., 2016). Hinshaw et al. (2022) provide a synthesis of their data in a recent study that looked at the effects of unrecognized and untreated ADHD in girls and women. Their findings indicate that earlier intervention can interrupt the progression of comorbidities, such as risk for poor self-concept and suicide (Guendelman et al., 2016; Hinshaw et al., 2022). For example, associated inattentive symptoms are very common in girls and translate into behaviors frequently misunderstood and stigmatized by society, which can lead to severe depression and other mental health concerns (Hinshaw et al., 2022).

Kakuszi et al. (2018) investigated just how much of an effect positive self-concept had on the mental health of individuals with ADHD based on gender. This investigation looked at suicidal ideation (SI) and its association with gender and psychopathology (Kakuszi et al., 2018). The team conducted a case-control study with 206 participants between the ages of 15 and 44 living with an ADHD diagnosis (Kakuszi et al., 2018). The Beck-I Depression-Inventory was used, as well as the CAARS to characterize the ADHD symptom-domains (Kakuszi et al., 2018).

The results showed a significantly higher SI in women with ADHD, when compared to the control groups; the difference was not significant in males (Kakuszi et al., 2018). Furthermore, in females, scores associated with problems with self-concept on the CAARS showed the closest association with SI. The authors concluded that problems with self-concept in women with ADHD are robustly associated with suicidality across diagnostic boundaries (Kakuszi et al., 2018). In addition, this revealed pronounced gender specificity in ADHD. Further investigation into what methods can strengthen self-concept in women with ADHD is essential to decrease chances of symptom persistence into adulthood and potential for SI (Kakuszi et al., 2018).

ADHD into adulthood typically has a cascade of comorbidities that further complicate an accurate diagnosis, therefore, recognizing it in an adult woman is very rare (Hinshaw et al., 2022; Nussbaum, 2012; Volkow et al., 2011). For example, 33% of adult woman with undiagnosed ADHD may be diagnosed with depression that is coupled with poor self-concept and thoughts of suicide. However, these symptoms may be a result of years of demoralization and stigmatization by society, secondary to ADHD related issues

in childhood that were overlooked (Hinshaw et al., 2022; Volkow et al., 2011). Trauma and anxiety are more prevalent and significantly higher in young girls with ADHD than in boys and both have been linked to causing poor self-concept, low self-esteem, and bouts of depression in young girls (Guendelman et al., 2016; Hinshaw et al., 2022; Nussbaum, 2012; Volkow et al., 2011).

Researchers believe that many comorbidities can be avoided with early diagnosis of ADHD in adolescent females. Statistics claim that girls with undiagnosed ADHD try to hide their symptoms with compensatory work efforts, but inconsistent performances lead to self-blame and low self-esteem (Holthe & Langvik, 2017). These articles support the claim that adolescent girls with ADHD are more likely to struggle with social difficulties; to have poorer self-concept; to have more psychological distress; and to feel less self-love when compared to males with ADHD and undiagnosed females (Holthe & Langvik, 2017). Hence, this group of female participants are at high risk of various psychological impairments and disorders and further research into treatment is imperative, as well as early recognition and intervention (Holthe & Langvik, 2017)

### ***MM and Self-Concept***

MM is believed to be intimately linked with the self and self-concept and mindfulness practice is thought to encourage self-love and acceptance (Hanley & Garland, 2017). A central idea of mindfulness practices is cultivating awareness of the self and self-love (Berkovich-Ohana et al., 2012; Hanley & Garland., 2017). Research has shown that there is a strong connection between mindfulness and self-concept in women, specifically (Berkovich-Ohana et al., 2012; Farb et al., 2007; Hanley & Garland.,

2017). The study conducted by Hanley and Garland (2017) observed the relationship between mindfulness meditation and beliefs about the self. Most participants were female and ranged from 18 to 53 years of age (Hanley & Garland, 2017).

Hanley and Garland (2017) found that MM is associated with self-concept, such that participants who practiced more mindfulness meditation reported a significantly higher clarity of self-concept than the control groups. Results suggested that MM leads to a clearer respect and understanding of self-concept, which in turn is associated with greater psychological well-being (Berkovich-Ohana et al., 2012; Farb et al., 2007; Hanley & Garland., 2017; Vago & Silbersweig, 2012). Hanley and Garland (2017) also found that greater self-concept encouraged higher self-esteem, more patience with the self, and an acceptance of life's circumstances that can only lead to healthier and happier individuals (Hanley & Garland., 2017; Vago & Silbersweig, 2012).

In 1977, Nystul and Gardes hypothesized that MM can help increase a person's self-concept and reduce psychological impairments. Their study consisted of 120 participants that they split into two large groups, one attending 1-week mindfulness retreat and the other was a control group. At the end of the 1 week, the researchers administered the Tennessee Self Concept Scale and found that the group with 1 week of MM reported a higher acceptance of self with an increase in overall self-esteem when compared to the control group (Campanella et al., 2014; Nystul & Gardes, 1977). Numerous studies have followed Nystuls and Gardes' and have come to similar conclusions.

A study conducted by Campanella et al. in 2014 took four groups of participants that had not yet used medication to treat ADHD symptoms. Three of the four groups took part in the same 8-week MM program and the fourth was a control group. At the end of the eight weeks, the authors reported an increase in self-concept and self-esteem scores in all three groups after the MM program when compared to scores before the MM program (Campanella et al., 2014). In the control group, character change scores remained the same before and after the 8-week program (Campanella et al., 2014). Campanella et al. (2014) are among a growing group of researchers that believe MM promotes positive changes in an individual's self-concept and personality (Campanella et al., 2014; Holzel, 2011; Smalley et al., 2009).

Overall, the reviewed studies suggest that MM may promote positive changes in a woman's ADHD symptoms, such as low self-concept. A positive change in the perspective on the self is an important component for enhancing the psychological well-being of women struggling with ADHD and SI (Campanella et al., 2014; Kakuszi et al., 2018). Overtime, the women dedicated to MM may have a better capacity for objectivity about their experiences, which could in turn lead to more authentic ways to reduce additional ADHD symptoms, such as risky behaviors, and psychological suffering (Berkovich-Ohana et al., 2012; Farb et al., 2007; Hanley & Garland., 2017; Holzel et al., 2012; Shapiro et al., 2006; Vago & Silbersweig, 2012).

### ***ADHD and Risky Behaviors***

ADHD symptoms in women are uniquely associated with several domains of impairment. Among impairments in self-concept, self-esteem, and familial relationships

studies have shown a higher inclination to engage in risky behaviors (Hinshaw et al., 2022; Nussbaum, 2012; Volkow et al., 2011). A study conducted by Hosain et al. (2012) assessed the association between adult ADHD symptoms and high-risk sexual behavior. The study interviewed 462 women aged 18-30 using the Adult ADHD Self-Report Scale Symptom Checklist. Risky sexual behaviors included having sex before 15 years old, risky sex partners in lifetime, number of sex partners condom use in the last 12 months, alcohol use before engaging in sexual activities, if traded sex in her lifetime, and any STI diagnoses in lifetime (Hosain et al., 2012). The results showed that women who endorsed more ADHD symptoms also reported engaging in riskier sexual behaviors of all types. The authors concluded that the ADHD symptom score appears to be associated with some risky behaviors and should be further investigated (Hosain et al., 2012). They recommended safe sex counseling for women who struggle with ADHD symptoms (Hosain et al., 2012).

Rates of suicide, self-harm, and other risky behaviors spike in women with psychiatric diagnoses, such as ADHD (Swanson et al., 2013). Hinshaw et al. (2012) reported that young women with ADHD diagnoses reported higher rates of SI and potential for risk taking when compared to women without ADHD. Via analyses of an ongoing longitudinal observation, the authors examined what aspects of ADHD promote more self-harm. They uncovered that the more persistent symptoms of impulsivity are the greater the chance of risky behavior (Swanson et al., 2013).

Additionally, Swanson et al. (2013) found that adolescent internalizing symptoms emerged as partial factors of undiagnosed childhood ADHD, although a young adult SI

link is still being investigated. They concluded that ADHD in women, especially when featuring childhood impulsivity and especially with persistent symptomatology, carries high risk for self-harm and risk taking (Swanson et al., 2013). Uncovering psychiatric comorbidities with ADHD and early intervention are essential in prevent risky behaviors and symptom persistence into adulthood (Swanson et al., 2013).

### ***MM and Risky Behaviors***

Research suggests that early MM intervention in adolescence significantly decreases risky behaviors in adulthood (Swanson et al., 2013; Mitchell et al., 2015). One reason for this claim is that MM, especially when taught to adolescents, dramatically increases self-control (Swanson et al., 2013; Mitchell et al., 2015). Mitchell et al. (2015) found that after an 8-week MM training session, focusing on personal goals and the ability to self-control spiked. Participants indicated improvement at post treatment and 8-week follow-up. At the 8-week follow-up, Mitchell et al. (2015) also observed other improvements in attention, externalizing problems, and a better ability to get along with others. Lastly, participants reported improvement in internalizing and externalizing symptoms, and social and thinking problems at both posttreatment and 8-week follow-up (Mitchell et al., 2015). Although a lack of self-control is not the only reason women with ADHD engage in risky behaviors, it is a major contributing factor.

Burton et al. (2019) conducted a quasi-experimental study with a random sampling method to select 30 people in the experimental and control groups. The control group did not receive any mindfulness training. The goal was to uncover whether mindfulness can be used as an effective intervention for adolescents that engaged in

significantly more risky behaviors than others the same age (Burton et al., 2019). Data showed that after six weeks of MM training, the sample group showed a statistically significant decrease in any desire to engage in risky behaviors. More research would be necessary to conduct this experiment with women diagnosed with ADHD ages 18 to 65, but the results are very promising.

Other risky behaviors in women with ADHD can manifest in anger/defiance and substance abuse (Luderer et al., 2021). A plethora of research has been conducted on the idea that mindfulness practices can help curb the pattern of risky behaviors or cravings for substance abuse in patients with symptoms like those found in ADHD. For example, Witkiewitz et al. (2014) designed an 8-week manualized outpatient program that incorporated mindfulness practices and perspectives into a treatment plan for people in recovery to decrease the probability of relapse by increasing awareness in the presence of triggers. The team found that medium to large effect size decreased in response to triggers, substance abuse consequences, urges to use, and depressive symptoms following the 8-week MM indicating that this could be an effective and safe way to reduce the chance of relapse (Witkiewitz et al., 2014).

In more recent studies, MM has proven its efficacy as a treatment for risky behaviors, such as substance abuse and sexual promiscuity, when compared to a control group in an outpatient treatment facility (Luderer et al., 2021), relapse prevention in a residential women's treatment center (Bowen et al., 2009), and in comparison, to behavioral therapy for smoking cessation (Brewer et al., 2011). The practices of MM are created to raise awareness and increase intentional and appropriate responses by bringing

a heightened awareness to a person's physical, emotional, spiritual, and mental activities (Brewer et al., 2011; Witkiewitz et al., 2014).

MM works at raising tolerance of negative states of existence, therefore decreasing the need to alleviate the discomfort by engaging in impulsive risky behavior (Brewer et al., 2011; Witkiewitz et al., 2014). This group of studies claim that MM as a treatment option may directly prevent the occurrence of high-risk situations by increasing awareness, decreasing non-mindful responses and self-criticism, while promoting kindness and self-compassion (Luderer et al., 2021; Witkiewitz et al., 2014). They suggest that MM does not reduce a person's pain, sadness, or distress but it does make the human experience more bearable.

### ***ADHD and Familial Relationships***

Intimate relationships with individuals who struggle with ADHD have shown to be problematic (Bijlenga et al., 2018). Because of lifetime symptoms like inattentiveness, forgetfulness, risky behaviors, mood swings, and impulsiveness people with ADHD cannot maintain healthy relationships with some of the most important people in their lives (Bijlenga et al., 2018). Guendelman et al. (2015) surveyed 1,200 partners living with loved ones who have an ADHD diagnosis and concluded that distractibility, risky behavior, and inattentiveness exacerbated marital tensions.

Research has also shown that relationships with women living with ADHD, be it family, friendships, or partnerships are significantly more strained than the average relationship (Bijlenga et al., 2018; Fuller-Thomson et al., 2016; Guendelman et al., 2015). These strains seem to stem from specific ADHD traits that are difficult to control

such as, neglecting other people, becoming self-absorbed in activities, constantly diverting attention elsewhere, and poor time management (Fuller-Thomson et al., 2016; Guendelman et al., 2015). Women struggle with familial relationships, especially relationships with their children continuing the vicious cycle of shame, low self-esteem, poor self-concept, and depression (Bijlenga et al., 2018; Fuller-Thomson et al., 2016).

### ***MM and Familial Relationships***

The dynamic of relationships can be difficult for anyone to handle, more so a person struggling with ADHD. Research argues that MM can positively affect symptoms by increasing self-control and decreasing impulsiveness (Campanella, 2014). Both traits are at the core of familial relationship issues in individuals struggling with ADHD (Campanella, 2014; Kozlowski, 2013). By increasing self-control, a woman with ADHD would be more able to focus her attention on another person, rather than fixating on her own activities. Furthermore, this woman would be able to control her time management making her more reliable to her children, husband, family, and friends.

Scheter (2013) conducted a study of adolescents that had a diagnosis of ADHD and reported poor time management, being unreliable, severe strain on family relationships, and negative social interactions. There were 22 participants, and all took part in a MM training that lasted 8 weeks (Scheter, 2013). The author measured constructs of stress, family conflict, and ADHD symptomology via short questionnaires emailed daily throughout the baseline, treatments, and six months to follow up (Scheter, 2013). Results from reports indicated reductions in adolescent stress, family conflict, and increased frequency and duration of meditation practice (Scheter, 2013). Reports also

suggested a decrease in inattention, hyperactivity, and impulsivity up to the six-month follow-up (Scheter, 2013). Meditation practice was significantly correlated with reduced stress levels and distress from family conflict and Scheter (2013) concluded that MM training holds considerable potential for improving many difficulties experienced by people with ADHD and their families.

According to McGill et al. (2016) it is the heightened self-awareness in the present moment that helps a person navigate negative symptoms often associated with ADHD, such as unreliability, therefore reducing negative interactions and conflict with others. The team conducted extensive research on literature that followed links between trait mindfulness and mental health benefits, as well as research that focused on the association between mindfulness and familial relationship satisfaction. Many authors agree that a better understanding of the value of this practice can help psychologists that are focused on promoting healthy family interactions (Kozlowski, 2013).

McGill et al.'s (2016) study used a meta-analytic technique that focused on twelve effect sizes from ten different studies and found that the relationship between mindfulness and relationship satisfaction was statistically significant with an overall effect size of .27. This suggested that higher levels of mindfulness are associated with higher levels of relationship satisfaction. It is suggested that the increase in attention and self-control, through MM, could be promoting higher quality relationships (Kozlowski, 2013; McGill et al., 2016). Kozlowski (2013) executed an illustrative literature review that explored the connection between MM and relationship satisfaction. She discovered that MM consistently correlated with greater relationship satisfaction due to specific

mechanisms that were fostered such as, individual well-being (mind, body, spirit), emotional control, increased empathy, and healthier stress response, all of which are deficits of ADHD.

For example, Barnes et al. (2007) also investigated the relationship between MM, self-control, and relationship satisfaction. The team used a short-term longitudinal design with 82 dating college students who completed a survey twice, once at the beginning of the MM and once at the end of the 10-week session. Data showed that self-control and accommodation had increased at the end of the 10-weeks which are both considered indicators of a person's capacity to deal with relationship stress (Barnes et al., 2007; Kozlowski, 2013). This increase in self-control and accommodation directly correlated with the increase in relationship satisfaction at the end of the 10-week interval (Barnes et al., 2007, Kozlowski, 2013).

Kozlowski's (2013) review suggested that MM is consistently correlated with greater relationship satisfaction. The above discussed research studies found statistically significant increases in relationship satisfaction after the implementation of MM, some as soon as after five sessions (Barnes et al., 2007; Burpee & Langer, 2005; Kozlowski, 2013; Wachs & Cordova, 2007). Research indicates that this correlation is due to a handful of mechanisms, also recognized in ADHD, being fostered through MM (Carson et al., 2004). Mechanisms thus far that have been identified as mediating this connection include increased empathy (Block-Lerner et al., 2007; Shapiro et al., 1998), emotional self-control (Wachs & Cordova, 2007), and healthier stress responses (Barnes et al.,

2007). By increasing self-control and decreasing impulsiveness, MM helps women with ADHD invest in familial relationships in a healthy and reciprocated manner.

### **Summary**

ADHD is a neurodevelopmental disorder that has been linked to several mental health concerns found in men and women (Babinski & Waschbusch, 2016). Although it was believed that ADHD was more prevalent in males, within the last decade research has found that an increasing number of women also live with ADHD (Nguyen & Hinshaw, 2020). Most of the research available focuses on children and adolescent symptomology, with some research focusing on the adult male population Flores-Ruiz, 2017). Therefore, little is known about gender-based ADHD symptom presentation and even less is known about symptoms as they appear in females (Flores-Ruiz, 2017).

Studies suggest that ADHD symptomology differs between men and women, but psychoeducation for healthcare professionals, educators, and parents is lacking (Cortese et al., 2016; Nguyen et al., 2020). Doctors are trained to look for a pattern of behaviors typically associated with the male population to identify ADHD, such as hyperactivity, inattentiveness, impulsivity, and aggression (Arnett et al., 2015). However, these symptoms are external and observable and seldom found in females with ADHD. Women internalize ADHD symptoms, and they manifest into incessant daydreaming, poor time-management, poor self-concept, low self-esteem, risky behaviors, and strained interpersonal relationships (Arnett et al., 2015).

Among women who have been diagnosed with ADHD less than 3.7% are taking medication, as women are more likely to question that standard of care and to seek out

alternative treatments than are men with ADHD (Mitchell, 2017). The lack of trust in medication as the first line of defense for the treatment of ADHD symptoms has to do with the medication's limitations. For example, only one in ten people benefit from taking one of the two stimulants prescribed, furthermore, many times there is insufficient symptom elimination, but a long list of side effects (Karponay et al., 2019). Patients also report a fear of addiction and whatever withdrawal symptoms may arise if medication is discontinued (Karponay et al., 2019). On the other hand, research suggests that MM is an effective, noninvasive approach to ADHD that is essentially harmless and comes with no side effects.

Research conducted on the effectiveness of MM has shown a statistically significant correlation between ADHD symptoms and mindfulness training. Van de Weijer-Bergsma et al. (2012) found that ADHD is categorized in terms of its deficits in behavior and brain functions, while MM is categorized by its ability to improve these same deficits. Weijer-Bergsma and his team (2012) discovered that 8 weeks of MM can drastically decrease inattentiveness and impulsiveness by creating more self-control. Additionally, Mak et al. (2018) found that MM had a significantly positive impact on attention regulation, executive functioning, self-control, and self-concept all of which are considered core deficits in women with ADHD, suggesting that MM may be a good approach.

This study's goal, more specifically, was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among women with ADHD who reported using medicine or meditation to manage their

symptoms. The scores were used to gauge the outcomes of MM on self-concept, risky behaviors, and familial relationships. There is little to no data on the usefulness that MM has on these three variables specifically in women with ADHD, however, a correlation can be observed. To date, research has shown a strong relationship between MM training and beliefs about the self, in women. MM is believed to be intimately linked with understanding the self, self-concept, acceptance, and patience, which in turn is associated with a greater psychological well-being (Hanley & Garland, 2017). Campanella et al. (2014) discovered a positive spike in self-concept and self-esteem score amongst women participants after an 8-week MM training and noted that the character change score remained the same at the 8 week follow up, suggesting that MM may have long lasting effects even if it is discontinued.

Similarly, to the positive effects MM has on self-concept, research has observed a significant decrease in risky behaviors amongst women who practice MM (Swanson et al., 2013; Mitchell et al., 2015). MM drastically increases a person's ability to self-control allowing more space to focus, think clearly, and execute goals (Mitchell et al., 2015). These positive changes in character persisted at the 8-week follow up, in addition participants also, unexpectedly, reported improvements in attention, externalizing problems, and relationship satisfaction, which suggests that MM can positively effect parts of the character that are not even being investigated (Mitchell et al., 2015). Furthermore, Witkiewitz et al. (2014) discovered that a large effect size significantly decreased in response to substance abuse triggers after following the 8-week MM

training, indicating MM could be a positive treatment for women struggling with ADHD and addiction.

Mindfulness meditation is not only effective in positively increasing self-concept, while decreasing risky behaviors, but it also has an ability to strengthen familial relationships. Scheter (2013) discovered that many adolescents with ADHD reported poor time management, strained familial relationships, and negative social interactions. He decided to measure these factors after an 8-week mindfulness meditation training and he discovered that stress, family conflict, and ADHD symptomology had all decreased across the board (Scheter, 2013). Furthermore, he also found that participants reported practicing MM more often than suggested and continuing the practice after the experiment had ended. The heightened self-awareness found through MM helps a person eliminate negative behaviors associated with ADHD, such as poor time management and being unreliable, both of which are major factors that lead to family conflict and relationship stress (Scheter, 2013).

Although there is research on MM and the effect it has on ADHD in general, some of it outlined in this paper, there is little data that is gender specific to women and even less data that looks at the three variables chosen for this experiment, self-concept, risky behavior, and familial relationships in relation to ADHD or solely women. The literature review highlighted this gap, as well as the lack of data on MM as an alternative approach, specifically for women living with ADHD symptoms. However, the overall research shows that MM can be a good approach to treating some ADHD symptoms in both genders, even if only as a supplement to medication. The significant impact found of

MM on ADHD symptoms has led many researchers to claim that additional experiments should be executed to test the efficacy of this approach. Considering how little data exists to support the efficacy of this treatment solely on women, researchers agree that gender specific tests of efficacy are paramount if ADHD is to be treated the best way possible.

The literature review gives broad examples of how MM could be considered an effective treatment of ADHD, but not specifically how this approach could help treat those symptoms found in women more so than in men. This study will attempt to fill a gap that is clearly justified. In the next chapter, I will discuss the research methodology that will be used to explore the experiences and differences in scores of women using MM and medication to treat three specific symptoms of ADHD: self-concept, risky behaviors, and familial relationships.

## Chapter 3: Research Method

### **Introduction**

The goal of this pre-experimental static group comparison study was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among women with ADHD who reported using medicine or meditation to manage their symptoms. One group of participants solely used MM training to treat ADHD, while the other group of participants solely used medication to treat symptoms. The goal was to measure group differences in dependent variable scores among women with ADHD who reported using medicine or meditation to manage symptoms of self-concept, risky behaviors, and familial relationships.

Garland's MMT supports the expectation that individuals with ADHD will struggle to control their symptoms, and medication may not always be the best option (Flores-Ruiz et al., 2017; Garland, 2015; Kapleau, 1965). MMT is discussed further in Chapter 3. Chapter 3 begins with a discussion of the selected research design and the rationale for choosing it. The demographic and sampling procedures are then explained, as well as the statistical power analysis used to determine the population and sample size for the study. Following will be an outline with a list of criteria participants had to meet to participate in the study, then an explanation of informed consent and a brief account of data collection techniques. In the final section, I discuss the WFIRS-S's reliability and validity, how the data collected were analyzed, and any validity and/or ethical concerns.

### **Research Design and Rationale**

According to White and Sabarwal (2014) a quantitative design must have variables that can be measured to generate numerical data for analysis. Also, a quantitative researcher uses deductive reasoning that starts with a hypothesis and assesses the research question to determine if there is enough statistical evidence to support or reject the hypothesis (Cornelius et al., 2017; Frankfort-Nachmias & Nachmias, 2015; Goertzen, 2017). Comparing two groups on a metric outcome variable to determine group mean differences is a pre-experimental static group comparison design (Campbell & Stanley, 1963). This specific research design is favored in research into MM and pharmacological treatment options for ADHD or other neurological disorders when experimental designs with random assignment pre-experimental static group comparison design pretests are not feasible (Campbell & Stanley, 1963; Carnett et al., 2020; Cornelius et al., 2017; Suen & Ary, 2014; White & Sabarwal, 2014).

This study had one independent variable, MM and medication, and three dependent variables self-concept, risky behaviors, and familial relationships with no mediating or moderating variables. I applied the quantitative method, descriptive and inferential statistics, to measure the variables. Ultimately, the data analysis summarized the characteristics of the data set and determined whether the data are generalizable to the broader population (see Frankfort-Nachmias & Nachmias, 2015).

Through administering the WFIRS-S, I sought to determine to what extent, if at all, self-concept, risky behaviors, and familial relationships are affected when treated with MM versus medication. For this pre-experimental static group comparison research,

the independent variable was not manipulated, and the change of the dependent variables was cautiously interpreted given specific threats to internal validity (e.g., selection, mortality) inherent in the design (Campbell & Stanley, 1963).

## **Methodology**

### **Population**

The rates of adults diagnosed with ADHD are growing four times faster than diagnosis in children with an increase of 12.3% (National Center for Health Statistics, 2020). ADHD is thought to be underdiagnosed in adults, especially in women ages 18 to 65; although symptoms are present in childhood, for many of these women, symptoms go unnoticed and are not diagnosed until adulthood (National Center for Health Statistics, 2020). The *DSM-5*'s criteria for an ADHD diagnosis remain more specific to children, and adult women often have comorbid psychiatric disorders that mask traditional symptoms of ADHD, making it easy to overlook a proper diagnosis (APA, 2017; Deault, 2010; Garland et al., 2017; Golden & Gross, 2010).

Among the comorbidities are also symptoms most often associated with women who have ADHD, such as poor self-concept, risky behaviors, and familial relationship problems. Symptoms of low self-esteem and poor self-concept are more common than symptoms of hyperactivity or impulsivity are in women with ADHD (Deault, 2010; Garland et al., 2017; Golden & Gross, 2010). Women with ADHD are more likely to experience anxiety, phobias, complicated professional and personal relationships, and recklessness compared to men with ADHD and women without ADHD (Deault, 2010; Garland et al., 2017; Golden & Gross, 2010;). Recent findings have shown that

medication used to treat ADHD is significantly lower in women ages 18 to 65 when compared to boys and men with ADHD, making this the ideal population for the study.

### **Sampling and Sampling Procedures**

A purposive sampling method was used to recruit participants who meet specific criteria. The criteria required that participants be between ages 18 and 65, were biologically female, identified as female, had an ADHD diagnosis (time frame person had ADHD diagnosis was not relevant), and used either MM as a form of treatment or medication as a form of treatment for symptoms of ADHD. I used G\*Power (see Faul et al., 2007) to determine an adequate sample size. Stevens (2002) recommended power of no less than .70 for univariate statistical analysis. Setting a priori power at .70 with  $\alpha = .05$  and a medium expected effect size of Cohen's  $f = .25$ , a sample of 102 (51 in each treatment group) is recommended.

### **Procedures for Recruitment, Participation, and Data Collection**

Twelve ADHD affinity groups on the social media platform Facebook granted me permission to recruit participants for the study. The procedure for recruitment began with a flier being posted on the walls of these groups giving a brief description of the study and included the mandatory criteria for participation (see Appendix A). The flier explained that to participate, the interested party must have been born female, identify as female, be between ages 18 and 65, have ADHD, and take medication prescribed by a licensed physician or practice meditation (individual or group) as treatment for ADHD symptoms (see Appendix A).

Participants who believed they were eligible for the study clicked a link on Facebook and were taken to a Google Forms regarding inclusion criteria (see Appendix B). Once potential participants filled out the inclusion criteria and clicked next, those who were not eligible were redirected to a message thanking them for their participation and explaining that they were not selected at this time because they did not meet the selection criteria (see Appendix C). Those who did meet the requirements were chosen as participants for the study and were redirected to the informed consent form (see Appendix D). The informed consent form included information on the purpose of the study and explained any risks or benefits of study participation, the time frame needed to complete the questionnaire, and answered any additional questions regarding anonymity. Lastly, the informed consent had my contact information in case a participant had concerns regarding their participation in the study. Partaking was optional, and participants were allowed to discontinue being part of the research at any time. Once the informed consent form was successfully completed, the demographic survey populated (see Appendix E). Once the demographic information was collected, the participant clicked on a link and was redirected to the relevant subscale items of the WFIRS-S questionnaire to complete (see Appendix F). Upon completion of the WFIRS-S questionnaire, participants were directed to the final page (see Appendix G), where they were thanked for their participation.

The target sample size was 105 participants with complete data. However, data collection continued until the study had complete and usable data for the calculated sample size. As soon as the sample size was met, the surveys were closed, and I collected

the data in an Excel spreadsheet and used IBM SPSS for data analysis. To ensure anonymity and prevent any breaches, my dissertation committee members and I were the only people with access to the analysis of these data.

### **Instrumentation and Operationalization of Constructs**

Three questionnaires for the participants were administered online: the inclusion criteria, the demographics questionnaire, and the relevant sections of the WFIRS-S survey. The inclusion criteria survey asked questions about gender identity, age, and ADHD diagnosis and treatments. The survey was made up of four fill-in-the blank questions and one multiple-choice question and took no more than 3 minutes to complete. The demographic questions for this study gathered information about the background characteristics of the participants. The questions included the participants' ethnic origin, socio-economic status, and marital status (see Appendix B). There were five fill-in-the blank questions and two multiple-choice questions, and these took no more than 5 minutes to answer.

The WFIRS-S was used to measure to what degree ADHD symptoms were affecting a woman's behavioral and emotional state and how this may have impacted domains of functioning (see Canu et al., 2016; Weiss et al., 2018). The questionnaire was comprised of 69 items. Participants rated their functioning across seven domains. The seven domains were (a) family, (b) work, (c) school, (d) life skills, (e) self-concept, (f) social, and (g) risk. However, for the purpose of this study only three domains were used. The three domains examined were self-concept (5 items), risky behaviors (14 items), and familial relationships (8 items). An example self-concept item was "feeling

frustrated with yourself.” An example risky behavior item is “doing other things while driving.” An example familial relationship item is “problems balancing your needs against those of your family.” I chose these three domains because research has shown these areas are where women with ADHD struggle (see Deault, 2010; Weiss et al., 2018). I contacted the survey creator and stated that these three domains can be used solely and reliably measure scores of MM or medication in relation to specific ADHD symptoms in the specific group of women. This questionnaire was not timed and took no more than 10 minutes to be completed.

Participants rated each item based on their experiences with ADHD symptoms and how the symptoms’ effects on behavioral and emotional state have impacted their functioning in the last month on a 0–3 Likert scale—0 (*never or not at all*), 1 (*sometimes or somewhat*), 2 (*often or much*), and 3 (*very often or very much*)—with higher scores indicating more life distress in a particular domain (Weiss et al., 2018). There was also a *not applicable* response option for each item, which was treated as missing data. Mean composite scores were calculated for participants who had nonmissing data on at least 70% of the items that make up a subscale. Specifically, four nonmissing responses for self-concept, 10 nonmissing for risky behaviors, and six nonmissing for familial relationship. Participant-specific mean on a subscale was imputed for those participants who met the 70% nonmissing criteria. Participant-specific mean substitution has been shown to be an easy, reliable, and valid imputation method (Downey & King, 1998; Shrive et al., 2006).

### **Reliability and Validity**

The WFIRS-S has an internal consistency of  $>.8$  for each of the domains (Canu et al., 2016; Weiss et al., 2018). Moderate convergent validity is 0.6 and discriminating validity is moderate (Weiss et al., 2018). Haugan et al. (2020) analyzed the psychometric properties of the Weiss functional impairment rating scale parent WFIRS-P and WFIRS-S in adolescents with ADHD. Convergent and divergent validity were assessed using correlations with the children's global assessment scale (C-GAS) and the ADHD rating scale IV (ADHD-RS-IV). The authors found that internal consistency was satisfactory across domains (Haugan et al., 2020). The correlations between the C-GAS and the total scores of the WFIRS-P and WFIRS-S were low to moderate ( $r = -0.29$  to  $-0.38$ ; Haugan et al., 2020). The ADHD-RS-IV correlated moderately ( $r = 0.49$ ) with WFIRS-P, the correlation with WFIRS-S was weak ( $r = 0.28$ ), supporting divergent validity (Haugan et al., 2020). Overall, the team's findings support the use of the WFIRS-S in the evaluation of functional impairment in adolescents with ADHD (Haugan et al., 2020). Additionally, according to Weiss et al. (2018), the survey is highly sensitive to change with treatment meaning that if medication or MM is useful the survey's scoring will reflect this (Canu et al., 2020; Weiss et al., 2018).

### **Data Analysis Plan**

Data screening is important prior to running the main statistical analyses. For example, if data is entered incorrectly and it is overlooked, the experiment may be compromised (Tabachnick & Fidell, 2013). Identifying missing data is also important, as missing values may occur if the participant overlooks or misunderstands a question.

Thoroughly explaining the survey and answering any questions, should lead to more reliable answers, which in turn should help protect the study's validity (Tabachnick & Fidell, 2013).

Two main statistical methods were used in the data analysis of this study, descriptive and inferential statistics. Descriptive statistics summarize data from a sampling using the mean or standard deviation and inferential statistics draw conclusions from the data that come with random variation, meaning that they are subject to observational errors or sampling variation (Frankfort-Nachmias & Nachmias, 2015; Tabachnick & Fidell, 2013). The descriptive and inferential statistics summarized the characteristics of the dataset and determined whether the data was generalizable to the broader population (Frankfort-Nachmias & Nachmias, 2015).

To test the null hypotheses and to answer the research question three separate one-way ANOVAs were conducted to determine if MM only and medication only groups differed on self-concept subscale scores, risky behavior subscale scores, and familial relationships subscale scores. Prior to conducting the ANOVAs, the data were screened and cleaned. Following Tabachnick and Fidell (2013), the data were separately screened and cleaned by group. Missing data were addressed as previously described. Then, each of the three subscales were checked for reliability, using standard procedures to address any issues.

Cronbach's alpha, average inter-item correlation, and minimum and maximum inter-item correlations were reported. Next, mean composite scores for each subscale were calculated and checked for outlier cases and normal distribution. Cases with values

exceeding  $\pm 3.29$  standard deviations and that are substantially discontinuous from the other cases were considered for removal from further analysis.

Skewness greater than  $\pm 3.0$  and kurtosis greater than  $\pm 10.0$  can adversely influence statistical results (Kline, 2016), and subscale scores with severe skewness or kurtosis will be considered for transformation. As part of the ANOVA procedure, homogeneity of variance on each of the three subscale scores was examined. Levene's test of homogeneity of variance was reported but it is overly sensitive, so severe departures were assessed using the Fmax ratio of largest to smallest variance and interpreted according to known robustness criteria (Tabachnick & Fidell, 2013).

### **Research Questions and Hypotheses**

**RQ: To what extent do self-concept subscale scores, risky behavior subscale scores, and familial relationships subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms?**

*H*<sub>01</sub>: Self-concept subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

*H*<sub>a1</sub>: Self-concept subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

*H*<sub>02</sub>: Risky behavior subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

*H*<sub>a2</sub>: Risky behavior subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

*H*<sub>03</sub>: Familial relationships subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

*H*<sub>a3</sub>: Familial relationships subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

### **Threats to Validity**

#### **External Validity**

External validity is important in generalizing the study's findings among the whole population (Babinski & Waschbusch, 2016; Stenner et al., 2019). Threats to validity are impossible to avoid, however, there are precautions that can be taken to minimize the threats. To avoid the Hawthorne Effect, the description of the research and the participation requirements offered just enough instruction to be informative. The less details the participants have, the less likely they will behave or answer questions differently (Babinski & Waschbusch, 2016; Stenner et al., 2019).

The second potential threat to external validity may be situation effect. The setting, time of day, location where questionnaire will be taken, and the participant's mood differs for nearly all participants. Since these factors were controlled, there was a chance that the answers would vary because of their influence. The questionnaire was administered online and accessed anytime, anywhere, and while in any mood. This decreased the chances that when retested, the data would point to the same conclusion (Shoham, 2019; Stenner et al., 2019). However, considering the way this study was designed, there was very little that could be done to prevent situation effect.

Lastly, this point in history is significantly more stressful on society, as there are a lot of major life changing events taking place. Some of these events, although entirely independent of the research being conducted, could have brought about feelings of fear, anxiety, and loneliness (Babinski & Waschbusch, 2016; Shoham, 2019; Stenner et al., 2019).

### **Internal Validity**

Internal validity plays a major role in ensuring that the data results represent what the researcher is studying (Roy, 2019; Stenner et al., 2019). Internal validity must make sure that the medication and MM scores accurately reflect the outcome measured by the DVs (Roy, 2019; Stenner et al., 2019). An internal threat within the study that was difficult to eliminate was that the WFIRS-S was self-administered. A self-administered survey expects participants to respond truthfully to each question, however, there is no guarantee that the participants will do so. If the participants are trying to portray a certain image to the researcher, or are unsure of what the question is asking, or perhaps they do

not know the answer so they guess, the research's validity will be jeopardized. To decrease the chances of these potential threats to internal validity, the responses to the survey remained anonymous. Research has shown that anonymity in responses, with self-reporting surveys, supports internal validity (Roy, 2019).

### **Ethical Procedures**

The Institutional Review Board (IRB) for Walden University approves an experiment at the proposal stage to ensure the study is within ethical guidelines before data is collected. When human participants are involved, following all ethical guidelines becomes essential for the implementation of the experiment. Since the participants were between the ages of 18 to 65, they were considered adults, so parental consent was not required. No ethical violations took place in these procedures, as the population that was recruited was not considered vulnerable, there were no conflicts of interest with the researcher, nor was the survey collecting data on a sensitive topic (Shoham, 2019). Moreover, administering an anonymous online questionnaire guaranteed ethical boundaries were not violated.

The participants were well informed of the procedures and expectations of the experiment through the informed consent form that they were required to read and sign. The informed consent was administered to guarantee each participant was making an independent and knowledgeable decision, free of pressure, on whether to take part in the study or not. The form administered outlined the purpose of the research, experiment procedures, confidentiality and maintaining anonymity throughout the process, and the expectations of the participants. Lastly, the data collected was in a password-protected

file on a personal computer and on a protected flash drive that was also saved on an external hard drive for five years, in line with ethical guidelines.

### **Summary**

The goal of this pre-experimental static group comparison design was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among women with ADHD who reported using medicine or meditation to manage their symptoms. One group solely used MM to treat symptoms, while the other group used medication to treat symptoms. Ultimately, the study wanted to measure the differences in dependent variable scores among women between the ages of 18 and 65 who reported using medicine or meditation to manage their symptoms.

The population used for the sample of the study included women that were biologically female, that identified as women, had an ADHD diagnosis, were between the ages of 18 and 65, and used medication or MM, but not both, as treatment for symptoms of ADHD. A purposive sampling method was used to invite participants from a female population age 18 to 65. The target sample size was 102 participants with completed data, not including any that choose to stop participating.

Once the IRB approved the study, The participants were recruited from one of twelve ADHD affinity groups on the social media platform Facebook. The groups being targeted included female members between the ages of 18 and 65 that had ADHD and were in the group for support with their symptoms and daily difficulties. Since the age requirement for participation was over 18, there was no need for parental consent, but all

participants were required to review and sign an informed consent form. Responses were anonymous, as to decrease chances of threats to internal validity.

Chapter 4 will discuss the process by which the data was collected, the recruitment and response rates by participants, and the time frame that was allocated for the data collection. Any inconsistencies in the data collection and/or analysis were explained and discussion of how applicable the results are to the majority population followed. The statistical analysis was outlined along with information on how assumptions for multivariate data were evaluated. Tables, figures, and graphs were displayed in this chapter to display the results and explain the conclusion of the study with visuals.

## Chapter 4: Results

### Introduction

Since 2015, the diagnosis of ADHD in women has increased by 85% (Shoham et al., 2020; Stenner et al., 2019; Young et al., 2020). Even though there is a striking increase in diagnoses, research shows that many women are choosing to live with the symptoms associated with ADHD, rather than seeking a proper diagnosis (Hosain et al., 2012; Stenner et al., 2019). Young et al. (2020) stated that this behavior leads to anticipated and unanticipated challenges that come from a lack of coping skills leading to anxiety, depression, poor self-concept and relationships, feelings of being an outcast, and suicidal ideation.

The goal of this pre-experimental static group comparison was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among women with ADHD who reported using medicine or meditation to manage their symptoms. In this case, one group solely used mindfulness meditation to treat symptoms, while the other group solely used medication to treat symptoms. The goal was to measure dependent variable scores in both treatment approaches and analyze these scores when applied to self-concept, risky behaviors, and familial relationships.

The research question and hypotheses for this study were:

RQ: To what extent do self-concept subscale scores, risky behavior subscale scores, and familial relationships subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms?

$H_{01}$ : Self-concept subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

$H_{a1}$ : Self-concept subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

$H_{02}$ : Risky behavior subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

$H_{a2}$ : Risky behavior subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

$H_{03}$ : Familial relationships subscale scores do not differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

$H_{a3}$ : Familial relationships subscale scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms.

Previous literature has shown that symptoms of ADHD exhibited in women are different from those symptoms typically found in men. Women's symptoms commonly include inattentiveness, being withdrawn, daydreaming, and risky behaviors (Babinski & Waschbusch, 2016; Barkley, 2010; Foley et al., 2014; Hirsch et al., 2018; Stenner et al.,

2019; Young et al., 2020). Unfortunately, these symptoms have been commonly misdiagnosed, leading to treatment options that are not effective in teaching the appropriate coping skills to deal with ADHD (Hirsch et al., 2018; Young et al., 2020). This pattern leads patients to mistrust the mental health field's ability to help, and many women discontinue medication and treatment recommendations, opting to find other ways to cope.

In this chapter, I discuss the purpose, research question and hypotheses, and data collection techniques. Even though there are more symptoms found in women with ADHD, this study focused on low self-concept, risky behaviors, and familial relationships (Davis & Mitchell, 2019; Young et al., 2020). I also present the results, including survey collection, participant data, descriptive statistics, and the research question and hypotheses testing. The chapter concludes with a summary.

### **Data Collection**

There were 12 ADHD affinity groups on the social media platform Facebook that granted me permission to recruit participants for the study. Facebook affinity groups were chosen because they were already target specifiers, making it easier to find women fitting the required criteria. Because participation in these groups is voluntary, I hoped members would be comfortable self-reporting on their condition. A flier was posted on the walls of the affinity groups giving a brief description of the study and included the mandatory criteria for participation. The flier explained the criteria necessary for participation stating that individuals must be between ages 18 and 65, have ADHD, and either be taking

medication prescribed by a licensed physician or practice meditation (individual or group) as treatment for ADHD symptoms.

Data were collected over a 2-week period in October 2022. I created the participant survey using the online platform Google Forms. Participants completed the WFIRS and a demographic questionnaire. A total of 109 surveys were collected from women who fit the required criteria. Of the 109 individuals who accessed the survey, two did not respond to any of the four eligibility items and were eliminated from further analysis. One participant responded indicating they receive both treatment types (prescription medication and mindfulness) and was eliminated from further analysis. This left 106 eligible for participation ( $N = 106$ ). Temporary variables were created to determine cases with missing data across items that make up each of the three subscales.

### **Screening for Missing Data**

For the portion of the survey pertaining to family relationships (family subscale), 81 cases had no missing data across the eight items, 23 cases had one missing item value, one case had missing data on two items, and one case had missing data on all eight items. For the portion of the survey pertaining to self-concept (self-concept subscale), one case had missing data on all five items, the other 105 had no missing data. For the portion on risky behaviors (risk subscale), 103 cases had no missing data across the 14 items, two had missing data on one item, and one had missing data on all 14 items. Because one of the cases had missing data on all three portions of the survey (family, self-concept, and risk subscales) that participant's responses were eliminated from further analysis, leaving the final number of valid participants at 105 ( $N = 105$ ).

There were 24 cases with missing data on the family and risk portions of the survey. For the family set of questions, two cases did not respond to the first item. Twenty cases responded *not applicable* to Item 2, two participants responded *not applicable* to Item 6, and one participant scored family Item 4 as *not applicable*.

The family mean value was calculated in SPSS based only on valid scores of 0–3. Because reliability analysis requires all items of a scale to be nonmissing, the case-specific mean based on the validly scored items was imputed in the data set. For example, the unanswered family1 item for case 5 and 6 were overwritten with 0.57 and 1.29, respectively; and all values scored as 4 = not applicable were overwritten with the participant's mean (e.g., ID37 family2 value was changed from 4 to 2.29).

### **Univariate Outliers**

Standardized scores were created for each of the three subscales separately for each treatment group. For the prescription medication group, standardized scores on each of the three subscales were within  $\pm 3.29$ , and no univariate outlier cases were detected. For the MM group, the maximum z-scores for family and self-concept were 5.35 and 4.69, respectively. ID 45 was responsible for both extreme scores and was removed from further analysis. Standardized scores were recomputed and mindfulness meditation scores for each of the three subscales were within  $\pm 3.29$ , and no other univariate outlier cases were detected. The final total of participants for the study were 103, with 52 in the prescription medicine group and 51 in the MM group (N = 103).

### Normal Distribution

Normal distribution (skewness and kurtosis) of each subscale score was evaluated separately for each treatment group. Skewness values for each subscale were within  $\pm 3.0$  and kurtosis values were within  $\pm 10.0$ , so each subscale score is considered to have a relatively normal distribution and to be robust for ANOVA analysis.

### Final Reliability Results of Three Subscales

Based on the Cronbach's alpha of each subscale, the reliability of the scale could not be improved by elimination of any item (see Table 1). The family subscale had a Cronbach's alpha of .913 with average inter-item correlation of .574, ranging from .446 to .741; the self-concept subscale had a Cronbach's alpha of .916 with average inter-item correlation of .690, ranging from .585 to .766; and the risk subscale had a Cronbach's alpha of .861 with average inter-item correlation of .347, ranging from .079 to .635. The alpha coefficients for the three subscales were considered to have high internal consistency and the higher the internal consistency the more reliable the survey.

**Table 1**

*Final Reliability Results of Three Subscales*

Subscale	Cronbach's $\alpha$	# Items	Inter-item correlations		
			Min.	Avg.	Max.
Family	.913	8	.446	.574	.741
Self-concept	.916	5	.585	.690	.766
Risk	.861	13	.347	.079	.635

## Results

### Demographic Characteristics

The plurality of participants were White (37.9%), followed by Black/African American (24.3%), and Asian (15.5%), and were relatively proportioned in both treatment groups (see Table 2). Nearly three fourths (72.8%) of the participants had a bachelor's degree or higher. Most participants were married (45.6%); 26.2% were divorced, and 24.3% were single.

The MM group had relatively fewer participants who were single compared to the prescription medicine group. Overall, participants were evenly split across income brackets of \$50,000–\$99,999 (32.0%), \$100,000–\$149,999 (32.0%), and more than \$150,000 (28.2%). The MM group had proportionally more participants in the two top income brackets (72.5%) compared to the prescription medicine group (48.1%). More than two thirds (68.0%) of the participants were employed, with a higher percentage employed in the MM group (72.5%) compared to the prescription medicine group (63.5%). Of the prescription medication group, 36.5% reported having no children and 53.8% lived with fewer than two people in the household. Of the MM group, 31.4% reported not having children and 39.2% lived in a household with fewer than two people (see Table 2).

**Table 2***Demographics of the Sample*

Demographic	Rx group		MM group		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<b>Ethnicity</b>						
White	21	40.4	18	35.3	39	37.9
Black/African American	14	26.9	11	21.6	25	24.3
American Indian/Alaska Native	3	5.8	4	7.8	7	6.8
Asian	8	15.4	8	15.7	16	15.5
Native Hawaiian/Pacific Islander	4	7.7	3	5.9	7	6.8
Other	2	3.8	7	13.7	9	8.7
<b>Education</b>						
Some high school/no diploma	6	11.5	3	5.9	9	8.7
High school graduate or GED	13	25.0	6	11.8	19	18.4
Bachelor's degree	22	42.3	23	45.1	45	43.7
Master's or graduate degree	11	21.2	19	37.3	30	29.1
<b>Marital status</b>						
Single	16	30.8	9	17.6	25	24.3
Married	22	42.3	25	49.0	47	45.6
Widowed	0	0.0	0	0.0	0	0.0
Divorced	13	25.0	14	27.5	27	26.2
Separated	0	0.0	3	5.9	3	2.9
<i>Missing</i>	1	1.9	0	0.0	1	1.0
<b>Income bracket</b>						
\$1–\$49,999	3	5.8	1	2.0	4	3.9
\$50,000–\$99,999	21	40.4	12	23.5	33	32.0
\$100,000–\$149,999	13	25.0	20	39.2	33	32.0
More than \$150,000	12	23.1	17	33.3	29	28.2
Don't know	3	5.8	1	2.0	4	3.9
<b>Number of children</b>						
None	19	36.5	16	31.4	35	34.0
1	17	32.7	13	25.5	30	29.1
2	12	23.1	15	29.4	27	26.2
3 or more	4	7.7	7	13.7	11	10.7
<b>Number people in household</b>						
2 or fewer	28	53.8	20	39.2	48	46.6
3 or more	24	46.2	31	60.8	55	53.4
<b>Employed</b>						
No	19	36.5	14	27.5	33	32.0
Yes	33	63.5	37	72.5	70	68.0

### Final ANOVAs

ANOVA was used to address the research questions; self-concept subscales, risky behavior subscales, and familial relationship subscales scores differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms. For all three subscales, the MM group had statistically significantly lower scores, meaning less frequent problems with family, less frequent low self-concept, and less frequent risk factors (see Table 3). The largest mean difference between groups was on self-concept ( $MD = 1.35$ ), followed by family ( $MD = 1.27$ ), and risk ( $MD = 0.71$ ). However, by eta-squared effect size, group differences accounted for 72.9% of the variance in family scores, 58.7% of variance in self-concept, and 52.5% of variance in risk.

**Table 3**

*Means Based on Treatment*

	$MD^a$	95% CI of $MD$		$F^b$	$df^b$	$p^b$	$\eta^2$
		Lower	Upper				
Family	1.27	1.11	1.42	276.1	66.2	< .001	.729
Self-concept	1.35	1.12	1.57	145.6	62.9	< .001	.587
Risk	0.71	0.58	0.85	113.6	60.5	< .001	.525

*Note.*  $\eta^2$  = eta-squared; a = Prescription medicine group mean minus mindfulness

meditation group mean; b = Welch's robust F, df, and p.

The first research hypothesis - self-concept subscale scores do differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms- was correct, rejecting the null 1 hypothesis. Using ANOVA results, we found a significant difference between that medication group's score

of 1.83 and the meditation group's score of 0.56 (See Table 4). The lower the Likert scale score, the higher a person's self-concept indicating less problems with items in this subscale.

The second research hypothesis - risky behavior subscale scores do differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms- was correct, rejecting the null 2 hypothesis. Using ANOVA, we discovered a significant difference between the medication group's score of 1.04 and the meditation group's score which was 0.33 (See Table 4). The lower Likert scores suggest participants engaged in less risky behaviors.

The third research hypothesis- familial relationships subscale scores do differ between women diagnosed with ADHD who use medication only to treat symptoms and those who use MM only to treat symptoms- was also correct, rejecting the third and final null hypothesis. ANOVA results showed the medication group's score to be 1.92 versus the meditation group's score that was 0.57 (See Table 4). The lower scores on the Likert scale suggest that those participants had healthier familial relationships.

**Table 4***Final Subscale Descriptive Statistics of Three Subscales*

Statistic	Subscale								
	Family			Self-concept			Risk		
	Rx group	MM group	Total	Rx group	MM group	Total	Rx group	MM group	Total
<i>M</i>	1.83	0.56	1.20	1.92	0.57	1.25	1.04	0.33	0.69
<i>SD</i>	0.51	0.20	0.75	0.76	0.26	0.88	0.46	0.14	0.50
Min.	0.50	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.00
Mdn.	1.88	0.57	0.88	2.10	0.60	0.80	1.08	0.31	0.46
Max.	2.86	1.00	2.86	3.00	1.20	3.00	2.31	0.62	2.31
<i>S</i>	-0.88	-0.05	0.37	-1.00	0.15	0.44	0.42	-0.02	1.02
<i>K</i>	0.66	0.19	-1.38	0.33	-0.03	-1.29	0.17	0.25	0.45

*Note.* Rx group = prescription medication (n = 52); MM group = mindfulness meditation (n = 51); Mdn = median; S = skewness; K = kurtosis.

### Summary

The goal of this pre-experimental static group comparison design was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among women with ADHD who reported using medicine or meditation to manage their symptoms. They were separated into two groups based on which form of treatment they were using to ease the symptoms associated with this disorder, medication, or meditation. The goal was to measure group differences in dependent variable scores among women with ADHD who reported using medicine or meditation to manage their symptoms of self-concept, familial relationships, and risky behaviors.

The research question- self-concept subscales, risky behavior subscales, and familial relationship subscales scores differ between women diagnosed with ADHD who

use medication only to treat symptoms and those who use MM only to treat symptoms- was addressed by conducting ANOVA analyses using SPSS. In all the three subscales the mindfulness meditation group had statistically significantly lower scores on the Likert scale, suggesting that this group experienced less frequent low self-concept, less frequent problems with family, and less frequent risky behaviors.

In Chapter 5, I will provide a summary of these findings, the interpretation of those findings, and the benefits of the study. Further, I explain the recommendations, future research, and implications for social change. Chapter 5 ends with a conclusion to the research study.

## Chapter 5: Discussion, Conclusions, and Recommendations

### **Introduction**

The goal of this pre-experimental static group comparison was to measure group differences in scores on instruments that measure familial relationships, risky behavior, and self-concept among women with ADHD who reported using medicine or meditation to manage their symptoms. This study is important because there has been little research on alternative treatment options for women with ADHD. The research design observed one group that solely used MM to treat symptoms and a second group that solely used medication to treat symptoms. The purpose was to measure MM and medication on self-concept, risky behaviors, and familial relationships and analyze the data of the two treatment methods for women diagnosed with ADHD. This study may have the potential to help medical professionals and counselors who deal with patients who have been diagnosed with ADHD design and develop interventions and treatment plans that may be useful in treating their symptoms. The better the treatments, the more likely the patient will learn the appropriate coping skills needed to control their symptoms and live a healthier life.

### **Summary of Findings**

Data were collected over a 2-week period in October of 2022. I created the survey using the online platform Google Forms. Participants were found by posting a flier on the walls of 12 ADHD affinity groups on the social media platform Facebook that had granted permission to do so. The flier explained all the criteria necessary for participation in the study. Participants completed the WFIRS and a demographic questionnaire.

A total of 109 surveys were collected from women who fit the requirements. All participants were biologically born female, identified as female, were between ages 18 and 65, had a diagnosis of ADHD, and were using either medication or meditation to treat symptoms associated with the diagnosis. When looking at the demographic data generated for the two groups, I discovered there were more married participants in the MM group than the prescription medication group. Furthermore, the MM group had significantly more participants in the top two income brackets (72.5%) compared to the prescription medicine group (48.1%). Lastly, a higher percentage of participants were employed in the MM group (72.5%) compared to the prescription medicine group (63.5%).

The research question asked whether self-concept subscales, risky behavior subscales, and familial relationship subscales scores differ between women diagnosed with ADHD who use medication only to treat symptoms and women diagnosed with ADHD who use MM only to treat symptoms. The question was addressed using ANOVA. Statistical significance was measured between self-concept, risky behavior, and familial relationship scores on both treatments: MM and prescription medication.

Past research has shown that women dealing with ADHD symptoms tend to have poor self-concept, increased risky behaviors, and poor familial relationships (Garland et al., 2017). Shapiro and Jazaieri's (2014) research showed that many women do not seek help for ADHD symptoms, as they do not want to be medicated, nor do they want to be associated with the stigma that comes with these treatments (Shapiro & Jazaieri, 2014). I sought to address the gap in literature by measuring the difference in dependent variable

scores among women with ADHD who reported using medicine or meditation to manage their symptoms. Perhaps in the future, meditation might be added to the list of treatment options for women with ADHD who do not want to use medication to treat their symptoms (see Flores-Ruiz et al., 2017).

### **Interpretation of Findings**

The theoretical framework for this study was Garland's MMT, and according to this theory, MM teaches a specific technique that is then practiced alone or in a group. This technique can help control thoughts, perceptions, and experiences (Garland et al., 2017). MM teaches attention and awareness to exist in an emotionally calm and stable state by turning any stressful thoughts into metacognitive states of awareness (Shapiro & Jazaieri, 2014).

### **Self-Concept**

Research findings suggest that earlier intervention for those with ADHD can interrupt the progression of comorbidities, such as suicidality (Guendelman et al., 2016; Hosain et al., 2012). Prescription medication has shown a significant decrease in self-harm, especially if the intervention takes place before adulthood (Hinshaw et al., 2022). Unfortunately, many symptoms in women translate into behaviors frequently misunderstood and stigmatized by society, which can lead to poor self-concept (Hinshaw et al., 2022).

Should poor self-concept symptoms be identified early enough and treated, the risks that come with poor self-concept may decrease (Hosain et al., 2012). Research has shown that MM can increase a person's self-compassion, leading them to being gentler

with experiences that shape their impression of themselves (Hosain et al., 2012). In return, this can lead to a stronger sense of self and a better self-concept (Hosain et al., 2012).

MMT focuses a lot of its ideas on reappraisal. Mindfulness facilitates stress coping by facilitating reappraisal, thereby promoting a reconstruction of a person's long-term views of the world and oneself (Garland et al., 2017). Reappraisal focuses a person's attention on new information that may have been overlooked or old information reexamined to bring about a more positive reassessment (Deault, 2010; Garland et al., 2017; Golden & Gross, 2010). The reappraising of a person's self-image seems to give insight into self-awareness, which in turn strengthens self-concept (Garland et al., 2017; Golden & Gross, 2010). This may be why the MM scores of self-concept suggested a healthy level of self-concept.

### **Risky Behavior**

ADHD symptoms in women are associated with engaging in risky behaviors (Hinshaw et al., 2022; Nussbaum, 2012; Volkow et al., 2011). Hosain et al. (2012) found that women who endorsed more ADHD symptoms took riskier chances in sexual behaviors of all types, even dangerous ones. The authors recommended early intervention for women who struggle with ADHD symptoms, as medication has shown a significant decrease in risky behaviors among this group (Hosain et al., 2012).

Rates of suicide, self-harm, and other risky behaviors spike in women with a diagnosis of ADHD (Swanson et al., 2013). Early intervention is essential in preventing risky behaviors, and medication has shown to help decrease the chances of suicide when

diagnosis is identified early (Swanson et al., 2013). MM strengthens a person's ability to control impulsive behaviors, potentially decreasing risky behaviors (Chimiklis et al., 2018). Research has shown that MM can make a person more aware of emotions and when those emotions are becoming overwhelming, helping a person redirect and control them (Chimiklis et al., 2018). Evidence suggests that MM helps with risky behaviors in ADHD because it thickens the prefrontal cortex, the part of the brain that involves impulse control, and raises dopamine, which is in short supply in people with ADHD (Chimiklis et al., 2018).

The MM Likert score for the risky behavior subscale was low, suggesting this group does not engage in a lot of risky behaviors. MMT discusses reappraisal where information is re-examined to bring about a more positive reassessment and reappraising risky behaviors may allow the person a chance to make the right decision (Golden & Gross, 2010). Research suggests that people with strong self-concept practice more self-love, making them less likely to engage in risky behaviors (Garland et al., 2017; Shapiro & Jazaieri, 2014). Additionally, MMT's reappraisal trains a person to remain calm and reconstruct negative thoughts. Thinking more clearly and more calmly allows for more responsible decision making, which could also lead to less risky behaviors (Shapiro & Jazaieri, 2014).

### **Familial Relationships**

Intimate relationships with individuals who struggle with ADHD have shown to be problematic (Bijlenga et al., 2018). Because of lifetime symptoms like inattentiveness, forgetfulness, risky behaviors, mood swings, and impulsiveness people with ADHD

cannot maintain healthy relationships with some of the most important people in their lives (Bijlenga et al., 2018). Modesto-Lowe et al. (2015) explored ADHD and MM focusing on emotional dysregulation and its effects on relationships. Evidence suggested that MM practices improve attention and improve the symptoms of ADHD by activating brain regions used for sustaining attention and directing emotions (Fuller-Thomson et al., 2016; Modesto-Lowe et al., 2015). Overall, the team supports that MM is a useful way to alleviate symptoms of ADHD that cause unstable relationships.

Women with ADHD struggle with familial relationships more so than do men, especially relationships with their children continuing the vicious cycle of shame, low self-esteem, poor self-concept, and depression (Bijlenga et al., 2018; Fuller-Thomson et al., 2016). Medication has proven to help individuals with ADHD maintain healthier relationships and control certain traits well enough to find happiness in those relationships, as has MM (Fuller-Thomson et al., 2016; Lowe et al., 2015).

In regard to familial relationships MM uses MMT's idea of reappraisal focusing on reevaluating circumstances when the person is in a more positive state of mind (Shapiro & Jazaieri, 2014). This is very helpful in relationships, as it could lead to less fighting and potentially more forgiveness and understanding. Reappraisal asks the person to concentrate on what is most meaningful in a relationship helping to nurture a stronger foundation. Promoting a stronger foundation could lead to more concrete relationships. This may be the reason the results for participants using MM to treat symptoms suggested healthy familial relationships overall. Taking into consideration the many symptoms of

ADHD, training the mind to remain calm and pace itself when assessing information could prove very beneficial in treating the disease (Garland et al., 2017).

### **Limitations of the Study**

Because the WFIRS is a self-reporting tool, the collected responses relied heavily on the participant's memory and her ability to recall detailed information, however, this has proven to be unreliable. Any inconsistencies found could have been due to a few factors. For example, maybe some of the participants did not understand what a question was asking, and they chose to guess or skip it. On the other hand, some participants may have answered the questions based on what they believed the researcher wanted to hear. To avoid these limitations, participants were asked to respond to every question honestly, take their time in answering, and to ask questions should confusion arise. Furthermore, the participants were reminded that the answers were anonymous, hopefully deterring any attempts of giving the expected answer.

Additionally, the age criteria that was chosen for the study was 18 to 65 in hopes that this would help to include as many women as possible. The span in age makes the results applicable to various women and/or situations giving the results good generalizability (Shoham, 2019; Zhou et al., 2019). However, this excludes women who had ADHD and were using one of the two approved treatment approaches but were under the age of 18 or older than the age of 65 at the time of the study. Furthermore, women using a third and different approach to treat symptoms, just like women using both prescription medication and mindfulness meditation together to alleviate symptoms, were not allowed to participate.

Another potential limitation was based on using the ANOVA statistic. This program is designed to be used with data from a normal distribution (Weissberger et al., 2018). Although the ANOVA is considered to be very reliable, the p-values yielded may not be correct, as the data was collected from non-normal distributions. The analysis of variance was expected to yield almost precise values, but there is always a chance they will not be precise.

Additionally, this study was a pre-experimental static group comparison design (Campbell & Stanley, 1963). That being said, full credit for answers to the questions on the survey was given to the treatment option that was being used by that person. Since there was no data collected before the person began her treatment, there is no measure of comparison to know exactly how much her score has changed, if even at all. For future research, perhaps the same survey could be given to participants before they begin treatment and then upon completion of treatment, so the researcher can have a better idea on just how much of a difference the chosen treatment option had on the symptoms.

Lastly, an important limitation to note is that there was no measure of ADHD symptoms among the participants, and no measure of scales among a non-ADHD control group before taking part in the survey. Nonetheless, it was not possible to gauge the similarity of the two groups in terms of symptom severity at the time of participation in the study. Furthermore, there was no way to measure how close to non-ADHD scores the higher scale scores were at the start of the survey. This leaves a lot of room for further investigation and exploration into why the MM group scores were higher than the prescription medication group scores. One potential reason could be that the MM group

started with a higher score before partaking in the survey, therefore, having an advantage over the other prescription medication group.

### **Recommendations**

The results of this study provide information on the difference in scores of women taking prescription medication and those women using mindfulness meditation to treat their symptoms of ADHD. Based on the findings, future research should be conducted on a larger scale to determine an accurate measure on the outcome of MM and prescription medication on women 18 to 65 with an ADHD diagnosis and to decide if MM could be used as a treatment approach. Additionally, this research should utilize a pre and posttest study comparing self-concept, risky behaviors, and familial relationships before mindfulness meditation or prescription medication and after applying one of the treatments. Results from pre and post studies will allow the researcher to better pinpoint what brought about the change and if it truly is due to the treatment that was applied.

Future research that utilizes pre and posttest studies may also be able to narrow down which symptoms benefit the most from a specific treatment, potentially opening the door to further research on numerous side effects associated with ADHD. Recent studies have shown that there is an increase in ADHD diagnosis in women and in the last 5 years medication amongst this group has increased by 85% (Babinski & Waschbusch, 2016; Stenner et al., 2019). Although this is the case, little has been done to study this occurrence further. One of the most effective and sought-after alternative treatments for ADHD symptoms is mindfulness meditation (MM) and yet, there is little to no applicable

data available that examines the effects it has solely on women (Babinski & Waschbusch, 2016; Barkley, 2010; Stenner et al., 2019; Young et al., 2020).

Further research specifically on this topic can help increase interventions that mitigate the prevalence of mental health disorders within this population. Choosing this direction of research could help create programs to educate mental health professionals on the importance of being more aware of other symptoms that are not widely discussed or researched. By preparing mental health professionals to recognize symptoms of ADHD in women, more appropriate treatment plans might be applied, which would teach the patient better coping skills and hopefully lead to a healthier life overall.

### **Implications for Social Change**

This study is significant because there is a lack of information and research on the extent to which ADHD symptoms effect women in a gender specific experiment. Furthermore, research is very limited in exploring the areas of self-concept, risky behaviors, and familial relationships in women with ADHD, all of which are areas negatively impacted by ADHD symptoms. Additionally, the current study looked at the prescription medication and mindfulness meditation as two treatment options that could be used to treat these specific symptoms of ADHD in women. The analysis suggested that mindfulness meditation can significantly help symptoms associated with ADHD and with further research perhaps it can be considered a treatment option.

The lack of information and research is of concern as evidence has shown that more and more women are being diagnosed with ADHD, but few are seeking professional assistance (Flores-Ruiz, 2017). Even more so, there is very little gender

specific data on women with ADHD and even less data on alternative approaches to help treat the disorder (Flores-Ruiz, 2017). This research is significant, as the implications for social change pave the way for more research to be conducted for this under researched population. Considering the large number of women living with ADHD but not seeking out help, presenting alternative approaches that are effective might prove beneficial. The data compared a commonly used treatment (prescription medication) with an alternative treatment (mindfulness meditation) and showed that those engaging in MM had lower Likert scores suggesting this group shows strong self-concept, less risky behaviors, and healthy familial relationships. This conclusion could help psychologists and therapists be better prepared to treat women struggling with ADHD, especially because it looked at three variables that impact patients' lives but are not widely researched. The results of this research could prove useful for clinicians as well as patients and could enhance treatment outcomes for this population.

The results can be used to create interventions to aid in mitigating mental health disorders in women with ADHD, which could not only lead to better well-being, but also to a more stable society overall. Positive well-being can help women with ADHD increase their chances of better, more stable relationships and more self-love, both of which are vital elements when creating a healthy and fulfilling life (Flores-Ruiz, 2017). The conclusion of this study is especially important because it looked at three variables that, although negatively affect a woman's life, are seldom studied. Furthermore, the results from this research study and the recommendations could lead to more research on

the topic of alternative treatment options for other rarely studied symptoms of ADHD that are often found in this population (Flores-Ruiz, 2017).

### **Conclusion**

The present study's data analysis suggested that mindfulness meditation could be a good approach when treating poor self-concept, familial relationship issues, and risky behaviors in women with ADHD. Thus far, other studies have applied the core concepts of the MMT to the general population and drawn similar conclusions regarding its effectiveness and its ability to build confidence in its safety among patients (Elder, 2010; Oberle et al., 2012). Past research has suggested that MM is linked with understanding the self, self-concept, acceptance, and patience, which in turn is associated with a greater psychological well-being (Hanley & Garland, 2017). Although there is some research on MM and the effect it has on ADHD in general, there is little data that is gender specific to women and even less data that looks at the three variables chosen for this experiment (self-concept, risky behavior, and familial relationships) in this context.

The population studied was living with ADHD and was asked questions relating only to the three chosen variables. Ultimately, the goal of this pre-experimental static group comparison design was to get a better picture on how MM and prescription medication are applied to the three variables, (self-concept, familial relationships, and risky behaviors) specifically in women with ADHD (Campbell & Stanley, 1963). Offering these women an alternative method to deal with their symptoms may not only benefit self-concept, risky behaviors, and familial relationships, but also other more common and even uncommon indicators associated with the disorder. Understanding this

and embarking on more research to better understand the phenomenon would not only advance the field of psychology, but it could also create healthier functioning women which could in turn allow society to thrive.

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## Appendix A: Facebook ADHD Affinity Groups Flier

Hello everyone,

My name is Maria Skoulidas, and I am a clinical psychology doctoral candidate at Walden University. My dissertation focuses on women who have a diagnosis of ADHD and are either taking medication or using mindfulness meditation to deal with their symptoms. Research inadequately represents women with ADHD, leading to many having their symptoms overlooked or misdiagnosed. This research is significant, as the implications for social change pave the way for more research to be conducted and better diagnosis and treatment options to exist for women with ADHD!

Your participation could help lay the steppingstones to this change.

If you meet the following criteria and can give 20 minutes of your time, then please click on the link below. You will be asked to fill out demographic information about yourself and take a 27-item questionnaire about personal experiences with ADHD.

If you have any questions or would like more information, please email

Thank you!

Click this link to begin the study: <http://www.googleforms>

## Appendix B: Inclusion Criteria

Sex assigned at birth: \_\_\_\_\_ Gender Identity Today: \_\_\_\_\_ Age: \_\_\_\_\_

At what age were you diagnosed with ADHD? \_\_\_\_\_

Please circle which of the two treatments you have been using to manage symptoms associated with ADHD:

Prescription Medication or Mindfulness Meditation

### Appendix C: Note to Participants Who Were Not Chosen for the Study

Thank you for your interest in joining our research study. Unfortunately, you did not meet the required criteria for participation, however we will keep you in mind for future studies.

Should you have any questions, please email the researcher at

To speak privately about your experience with this study up to this point, please call the research participant advocacy department at my university at

## Appendix D: Informed Consent

You are invited to take part in a research study about the affects alternative methods have on treating symptoms associated with ADHD. The researcher is seeking 102 individuals that meet the following criteria:

1. Biologically born female
2. Identify as a female person
3. Between 18 and 65 years of age
4. ADHD diagnosis
5. Medication or Mindfulness Meditation (MM) is used to treat symptoms.

This form is part of a process called “informed consent” to allow you to understand this study before deciding whether to take part. This study is being conducted by a researcher named Maria Skoulidas, who is a doctoral student at Walden University.

### **Background Information:**

The purpose of this research study is to compare two groups of women 18 to 65 years of age that have been diagnosed with ADHD. One group will use MM to treat symptoms, while the other group will use medication to treat symptoms. Each participant will answer a short questionnaire asking about self-concept, familial relationships, and risky behaviors.

### **Procedures:**

If you agree to be in this study, you will be asked to:

- Complete the selective criteria and the survey, which will all together take approximately 20 minutes.
- The statements will be rated with a number from 0 to 3 or n/a (0 = never or not at all, 1 = sometimes or somewhat, 2 = often or much, 3 = very often or very much).

Sample statements include:

*My emotional or behavioral problems:*

- Make it hard for my family to have fun together
- Make me feel incompetent
- Make me verbally aggressive

### **Voluntary Nature of the Study:**

Participating in this study is voluntary. If you decide to be in the study now, you can change your mind later. You may stop at any time.

**Risks and Benefits of Being in the Study:**

Choosing to participate in this research study may involve some risk, such as minor feelings of psychological discomfort. These feelings are the kind that are experienced in day-to-day life, such as becoming sad or upset. Please note, taking part in this research study will not pose a risk to your safety or well-being. However, if you become anxious, depressed, fearful, or experience any other serious feelings from participating in the study, please call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

The obstacles of managing ADHD and living a healthy and productive life are well known. Although there is a plethora of research around ADHD and its effects on daily life, there is little focus on women alone. This research will study the effects of ADHD on only women and how medication and/or MM can benefit treatment of symptoms. With your help, this study can provide positive social change for girls and women of all ages by raising awareness and advocating for the rapidly growing group of females struggling to live a healthy and happy life with ADHD.

**Payment:**

This is not a paid participation and there are no required payments to take part in this study.

**Privacy:**

The researcher is required to protect your privacy. Your identity will be kept anonymous, within the limits of the law. Details that might identify a participant also will not be shared. The researcher will not know the identity of the participants and she will not use your personal information for any other purpose other than this research project. Data will be collected once surveys are complete and will be kept secure by a password-protected file stored on a password-protected computer. If the researcher were to share this dataset with another researcher in the future, the dataset would contain no identifiers so this would not involve another round of obtaining informed consent. The data will be kept for a minimum of 5 years, as is the requirement of the university.

**Contacts and Questions:**

Should you have any questions, please email the researcher at.

To speak privately about your rights as a participant of this research study, please call the research participant advocacy department at my university at

Walden University's approval number for this study is 09-19-22-0669983 and it expires on September 18, 2023.

*Please print or save this consent form for your records.*

### **Obtaining Your Consent**

You may print a copy of this consent form for your records. If you feel you understand the study well enough to decide whether to participate, please continue by clicking “next”.

## Appendix E: Demographics

**Demographics:**

Ethnic Origin: \_\_\_\_\_ Number children you have \_\_\_\_\_

**Socioeconomic Status:**

Marital Status \_\_\_\_\_

Number of people living in your household \_\_\_\_\_

Are you employed? Yes or No.

Please circle the income bracket for combined income in your home:

a. \$0.00 - \$9,999 b. \$10,000 - \$19,999 c. \$20,000 - \$49,999 d. \$50,000 - \$99,999 e.

\$100,000 - \$149,999 f. More than \$150,000 g. Don't know

**Education:**

Highest level of education completed \_\_\_\_\_

## Appendix F: WFIRS-S Questionnaire

**WEISS FUNCTIONAL IMPAIRMENT RATING SCALE – SELF REPORT (WFIRS-S)**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Date of birth: \_\_\_\_\_ Sex:  Male  FemaleWork:  Full time  Part time  Other \_\_\_\_\_School:  Full time  Part time

Circle the number for the rating that best describes how your emotional or behavioural problems have affected each item in the last month.

		Never or not at all	Sometimes or somewhat	Often or much	Very often or very much	n/a
<b>A</b>	<b>FAMILY</b>					
1	Having problems with family	0	1	2	3	n/a
2	Having problems with spouse/partner	0	1	2	3	n/a
3	Relying on others to do things for you	0	1	2	3	n/a
4	Causing fighting in the family	0	1	2	3	n/a
5	Makes it hard for the family to have fun together	0	1	2	3	n/a
6	Problems taking care of your family	0	1	2	3	n/a
7	Problems balancing your needs against those of your family	0	1	2	3	n/a
8	Problems losing control with family	0	1	2	3	n/a

		Never or not at all	Sometimes or somewhat	Often or much	Very often or very much	n/a
<b>E</b>	<b>SELF-CONCEPT</b>					
1	Feeling bad about yourself	0	1	2	3	n/a
2	Feeling frustrated with yourself	0	1	2	3	n/a
3	Feeling discouraged	0	1	2	3	n/a
4	Not feeling happy with your life	0	1	2	3	n/a
5	Feeling incompetent	0	1	2	3	n/a

		Never or not at all	Sometimes or somewhat	Often or much	Very often or very much	n/a
<b>G</b>	<b>RISK</b>					
1	Aggressive driving	0	1	2	3	n/a
2	Doing other things while driving	0	1	2	3	n/a
3	Road rage	0	1	2	3	n/a
4	Breaking or damaging things	0	1	2	3	n/a
5	Doing things that are illegal	0	1	2	3	n/a
6	Being involved with the police	0	1	2	3	n/a
7	Smoking cigarettes	0	1	2	3	n/a
8	Smoking marijuana	0	1	2	3	n/a
9	Drinking alcohol	0	1	2	3	n/a
10	Taking "street" drugs	0	1	2	3	n/a
11	Sex without protection (birth control, condom)	0	1	2	3	n/a
12	Sexually inappropriate behaviour	0	1	2	3	n/a
13	Being physically aggressive	0	1	2	3	n/a
14	Being verbally aggressive	0	1	2	3	n/a

**SCORING:**

1. Number of items scored 2 or 3  
or
2. Total score  
or
3. Mean score

**DO NOT WRITE IN THIS AREA**

- A. Family
- B. Work
- C. School
- D. Life skills
- E. Self-concept
- F. Social
- G. Risk

Total

### Appendix G: Thank You

Thank you very much for your participation!

Should you have any additional questions, please email me: