

THE EFFECT OF MEDITATION ON STATE-TRAIT ANXIETY IN INDIVIDUALS WHO  
ARE INPATIENT IN AN OPIATE TREATMENT PROGRAM

By

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Substance use disorder (SUD) is a significant issue all over the world. In a report by the United Nations Office of Drugs and Crime (2018), approximately 275 million people worldwide have used psychoactive substances, such as cannabis, amphetamines, cocaine, opioids, and non-prescribed psychotropic medication at least once. Researchers suggest that between 26.4 million and 36 million individuals misuse opioids worldwide (Volkow, 2014). Life stressors have been identified as potential triggers that can cause individuals with SUD to relapse; therefore, treatment is unsuccessful, or the recovery experience is more difficult (Brady & Sonne, 1999). The purpose of this exploratory, single-group, pre- and post-intervention design study was to determine if there is a relationship between participation in meditation and the stress levels of individuals who are in recovery for opiate use disorder (OUD). Participants ( $N = 16$ ) included both adult males and females who were receiving inpatient treatment for OUD. Data were collected utilizing the State-Trait Anxiety Inventory at four separate times to evaluate immediate and overtime changes for the program. The mobile application, Headspace, was used for the guided meditation sessions. Results indicated statistically significant changes in state anxiety,  $F(3, 45) = 14.81, p \leq 0.001$ ; however, the findings for trait anxiety changes were not statistically significant.



THE EFFECT OF MEDITATION ON STATE-TRAIT ANXIETY IN INDIVIDUALS WHO  
ARE INPATIENT IN AN OPIATE TREATMENT PROGRAM

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## **SECTION I: MANUSCRIPT**

### **Introduction**

Substance use disorder (SUD) is a significant issue all over the world. In a report by the United Nations Office of Drugs and Crime (2018), approximately 275 million people worldwide have used psychoactive substances, such as cannabis, amphetamines, cocaine, opioids, and non-prescribed psychotropic medication at least once. Researchers calculate that between 26.4 and 36 million individuals misuse opioids worldwide (Volkow, 2014). In 2015, more than 33,000 Americans died as a result of an opioid overdose, including prescription opioids, heroin, and illicitly manufactured fentanyl, a powerful synthetic opioid (National Institute on Drug Abuse [NIDA], 2018a). During the same year, an estimated two million Americans were diagnosed with SUD related to prescription opioid pain relievers and 591,000 were diagnosed with heroin use disorder (Center for Behavioral Health Statistics and Quality, 2016). There are more than 115 opiate overdose-related deaths in the United States daily (NIDA, 2018a). Not only does SUD negatively affect the individuals and their close social network, but it also has a significant impact on the nation's economy with an estimated cost of more than \$78.5 billion annually related to crime, loss of work productivity, healthcare, and criminal justice involvement (Florence, Zhou, Luo, & Xu, 2016; NIDA, 2018b).

Individuals with a SUD can experience significant behavioral, relational, and health problems. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) defines SUD as a chronic relapsing brain disorder characterized by compulsive drug seeking and usage despite the knowledge of harmful consequences (American Psychiatric Association, 2013). Signs of SUD include a strong desire to take drugs, difficulty controlling the usage, persistent drug use despite knowledge of harmful consequences, making the drug a higher priority than

other obligations, increased tolerance, and physical withdrawal symptoms (World Health Organization [WHO], 2018).

Some individuals with SUD are more likely to recover compared to others with SUD. Researchers have identified life stressors that are potential triggers which may cause individuals with SUD to relapse (Tavolacci et al., 2013). Increased stress levels may trigger the use of substances or a relapse during the recovery process (Moitra, Anderson, & Stein, 2013). Stress occurs when there is a discrepancy between perceived demands and resources an individual requires to complete those demands (Lazarus & Folkman, 1984). The resulting imbalance of stress has the potential to affect the success of interventions and the recovery experience of the individual (Brady & Sonne, 1999). The adverse effects may be both psychological and physiological. Psychological effects of stress include confusion, irritation, jumpiness, and feeling overwhelmed; physiological effects include an increased heart rate, breathing rate, fatigue, sleep disturbances, and sweaty palms (Greenberg, 2013).

In some cases, pharmacological treatment has adverse side effects. This indicates the need for non-pharmacological interventions to assist individuals with SUD. Non-pharmacological interventions have been shown to be an effective way for individuals with SUD to cope with symptoms of stress. For example, non-pharmacological approaches used for the treatment of individuals with SUD include aerobic exercise, participation in sports, social activities, and yoga. Specifically, a growing body of research found meditation as an intervention supports the recovery process (Brown et al., 2010; Landale & Roderick, 2013; VanDeMark, 2007; Zhuang, An, & Zhao, 2013). Meditation has the potential to be utilized in SUD treatment to teach patients positive coping techniques, reduce perceived stress, and facilitate successful treatment (Bowen et al., 2009; Oman, Hedberg, & Thoreson, 2006; Pruet, Nishimura, & Priest,

2007). Specifically, Kang, Choi, and Ryu (2009) demonstrated meditation reduced perceived stress in patients, improved self-awareness, and increased knowledge and active practice of a positive coping mechanism for stress. Guided meditation is a process in which one or more individuals meditate with the assistance of an expert through either verbal direction, written text, audio, video, or a combination of methods (Moral, 2017). There are several applications available to practice guided meditation such as Headspace, that can be used in a variety of environments with access to a computer, tablet, or smartphone. The purpose of this study was to examine the impact of participation in guided meditation on anxiety-producing responses by individuals in recovery for OUD.

## **Review of Literature**

### **Indicators of being in Successful Recovery for Substance Use Disorder**

Researchers have identified a few common factors among individuals who successfully participate in recovery processes for substance use disorder (SUD) and maintain long periods of abstinence from substances. These factors include maintaining social roles (Yang, Mamy, Gao, & Xaio, 2015), higher level of social support (VanDeMark, 2007), higher self-efficacy (Hser, 2008), life satisfaction (Merrill & Thomas, 2013), autonomy (Cogswell & Negley, 2011), adherence to treatment plans (Andre, Jaber-Filho, Carvalho, Jullien, & Hoffman, 2003), use of adaptive coping mechanisms, and increased motivation for change (Laudet & Stanick, 2010). Successful and long-term recovery from SUD is affected by many different aspects of the individuals' lives. Many of the factors associated with an unsuccessful recovery were related to adverse responses to stress; therefore, researchers and practitioners perceive individuals' inability to successfully cope with perceived stress or anxiety as a potential impediment to their successful recovery. Stressors that have the potential to put a strain on the recovery process include job loss, failed relationships, finances, and the loss of loved ones (Grzywacz & Almedia, 2008).

### **Stress, Anxiety, and Substance Use Disorder**

Researchers have suspected an association between SUD and stress for decades; however, supportive literature was limited until recently. For instance, Tavolacci et al. (2013) found that stress places many individuals in a vulnerable state when it comes to their risk-taking behavior, physical health, and mental health. This means that individuals experiencing high levels of stress were more likely to seek out risky activities such as substance use. Moitra et al.

(2013) reported that individuals with higher levels of perceived stress also had higher risks of substance use and behavioral addictions.

Researchers have also linked SUD to anxiety. Anxiety disorder is most often observed alongside other comorbid conditions and has been identified as the most common mental health disorder encountered in primary medical care (Baldwin, Allgulander, Bandelow, Ferre, & Pallanti, 2011). Individuals who have co-occurring SUD and anxiety were more likely to exhibit more severe symptomology, greater health problems, greater functional impairment, and struggle more with adhering to treatment, contributing to a heightened chance of relapse after discharge from a facility (Smith & Randall, 2012). Once comorbid SUD and anxiety develop, the disorders mutually reinforce each other, which tends to negatively impact the course of treatment and outcomes (Ruglass, Lopez-Castro, Cheref, Papini, & Hein, 2014). Researchers classify anxiety in two categories. The first category, state anxiety, is identified as individuals' immediate perception of anxiety, and the second category, trait anxiety, is identified as individuals' general orientation to anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

Although additional research is needed, it appears that stress, anxiety, and SUD are related. One non-pharmacological intervention that has the potential to counteract the harmful effects of stress and anxiety on individuals with a SUD is meditation. Researchers (Grossman, Neimann, Schmidt, & Walach, 2004) have demonstrated that meditation activities can reduce stress and improve overall health.

### **Meditation and Substance Use Disorder Recovery**

Meditation is a centuries-old practice that has re-emerged in recent decades to help individuals cope with stress. Researchers have suggested that practicing meditation has positive influences on the overall health of an individual (Lane, Seskevich, & Pieper, 2007; Marcus &

Zgierska, 2010). Among the most significant health benefits of meditation is the ability to control perceived stress, which is of importance for individuals who are in recovery for SUD (Brady & Sonne, 1999). Other benefits of meditation that may impact recovery are enhanced autonomy, improved life satisfaction, and increased self-efficacy (Cogswell & Negley, 2011; Hser, 2008; Laudet & Stanick, 2010). Meditation, when performed in a group format with other individuals, can also assist in building social relationships (Zhuang et al., 2013). In this sense developing and maintaining healthy social relationships has a large impact on individuals who have SUD (Canino, Vega, Sribney, Warner, & Algeria, 2008).

Meditation appears to be a viable option to assist with recovery for SUD. Due to its ability to help adults cope with stress and anxiety, meditation has the potential to extend the recovery periods for individuals with SUD (Witkiewitz et al., 2014). Once in recovery, individuals who participate in meditation may develop greater self-awareness of their impulsive behaviors and be better able to recognize harmful coping mechanisms involved in dealing with triggers to their substance use (Witkiewitz et al., 2014). However, research into the effects of meditation on recovery from substance use is still emerging. Thus, additional research regarding the use of meditation as an intervention to help individuals with SUD cope with stress is essential to understand its role in the recovery process.

## **Headspace**

Headspace is a mobile guided meditation application that is available through internet access on cellular devices, computers, and tablets. An individual with Buddhist monastic training designed Headspace, which guides users through mindfulness meditation using both audio and visual materials (Headspace, 2018b). Mobile guided meditation applications are becoming more prevalent in the aspects of positively impacting mental well-being in a variety of populations

(Economides, Martman, Bell, & Sanderson, 2018). Research has indicated that practicing guided meditation using Headspace for 10 to 20 minutes each day decreased perceived stress in medical students, having a possible impact on the balance of their life stressors and patient care (Yang, Schamber, Meyer, & Gold, 2018). Research has also indicated that the use of mobile guided meditation, specifically Headspace, provides increased attention to detail and fewer symptoms of burnout and compassion fatigue (Wylde, Mahrer, Meyer, & Gold, 2017). Headspace was chosen for this research study due to its accessibility and aesthetic appeal (Mani, Kavanagh, Hides, & Stoyanov, 2015).



## **Study Objectives**

### **Hypotheses**

H1: There will be a significant decrease in the state anxiety of participants in recovery for opiate use disorder (OUD) after one meditation session as evidenced by the State-Trait Anxiety Inventory (STAI).

H2: There will be a significant decrease in the state anxiety of participants in recovery for OUD after two one-week meditation sessions for five consecutive days as evidenced by the STAI.

H3: There will be a significant decrease in the trait anxiety of participants in recovery for OUD after two one-week meditation sessions for five consecutive days as evidenced by the STAI.

## **Sample**

Participants were patients in an opiate treatment program at the study site. A convenience sampling strategy was used due to agency policy restrictions. The criteria for participation in this study included patients who had a diagnosis of opiate use disorder (OUD). According to facility personnel, an advantage of studying meditation effects on anxiety for patients with OUD was that patients were not taking preventative medications given that these contraindicated in the opiate recovery process. Although detailed demographic information could not be collected due to the protocols set by the facility, the participants in this study were between the ages of 18 to 65 years. Based on the census numbers for opiate specific users (approximately eight per week) at the facility, the number of individuals for this study was limited to 16. Six individuals were discharged from the facility by their physician and treatment team before completing the program. This program took place Monday through Friday, at 2:00 p.m., over a 14-day period. The facility is considered to be acute care; therefore, the facility assesses and assists individuals in detox and then locates facilities to provide these individuals with further help in the community after discharge.

## **Study Location**

The study took place at an alcohol and drug treatment center in the southeastern United States. The facility is designed to provide inpatient treatment, psychiatric stabilization, and medical detoxification for individuals 18 years and older. The facility focuses on individuals who have substance use disorder (SUD) and other co-occurring mental health diagnoses and provides services to prepare them for ongoing community-based treatment and recovery. The facility gives priority admission to individuals who take substances intravenously, individuals with human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS),

communicable diseases, and pregnant women with the addition of perinatal care services. The length of stay differs for patients depending on their unique needs and experiences. The staff at the facility includes psychiatrists, medical doctors, nurses, addiction specialists, recreational therapists, social workers, and counselors.

## **Research Design**

This study used a single-group, pre- and post-test design to examine the association between participation in the meditation intervention and perceived stress or anxiety-producing responses by individuals in recovery for OUD.

## **Instrumentation**

The State-Trait Anxiety Inventory (STAI) (Spielberger et al., 1983) was used to assess the participants' anxiety levels in this study. Anxiety was examined in this study as it is the most common mental health disorder and comorbid condition in the primary medical care setting (Baldwin et al., 2011). Individuals who have co-occurring SUD and anxiety are more likely to exhibit more severe symptomology, greater health problems, greater functional impairment, and struggle more with adhering to treatment, contributing to a heightened chance of relapse after discharge from a facility (Smith & Randall, 2012). Two specific types of anxiety were utilized for this research study: state anxiety which is identified as an individual's immediate perception of anxiety and trait anxiety which is identified as an individual's general orientation to anxiety (Spielberger et al., 1983).

The STAI includes two subscales: the state anxiety subscale and the trait anxiety subscale (Spielberger et al., 1983). Participants completed the full STAI before the first (Time 1) and final meditation session (Time 3); the state anxiety subscale was completed after the first (Time 2) and

final (Time 4) meditation session. The STAI evaluations were completed independently in a group setting. No demographic information was gathered due to facility restrictions.

The STAI is used more extensively in psychological research than any other anxiety measure, and it is considered a valid measure of state and trait anxiety, with good test-retest reliability ranging from 0.70 to 0.77 (Spielberger et al., 1983). Research has indicated that stability coefficients for both college and high school students were low for the state anxiety subscale, with a median reliability coefficient of 0.33 (Spielberger et al., 1983). State anxiety is expected to fluctuate, thus suggesting that the STAI is sensitive to change in an individual's level of anxiety. Stability measured by the test-retest coefficients is relatively high for the trait anxiety subscale and is relatively low for the state anxiety subscale (Spielberger et al., 1983). The low stability in the state anxiety measure indicates that it can correctly identify situational factors that exist during the time of the testing. Internal consistency coefficients for the scale have ranged from 0.86 to 0.95 (Spielberger et al., 1983). There is also evidence that attests to the construct and concurrent validity of the scale (Spielberger et al., 1983).

### **The Intervention**

This research study utilized Headspace, an online guided meditation application. The 10-day sessions used for this study were free and could be used repeatedly by the researcher. There is an option to purchase this application as well, that includes a variety of guided meditation options for specific activities, such as cooking and walking. In a study on the effectiveness of 23 mobile meditation applications evaluated using the Mobile Application Rating Scale (MARS), Headspace received the highest score on the MARS, getting a 4.0 out of 5.0 (Mani, Kavanagh, Hides, & Stoyanov, 2015). This rating indicates that the Headspace application is the most

effective when it comes to the individual's engagement, functionality, usability of the application, and providing appropriate information.

**Data Collection** For this study, researchers administered the STAI before the first and final session, the post-tests for these meditation sessions were measured using only the state anxiety subscale. Per the STAI manual, when researchers administer the full STAI, the trait anxiety subscale is given first, followed by the state anxiety subscale (Spielberger et al., 1983). Each STAI item has a weighted score and is assessed on a Likert scale of 1 (not at all) to 4 (very much so) for state anxiety and 1 (almost never) to 4 (almost always) for trait anxiety. Of the 20 questions included on the state anxiety subscale, 10 of them use reverse coding. The same reverse coding applies to 9 of the 20 questions included in the trait anxiety subscale. The state anxiety subscale measures the intensity of an individual's current feelings related to a stressor or anxiety-producing event. Sample anxiety questions include "I feel calm" and "I feel strained." The trait anxiety subscale is used to measure the frequency of an individual's feelings of anxiety. Sample trait items include "I feel satisfied with myself" and "I worry too much over something that doesn't matter."

The STAI sum score is computed after converting the reverse coded items. The scores on either subscale can range from a minimum of 20 to a maximum of 80. A higher score indicates greater levels of anxiety. The STAI was designed to be self-administered and may be given individually or in group settings (Spielberger et al., 1983). Though the inventory has no time limits, it typically takes a total of approximately 10 minutes to administer the full STAI (Spielberger et al., 1983). The administration of each portion separately takes approximately 6 minutes to complete (Spielberger et al., 1983). For this study, the evaluations were completed independently in a group setting. The researcher was available to answer questions and address participants' concerns.

### **Procedure**

Participants completed the full STAI before the first (Time 1) and final meditation sessions (Time 3) and the state anxiety subscale after the first (Time 2) and final (Time 4) meditation sessions. At Time 1, participants were asked to read and sign an informed consent form. No demographic information was collected. Each session took place at the facility in a dimly lit, quiet room with minimal interruptions or distractions. The guided meditation application was played aloud through a speaker for the participants to follow along and it was controlled by the principal investigator.

Due to this study serving as a part of participants' active treatment, they engaged in the meditation sessions during one of their regularly scheduled recreational therapy groups. Also, there were other individuals in the facility who participated in the meditation sessions; however, they were not assessed because their diagnoses did not fit the requirements for this study. Each session, participants were asked to sit comfortably in chairs placed in an open circle with their feet on the floor; the researcher reviewed the intervention and answered any questions or

concerns from the participants before beginning the meditation session. The participants then listened to and followed along with the 10-minute guided meditation sessions provided by the mobile application Headspace. These sessions took place Monday through Friday at two o'clock in the afternoon during a two-week period until the participants completed 10 consecutive days of sessions. Due to the study being completed in a controlled environment, six of the 22 participants were discharged before completing the study, leaving the total number of participants at 16. Many participants continued to join the meditation sessions after completing the required 10 consecutive sessions. The 10-day guided meditation sessions provided by Headspace were offered at no cost and could be used repetitively. The participants were notified about the option to purchase this application, thus increasing the options that Headspace offers, including guided meditation for specific activities such as cooking and walking. Each of the 10-day sessions included in the free trial provides the basics of guided mindful meditation. The first session introduced the participant to guided mindful meditation including how the participant should sit, how they should breathe, and how to deal with outside noise. Each of the subsequent sessions focused on a different topic including educational facts about meditation, the importance of practice and patience when attempting to learn how to meditate, as well as encouraging a change in thought processes and behaviors. Many of the sessions come with animations about what to expect or what will be introduced during that session. By the last session, participants should be able to engage more effortlessly in meditation.

## Results

This research study examined the effects of a meditation program on state and trait anxiety symptom severity for participants who have opiate use disorder (OUD).

### Hypothesis 1

Hypothesis 1 was examined utilizing a repeated-measures ANOVA that included all four state anxiety data collection times. The repeated measures ANOVA demonstrated a significant change across the four times for state anxiety scores,  $F(3, 45) = 14.881, p \leq 0.001$ . Within-subject contrasts revealed significant decreases in anxiety for participants after the first session when examining the mean values at Time 1 and Time 2,  $F(1, 15) = 25.970, p \leq 0.001$ . Table 1 provides the descriptive statistics for state anxiety at each data collection point. Table 2 includes the results of the pairwise comparisons for state anxiety scores that explore transitory changes. Thus, the hypothesis that a single meditation session improved state anxiety for participants in recovery for OUD was accepted.



Table 1

*Descriptive Statistics for State Anxiety*

Time	N	Mean	Standard Deviation
1	16	52.38	7.46
2	16	41.31	10.08
3	16	45.13	11.00
4	16	38.94	11.93

*Notes.* T1 = Pre-Session 1, T2 = Post-Session 1, T3 = Pre-Final Session, & T4 = Post-Final Session

Table 2

*Pairwise Comparisons of a Single Meditation Session for State Anxiety*

<i>N</i>	Time 1	Time 2	Mean Difference	Standard Error	<i>p</i>
16	52.38	41.31	11.06	2.17	$\leq 0.001$

*Notes.* T1 = Pre-Session 1 & T2 = Post-Session 1

## Hypothesis 2

Hypothesis 2 was also examined using the repeated measures ANOVA to compare scores over the 14-day meditation intervention,  $F(3, 45) = 14.881, p \leq 0.001$ . Within-subject contrasts demonstrated significant decrease in anxiety mean scores at Time 1 and Time 3,  $F(1, 15) = 13.265, p = 0.002$ . Table 3 provides the findings from this pairwise comparison. Thus, we accept the hypothesis that the 14-day meditation intervention improved state anxiety for participants in recovery for OUD from before the first session until before the start of the final session.

Table 3

*Pairwise Comparisons of a Single Meditation Session for State Anxiety*

<i>N</i>	Time	Time	Mean Difference	Standard Error	<i>p</i>
16	1	3	7.25	1.99	0.002

*Notes.* T1 = Pre-Session 1 & T3 = Pre-Final Session

**Hypothesis 3**

Hypothesis 3 was examined using a paired samples t-test to compare the participants' scores on trait anxiety over the 14-day meditation intervention. The paired samples t-test indicated that the change for trait anxiety scores between Time 1 ( $M = 50.94$ ,  $SD = 10.58$ ) and Time 3 ( $M = 50.31$ ,  $SD = 10.33$ ) was not statistically significant,  $t(15) = 0.28$ ,  $p = 0.778$  (See Table 4). Thus, while the participants demonstrated a significant change in state anxiety due to the intervention, their trait anxiety levels were not significantly reduced by participating in the meditation intervention and hypothesis 3 was not confirmed.

Table 4

*Paired Samples T-Test of a Meditation Intervention for Trait Anxiety*

Pair 1	<i>N</i>	Mean	Std. Dev	Std. Error	t	df	<i>p</i>
TA_1- TA_3	16	0.625	8.717	2.179	0.287	15	0.778

*Notes.* T1 = Pre-Session 1 & T3 = Pre-Session 2

## **Discussion**

### **Explanation of Findings**

Research suggests that meditation influences individuals' stress and anxiety levels (Kang, Choi, & Ryu, 2009). In this study, significant improvements in the participants' state anxiety were evident. However, no significant changes were reported in the participants' trait anxiety.

Hypothesis 1 examined whether transitory state anxiety significantly changed for participants in recovery for opiate use disorder (OUD) after a single session. The participants experienced a significant decrease in their state anxiety scores between baseline (Time 1) and post-intervention (Time 2) supporting this hypothesis. Hypothesis 2 explored whether the participants experienced a significant decrease in state anxiety after the 14-day meditation intervention. The findings indicated that state anxiety significantly decreased over the 14-day program. State anxiety is unpleasant emotional arousal in the face of threatening demands or dangers (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Research indicates that meditation is an effective way to cope with stressors, including acute anxiety that is subject to change quickly. Given that acute anxiety affects substance abuse and often influences their chance of relapse, these findings suggest that meditation has potential as an intervention to prevent relapse. These findings suggest that meditation can be useful as part of treatment for individuals with OUD. The results further demonstrate that meditation can significantly improve patients' state anxiety during a typical in-patient treatment period.

Hypothesis 3 proposed that there would be a significant decrease in trait anxiety among participants in recovery for OUD after over the 14-day intervention period of meditation sessions. The findings did not indicate that engaging in the meditation program significantly reduced participants' trait anxiety. Research has demonstrated that trait anxiety is less

susceptible to change than state anxiety and requires a longer period before such changes might occur (Spielberger et al., 1983). The short duration of this program is one possible reason participants did not experience a significant change for trait anxiety.

Overall, the findings from this study provide support for using meditation programs with participants with an OUD to positively influence their state anxiety. Analyses revealed that the meditation program significantly reduced the state anxiety of participants after a single session and that these reductions were sustained over the course of the two-week intervention. Research also suggests that meditation can effectively be utilized to help adults cope with stress and anxiety and has the potential to extend the recovery periods for individuals with OUD (Kang et al., 2009). This research study supports this statement as significant changes to state anxiety scores. To further explore the extended effects of such meditation programs for individuals with a substance use disorder (SUD), future research should examine programs of a longer duration and attempt to gather data several weeks after the conclusion of the program to see if these changes are sustained after the removal of the intervention.

### **Limitations**

There were several limitations in this study related to the fact that it took place in a treatment center and the collection of data related to participants were restricted due to privacy and confidentiality rules. One of the main limitations of this research includes the use of a convenience sample and no control group. This research did not account for the other current treatments taking place at the facility during this study period. Future research could better address this by taking into consideration all interventions offered at the facility and offering a different therapeutic group such as reading for a comparison group. Granted this would not allow researchers to examine the difference between an experimental and control group, they could

compare it to another treatment group using an experimental design that compares two treatment options.

Another limitation of this study includes that demographic information was not collected due to policies set by the facility. Demographic information would have allowed for analysis to explore whether gender, race, age, or other personal factors influenced the participants' response to the interventions. Also, the number of sessions participants attended were not taken into consideration due to study participation being voluntary. Keeping track of the participants' involvement in each session would have allowed for further analysis to explore whether attendance influenced anxiety.

Information regarding the medications the participants in this study were currently taking was also not gathered. This information would have been valuable due to the influence and effect that medications may have on the participants' anxiety levels during treatment and the meditation sessions. In addition, this study took place in a controlled environment (i.e., locked facility). This study was added to participants' current treatment at the facility. There was no control over how many times a participant attended the group, as they had the option to refuse participation. Additionally, patients who were not part of the study also attended and may have gained benefits from the intervention, but data for these individuals was not collected. Future studies should consider using participants in a facility that would allow for researchers to collect demographic data that was inaccessible for this study.

Given the exploratory nature of this study and minimal research available about the effectiveness of meditation to reduce anxiety for individuals with SUD, more research in this area is needed. Due to the limitations of this study, the results may not generalize to other populations or facilities, and this study does not provide conclusive evidence that meditation is

effective for all individuals with a SUD. However, the findings are encouraging and since this non-pharmacological intervention is easy to implement, it might be a useful strategy for individuals with SUD to manage their anxiety and prevent relapse both in treatment and after discharge.

### **Future Research**

Results from this study suggest that future efforts focus on understanding the use of alternative coping mechanisms for treatment of individuals with a SUD. Specifically, research examining programs of a longer duration would provide information to identify whether meditation has positive effects on trait anxiety and can be utilized as an extended intervention to minimize relapse.

Additionally, research examining differences between first-time meditation users and those with meditation experience would be beneficial in determining the value of long-term practice. Another area for future research is the examination of group and individualized meditation. Research shows that group meditation assists the user in developing social relationships and support systems and that individualized meditation influences character maturity (Matiz, Fabbro, & Crescentini, 2018). Future research can compare individualized, group, and a mixed meditation practice of both to examine how the model of meditation use influences relationship development and social support. This is a critical area for exploration given individuals with a SUD who have adequate social support are more likely to experience long-term recovery (VanDeMark, 2007). Also, future research would include exploration of meditation as a useful post-discharge treatment to maintain improvements that individuals received during active in-patient treatment.

## **Clinical Implications for Recreational Therapy**

Research has demonstrated that meditation is useful in a variety of settings and among many populations including individuals with SUD (Witkiewitz et al., 2014), generalized anxiety, and stress (Grossman et al., 2004) and physiological health conditions such as high blood pressure, pain, and irritable bowel syndrome (Lane, Seskevich, & Pieper, 2007; Marcus & Zgierska, 2010). This study suggests that the use of meditation for individuals with an OUD might be an important intervention for recreational therapists to integrate into treatment to assist clients as they begin the recovery process. Given the increasing prevalence of OUD, the need to find effective treatment options is evident and the findings from this study are encouraging. Meditation offers a non-pharmaceutical approach to help address the opiate epidemic and may aid in preventing relapse for individuals who are in recovery.

Mobile guided meditation such as Headspace is useful and can be utilized during and after recreational therapy treatment. Headspace, along with other mobile meditation applications, can be utilized anywhere the individual has access to the internet. This intervention is easy to access and can assist individuals in coping with a variety of emotions that include stress, anger, depression, sadness, and grief, which have the potential to cause adverse long-term effects. For example, through access to speakers, and a projector screen, headspace can be displayed and followed along with by individuals receiving treatment during recreational therapy programs. Headspace teaches the basics for guided mediation and could serve as an introduction to more advanced relaxation and stress reduction programming.

There are many treatment options available when considering Headspace. For example, this study utilized the 10-day free sessions. If the individual chooses, there are many purchasing options for this application: \$12.99 on a month to month basis, \$7.99 per month annually, and

\$399.99 one time for a lifetime purchase of the application. With this investment, individuals will receive all of the benefits associated with the application including: short mini sessions for busy lifestyles, themed meditation that targets specific areas including stress, anxiety, and self-esteem, mindfulness exercises that can be completed while doing tasks like cooking, commuting, and cleaning, everyday Headspace which includes a specified meditation delivered to your phone daily, sleep sounds and meditations for a restful night, Headspace for kids, which includes fun ways for children to learn the art of meditation, a meditation teacher, and the animation library that includes several fun and simple videos to help with meditation practice (Headspace, 2018c).

Another consideration would be other applications such as the Mindfulness App. Their paid options include one free week, \$5.00 per month or \$59.99 per year for the premium level. The premium level includes unlimited access to more than 20 full length courses; 200 meditation sessions that cover foundational meditation, calm, emotions, inner strength, body, and focus. Also included with the purchase of this application is the ability to listen to the meditation sessions while offline (The Mindfulness App, 2018).

Calm, another meditation option, provides users the option to pay 59.99 per year for a premium level package that includes an entire library of meditation sessions, sleep stories, music, calm body, and a calm masterclass. This application also provides a new daily calm every day, 100 plus sessions that are specific to anxiety, focus, stress, and gratitude, 30 plus nature scenes and sounds, and video sessions on mindful movement and gentle stretching (Calm, 2018). These applications are both rated alongside Headspace as the best meditation apps of 2018 (Fischer, 2018).

## **Conclusion**

This exploratory research study indicated that meditation is a viable treatment modality



for individuals in treatment for OUD that wish to improve their state anxiety. Equally important, this study identifies methods for mobile applications such as Headspace, that can improve individuals with SUD, anxiety, and stress-related conditions during treatment and has the potential to be used as a post-discharge intervention. The state anxiety findings were significant, indicating the need for further research and testing to validate and expand the application of mobile meditation use as a therapeutic intervention. Ultimately, this study is the starting point for future studies to explore and develop specific population and prescription-based meditation interventions.

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## SECTION II: EXTENDED REVIEW OF LITERATURE

### Indicators of being in Successful Recovery for Substance Use Disorder

Researchers have identified common factors among individuals who have successfully participated in the recovery process for substance use disorder (SUD) and who have maintained long periods of abstinence from substances. The factors noted include maintaining social roles (Yang, Mamy, Gao, & Xaio, 2015), higher level of social support (VanDeMark, 2007), greater self-efficacy (Hser, 2008), life satisfaction (Merrill & Thomas, 2013), autonomy (Cogswell & Negley, 2011), adherence to treatment plans (Andre, Jaber-Filho, Carvalho, Jullien, & Hoffman, 2003), use of adaptive coping mechanisms, and increased motivation for change (Laudet & Stanick, 2010).

Laudet and Stanick (2010) examined factors related to motivation for abstinence from all substances in underserved ethnic minorities ( $N=250$ ). They identified perceived harm of future use to oneself and loved ones, prolonged abstinence, self-efficacy, quality of life, and the number of 12-step program members within their social circles as significant predictors of abstinence motivation. A higher quality of life satisfaction was associated with greater motivation for recovery among these participants. In addition, seeking out treatment earlier, rather than when the participant's life has become unmanageable (often described as *hitting rock bottom*), increased the participant's motivation for change and their desire to minimize potential problems caused by the active use of substances.

Hser (2008) conducted a prospective longitudinal study on the recovery of males with heroin addictions ( $N=242$ ) over a 33-year period. Three interviews were conducted at 10-year intervals, with each interview lasting two to three hours. A urine sample was also collected from each participant at each data collection. Using the Medical Outcomes Study 36-item Short Form,

the participants' self-efficacy of abstinence, stress coping strategies, and self-rated health status was assessed. The findings indicated that problems with family and school in early life did not predict recovery later. However, negative emotional states experienced by the participants, such as depression, anxiety, and lack of adequate coping skills, were significant risk factors. Also, greater self-efficacy and adequate social support were found to be helpful in maintaining a stable recovery. Given these findings, identifying personal and social resources and engaging in prosocial activities should all be considered as parts of effective strategies for achieving and maintaining a stable recovery.

LePage and Garcia-Rea (2009) studied the association between healthy lifestyle behaviors and relapse rates in homeless veterans ( $N=97$ ) with SUD who were in early remission. The participants were all male, and the majority were African American. Participants recorded their daily activities in a journal organized into different sections that included coping, spiritual, social, recreational, and substance recovery activities. There was no direct relationship between the number of substance recovery activities reported and relapse prediction. However, greater engagement in healthy lifestyle behaviors was significantly associated with lower relapse rates. The researchers concluded that those participants who did not relapse during the study engaged in significantly healthier lifestyle behaviors, such as leisure and recreation behaviors, socialization with others, and the ability to effectively cope with stress than those who did relapse.

There are many aspects to successful and long-term recovery from SUD. Many of the factors associated with a successful recovery for individuals with a SUD are related to stress. Therefore, the inability to successfully cope with perceived stress or anxiety can be conceived as an impediment to a successful recovery. Stressors such as job loss, failed relationships, finances,

and the loss of loved ones may put a strain on the recovery process and have the potential to initiate a relapse (Grzywacz & Almedia, 2008).

### **Stress, Anxiety, and Substance Use Disorder**

An association between SUD and stress has been suspected for decades, but the research literature was limited in offering substantive evidence of such a relationship until relatively recently. Tavoracci, Ladner, Grigioni, Richard, Villet, & Dechelotte (2013) demonstrated that stress places many individuals in a vulnerable state, specifically in the areas of risk-taking behavior, physical health, and mental health. This means that these individuals are more likely to seek out risky activities such as substance use when under stress. Moitra, Anderson, & Stein (2013) found that higher levels of stress were linked to greater risks regarding substance use and behavioral addictions.

Tavoracci et al. (2013) studied the effects of perceived stress on the prevalence of substance use and behavioral addictions among university students ( $N=1876$ ). The students were located on seven different campuses in France, aged 18 to 25 years old, and included both males and females (0.51 ratio). Participants completed an anonymous questionnaire on their socioeconomic characteristics, athletic participation, substance use and disorders, risk of cyber addiction and perceived mental stress utilizing the Perceived Stress Scale (PSS). Results indicated that 23.2% of students smoked at least once per day, 20.1% of students drank alcohol more than ten times per month, and 3.7% of students frequently used marijuana. The PSS scores indicated that female students were more exposed to stress, and therefore had a higher risk of cyber addictions, disorders related to substance use, eating disorders, and regular smoking. The rate of students who received positive tests, indicating alcohol use disorders, increased as their level of perceived stress increased.

Moitra, Anderson, and Stein (2013) examined the relationship between perceived stress and substance abuse among patients in a Methadone maintenance treatment program that frequently smoked cigarettes ( $N=315$ ). Participants were over 18 years old, frequent or regular cigarette smokers, had received methadone for the past month, and were available for at least 12 months. Instruments utilized included the Alcohol Use Disorders Identification Test (AUDIT), Fagerstrom Test for Nicotine Dependence (FTND), Perceived Stress Scale (PSS), Timeline Follow Back Interview (TLFB), and the Addiction Severity Index- drug module (ASI). Results indicated that perceived stress was positively and significantly associated with the likelihood of screening positive for hazardous drinking or alcohol-related problems on the AUDIT ( $p<.05$ ). Perceived stress and the likelihood of recent cocaine use ( $p<.05$ ) and the likelihood of recent benzodiazepine use ( $p<.01$ ) were also positively correlated. Perceived stress was associated with ongoing opioid use among these participants.

Hassanbeigi, Askari, Hassanbeigi, and Pourmovahed (2013) studied the relationship between stress and SUD in male opium addicts ( $N=150$ ). The control group for this study consisted of non-substance users who were family or close friends of the participants with opium SUD. These participants were matched by age, education level, marital status, and socioeconomic status. Results indicated that over a two-year period before beginning using heroin, the occurrence rate of various psychological stressors was significantly higher in the user group than the control group ( $p< 0.0001$ ). Findings also showed that in comparison to the control group, the participants with opium SUD reported significantly less usage of problem-focused coping strategies, including active coping ( $p< 0.01$ ), and significantly greater use of less useful coping strategies such as venting emotions, behavioral disengagement, and mental disengagement ( $p< 0.0001$ ).

Researchers have also linked SUD to anxiety. Anxiety disorder is most often observed alongside other comorbid conditions and has been identified as the most common mental health disorder encountered in primary medical care (Baldwin, Allgulander, Bandelow, Ferre, & Pallanti, 2011). Individuals who have co-occurring SUD and anxiety are more likely to exhibit more severe symptomology, greater health problems, greater functional impairment, and struggle more with adhering to treatment, contributing to a heightened chance of relapse after discharge from a facility (Smith & Randall, 2012). Once comorbidity develops between SUD and anxiety, these disorders mutually reinforce each other, which also tends to negatively impact the course of treatment and outcomes (Ruglass, Lopez-Castro, Cheref, Papini, & Hein, 2014). Two specific types of anxiety were investigated for this research study: state anxiety or an individual's immediate perception of anxiety, and trait anxiety which is identified as an individual's general orientation to anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Although additional research is needed, it appears that stress, anxiety, and SUD are related. Greater levels of perceived stress have been linked to higher risks for substance use and behavioral addictions (Moitra, Anderson, & Stein, 2013). One intervention that may potentially counteract the adverse effects of stress in this population is meditation. Researchers have demonstrated that meditation can reduce stress and improve overall health (Grossman, Neimann, Schmidt, & Walach, 2004).

### **Meditation and Substance Use Disorder Recovery**

Meditation is a centuries-old practice that has re-emerged in recent decades to help individuals cope with stress. Researchers have suggested that practicing meditation has a positive influence on the overall health of an individual (Marcus & Zgierska, 2010; Lane, Seskevich, & Pieper, 2007). Among the most significant health benefits of meditation is the ability to control perceived stress, which is of importance for individuals who are in recovery for SUD (Brady &

Sonne, 1999). Other benefits of meditation that impact recovery are enhanced autonomy, improved life satisfaction, and increased self-efficacy (Cogswell and Negley, 2011; Laudet and Stanick, 2010; Hser, 2008). Meditation, if completed in a group format with other individuals, can also assist in building social relationships (Zhuang et al., 2013).

A few mobile applications are available that focus on a guided meditation. Mani, Kavanagh, Hides, and Stoyanov (2015) examined 23 mobile meditation applications in their research. They used the Mobile Application Rating Scale to evaluate the mobile applications. The mobile application that received the highest score on the MARS, earning 4.0 out of 5.0 points, was Headspace. This suggests that the Headspace application would potentially be effective when it comes to engaging the participants, has good functionality and the usability related to the application, and provides appropriate information and guidance about how to meditate effectively for new users.

Lane, Seskevich, and Pieper (2007) studied the effects of meditation training on perceived stress and negative emotion. Participants included healthy adults ( $N=192$ ) who were interested in learning meditation for stress reduction and control. Participants included both males (24%) and females (76%) who learned mantra-based meditation during four sessions that were an hour each. They were then instructed to practice meditation for 15-20 minutes, two times per day. Results indicated that meditation led to significant reductions ( $p<0.0001$ ) in measurements of stress and negative emotion using the PSS, Profile of Mood States, State-Trait Anxiety Inventory, and the Brief Symptom Inventory. Post-hoc comparisons found no differences among the three self-reported follow-up visits after the meditation sessions had been completed for any measure which indicated stability over time.

Bowen et al. (2009) studied the effects of an eight-week outpatient Mindfulness-Based Relapse Prevention (MBRP) program on participants with substance abuse disorders ( $N=168$ ). Two weeks before the study, participants completed intensive inpatient or outpatient substance abuse treatment. Multiple assessments such as the Penn Alcohol Craving Scale and the Short Inventory of Problems were administered pre-treatment, post-treatment, and at a two- and four-month follow-up. The MBRP program sessions consisted of eight weekly two-hour sessions that included 10 participants and two therapists per session. Significant improvements in days free of substance use and cravings as well as increases in acting with awareness and acceptance were reported. This study indicates that the need to alleviate discomfort with substance abuse decreases and intentional versus reactive behaviors increase among participants when they engage in mindfulness programs.

Chen, Comerford, Shinnick, and Ziedonis (2010) studied the effects of Qigong meditation on participants who were patients in an adult rehabilitation unit for SUD ( $N= 248$ ). During the first week of this pilot study, Qigong meditation was offered to voluntary participants during their free time in the evenings. During the second week, both Qigong and SMART, another form of mindfulness meditation, were offered. A 90-minute informational session on meditation, stress management, self-healing, and the application of meditation for health was also offered once per week. There were no exclusion criteria in this study, and involvement was strictly on a voluntary basis for all the patients in the facility. The participants ( $N= 7$ ) who chose to participate in Qigong meditation every day had significant improvements in withdrawal and craving symptoms. The Qigong meditation group reported a greater reduction in craving than the SMART group did in both weeks one ( $p<0.01$ ) and two ( $p<0.01$ ). Participants reported a significant reduction in cravings, sleep problems, anxiety, depression, and withdrawal symptoms

( $p < 0.001$ ). Results also indicated a difference in the reduction of cravings and anxiety by gender ( $p < 0.05$ ) suggesting that meditation may benefit females in these areas more so than males.

Bowen et al. (2006) studied the effects of Vipassana Meditation (VM) on incarcerated participants who have SUD ( $N=173$ ). Participants in this study included nine gender-segregated VM courses that took place during a 15-month period. Participation in these courses was voluntary. Participants who took the VM courses were compared to others who completed treatment as usual. There was a significant relationship between participation in the VM course and lack of substance use once the participants were discharged. Participants who participated in VM also reported significantly lower levels of psychiatric symptoms, a higher internal locus of control, and higher levels of optimism. Results indicated preliminary support for the effectiveness of VM meditation as a treatment for SUD in correctional populations.

Based on the information above meditation appears to be a viable option to assist with recovery for SUD. Meditation has the potential to improve adults' ability to cope with stress and contribute to more extended periods of recovery for individuals who abuse substances (Witkiewitz, K., Bowen, S., Harrop, E. N., Douglas, H., Enkema, M., & Sedgwick, C., 2014). Once in recovery, individuals participating in meditation begin to develop more self-awareness regarding their impulsive behaviors and are better able to recognize negative coping mechanisms involved in dealing with triggers to their substance use (Witkiewitz, K., et al., 2014). However, the research into the effects of meditation on recovery from substance use is still emerging; thus, additional research into the use of meditation to help individuals with SUD cope with stress is essential to understand its role in the recovery process better.



## **Headspace**

Headspace is a mobile guided meditation application that is available through internet access on cellular devices, computers, and tablets. An individual with Buddhist monastic training designed Headspace, which guides users through mindfulness meditation using both audio and visual materials (Headspace, 2018b). Mobile guided meditation applications are becoming more prevalent in the aspects of positively impacting mental well-being in a variety of populations (Economides, Martman, Bell & Sanderson, 2018). According to research, the use of mobile guided meditation, specifically Headspace, has been indicated to provide more action with awareness and fewer symptoms of burnout and compassion fatigue (Wylde, Mahrer, Meyer & Gold, 2017). Research has also indicated that practicing Headspace guided meditation 10 to 20 minutes each day decreased perceived stress in medical students, having a possible impact on the balance of their life stressors and patient care (Yang, et al., 2018). Headspace was chosen for this research study due to its accessibility and aesthetics (Mani, Kavanagh, Hides, & Stoyanov, 2015).

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## APPENDICES

## APPENDIX A: Survey Instrument

For use by Stephanie Warrick only. Received from Mind Garden, Inc. on September 7, 2017

**Permission for Stephanie Warrick to reproduce 100 copies  
within one year of September 7, 2017**

### **State-Trait Anxiety Inventory for Adults™**

### **Instrument and Scoring Key**

**Developed by Charles D. Spielberger**

in collaboration with R.L. Gorsuch, R. Lushene, P.R. Vagg, and G.A. Jacobs

Published by Mind Garden, Inc.

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**SELF-EVALUATION QUESTIONNAIRE STAI Form Y-1**

**Please provide the following information:**

Name \_\_\_\_\_ Date \_\_\_\_\_ S \_\_\_\_\_  
 Age \_\_\_\_\_ Gender (Circle) M F T \_\_\_\_\_

**DIRECTIONS:**

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

VERY MUCH SO  
 MODERATELY SO  
 SOMEWHAT  
 NOT AT ALL

- |   |   |   |   |   |
|---|---|---|---|---|
| 1. I feel calm.....                                       | 1 | 2 | 3 | 4 |
| 2. I feel secure.....                                     | 1 | 2 | 3 | 4 |
| 3. I am tense.....  | 1 | 2 | 3 | 4 |
| 4. I feel strained.....                                   | 1 | 2 | 3 | 4 |
| 5. I feel at ease.....                                    | 1 | 2 | 3 | 4 |
| 6. I feel upset.....                                      | 1 | 2 | 3 | 4 |
| 7. I am presently worrying over possible misfortunes..... | 1 | 2 | 3 | 4 |
| 8. I feel satisfied.....                                  | 1 | 2 | 3 | 4 |
| 9. I feel frightened.....                                 | 1 | 2 | 3 | 4 |
| 10. I feel comfortable.....                               | 1 | 2 | 3 | 4 |
| 11. I feel self-confident.....                            | 1 | 2 | 3 | 4 |
| 12. I feel nervous.....                                   | 1 | 2 | 3 | 4 |
| 13. I am jittery.....                                     | 1 | 2 | 3 | 4 |
| 14. I feel indecisive.....                                | 1 | 2 | 3 | 4 |
| 15. I am relaxed.....                                     | 1 | 2 | 3 | 4 |
| 16. I feel content.....                                   | 1 | 2 | 3 | 4 |
| 17. I am worried.....                                     | 1 | 2 | 3 | 4 |
| 18. I feel confused.....                                  | 1 | 2 | 3 | 4 |
| 19. I feel steady.....                                    | 1 | 2 | 3 | 4 |
| 20. I feel pleasant.....                                  | 1 | 2 | 3 | 4 |

**SELF-EVALUATION QUESTIONNAIRE**

**STAI Form Y-2**

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

**DIRECTIONS**

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel.

ALMOST NEVER  
SOMETIMES  
OFTEN  
ALMOST ALWAYS

- |   |   |   |   |   |
|---|---|---|---|---|
| 21. I feel pleasant.....  | 1 | 2 | 3 | 4 |
| 22. I feel nervous and restless .....   | 1 | 2 | 3 | 4 |
| 23. I feel satisfied with myself .....  | 1 | 2 | 3 | 4 |
| 24. I wish I could be as happy as others seem to be.....  | 1 | 2 | 3 | 4 |
| 25. I feel like a failure .....   | 1 | 2 | 3 | 4 |
| 26. I feel rested.....  | 1 | 2 | 3 | 4 |
| 27. I am "calm, cool, and collected" .....  | 1 | 2 | 3 | 4 |
| 28. I feel that difficulties are piling up so that I cannot overcome them.....                    | 1 | 2 | 3 | 4 |
| 29. I worry too much over something that really doesn't matter .....                              | 1 | 2 | 3 | 4 |
| 30. I am happy.....   | 1 | 2 | 3 | 4 |
| 31. I have disturbing thoughts.....   | 1 | 2 | 3 | 4 |
| 32. I lack self-confidence .....  | 1 | 2 | 3 | 4 |
| 33. I feel secure .....   | 1 | 2 | 3 | 4 |
| 34. I make decisions easily.....  | 1 | 2 | 3 | 4 |
| 35. I feel inadequate .....   | 1 | 2 | 3 | 4 |
| 36. I am content.....   | 1 | 2 | 3 | 4 |
| 37. Some unimportant thought runs through my mind and bothers me.....                             | 1 | 2 | 3 | 4 |
| 38. I take disappointments so keenly that I can't put them out of my mind .....                   | 1 | 2 | 3 | 4 |
| 39. I am a steady person.....   | 1 | 2 | 3 | 4 |
| 40. I get in a state of tension or turmoil as I think over my recent concerns and interests ..... | 1 | 2 | 3 | 4 |

## APPENDIX B: Consent Form

East Carolina University



### **Informed Consent to Participate in Research**

Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: The Effect of Meditation on Perceived Stress of Individuals who are Patients in an Opiate Treatment Program

Principal Investigator: Stephanie Warrick

Institution, Department or Division: East Carolina University Department of Recreation and Leisure Studies

Address: 1413 Belk Building Greenville, North Carolina 27858

Telephone #: (252) 328-4640

Faculty Supervisor: Matthew Fish

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Researchers at East Carolina University (ECU) and Walter B. Jones Alcohol and Drug Abuse Treatment Center issues related to society, health problems, environmental problems, behavior problems and the human condition. To do this, we need the help of volunteers who are willing to take part in research.

#### **Why am I being invited to take part in this research?**

The purpose of this research is to determine if meditation makes a difference in the perceived stress level of people who have Opiate related substance use disorder. You are being invited to take part in this research because you are seeking assistance for Opiate related substance use disorder from Walter B Jones Alcohol and Drug Abuse Treatment Center. The decision to take part in this research is yours to make. By doing this research, we hope to learn whether meditation makes a difference in an individual's perceived stress level.

If you volunteer to take part in this research, you will be one of about 20 people to do so.

#### **Are there reasons I should not take part in this research?**

I understand I should not volunteer for this study if I am, under 18 years of age, or I am on medicine for depression or anxiety. I understand that the risk associated with meditation includes potential psychological discomfort.

#### **What other choices do I have if I do not take part in this research?**

You can choose not to participate.

#### **Where is the research going to take place and how long will it last?**

The research will be conducted at Walter B. Jones Alcohol and Substance Abuse Treatment Center. You will need to come to the activity room located in the facility times during the study. The total amount of time you will be asked to volunteer for this study is 20 minutes over the next 5 days.

### **What will I be asked to do?**

You will be asked to do the following: Each participant included in the study will be asked to complete the State Trait Anxiety Inventory before the first and last meditation sessions. The state anxiety scale measures intensity of an individual's feelings and it is answered on a four-point Likert style scale ranging from 1 (not at all) to 4 (very much so). The trait anxiety scale is used to measure frequency of and individual's feelings of anxiety on a four-point Likert scale ranging from 1 (almost never) to 4 (almost always). Once this has been completed, you will begin your first session. Each session will take place in a dimly lit, quiet room with minimal interruptions or distractions. The researcher will have a speaker through which the guided meditation application will be played aloud and a projector through which the graphics can be seen.

You will participate in meditation sessions during one of your regularly scheduled recreational therapy group sessions. For each session, you will be asked to sit comfortably in a chair that will be placed in a circle with your feet on the floor. The researcher will thoroughly review the activity and answer any questions or concerns that you might have prior to starting the intervention. You will then listen to and follow along with a 10-minute guided meditation session provided by the mobile application Headspace.

Headspace is a mobile application for guided meditation. The first ten sessions of this application are free and can be repeated endlessly, the option to purchase is also available. The stated mission of the Headspace application is "to get people everywhere to look after the precious resource that is the brain and mental wellbeing" (Headspace, 2018). Headspace is now used in over 190 countries (Headspace, 2018). The intention of the techniques used by Headspace is to cultivate awareness and compassion of meditation to better understand the mind and the relationship with the world. This application was made mobile due to individuals being on the go more often. It is something that is portable and can be used in any environment with access to a computer, tablet, or cellular device.

### **What might I experience if I take part in the research?**

We don't know of any risks (the chance of harm) associated with this research. Any risks that may occur with this research are no more than what you would experience in everyday life. We don't know if you will benefit from taking part in this study. There may not be any personal benefit to you but the information gained by doing this research may help others in the future.

### **Will I be paid for taking part in this research?**

We will not be able to pay you for the time you volunteer while being in this study.

### **Will it cost me to take part in this research?**

It will not cost you any money to be part of the research.

### **Who will know that I took part in this research and learn personal information about me?**

ECU and the people and organizations listed below may know that you took part in this research and may see information about you that is normally kept private. With your permission, these people may use your private information to do this research:

- Walter B. Jones Alcohol and Substance Abuse Treatment Center.
- Department of Health and Human Services (DHHS).
- The University & Medical Center Institutional Review Board (UMCIRB) and its staff have responsibility for overseeing your welfare during this research and may need to see research records that identify you.

### **How will you keep the information you collect about me secure? How long will you keep it?**

Paper copies of information will be kept in Dr. Matthew Fish’s office in Carol Belk Building room 2404 until 6 months after the study is completed, then they will be shredded. Electronic information will be saved in the departmental pirate drive and on my personal computer until 3 years after the study is completed. It will then be deleted.

**What if I decide I don’t want to continue in this research?**

You can stop at any time after it has already started. There will be no consequences if you stop and you will not be criticized. You will not lose any benefits that you normally receive.

**Who should I contact if I have questions?**

The people conducting this study will be able to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at (252) 326-9320 (days, during the hours of 10:00 am to 3:00 pm).

If you have questions about your rights as someone taking part in research, you may call the Office of Research Integrity & Compliance (ORIC) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, you may call the Director of the ORIC, at 252-744-1971.

**I have decided I want to take part in this research. What should I do now?**

The person obtaining informed consent will ask you to read the following and if you agree, you should sign this form:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop taking part in this study at any time.
- By signing this informed consent form, I am not giving up any of my rights.
- I have been given a copy of this consent document, and it is mine to keep.

---

<b>Participant's Name (PRINT)</b>	<b>Signature</b>	<b>Date</b>
-----------------------------------	------------------	-------------

**Person Obtaining Informed Consent:** I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person’s questions about the research.

---

<b>Person Obtaining Consent (PRINT)</b>	<b>Signature</b>	<b>Date</b>
---	------------------	-------------



## APPENDIX C: IRB Approval

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**EAST CAROLINA UNIVERSITY**  
**University & Medical Center Institutional Review Board Office**  
4N-70 Brody Medical Sciences Building · Mail Stop 682  
600 Moye Boulevard · Greenville, NC 27834  
Office 252-744-2914 · Fax 252-744-2284 · [www.ecu.edu/ORIC/irb](http://www.ecu.edu/ORIC/irb)

### Notification of Initial Approval: Expedited

**From:** Social/Behavioral IRB  
**To:** [Stephanie Warrick](#)  
**CC:** [Richard Williams](#)  
**Date:** 8/7/2017  
**Re:** [UMCIRB 17-000050](#)  
The Effect of Meditation on Perceived Stress in Individuals who are Patients in an Opiate Treatment Program

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 8/7/2017 to 8/6/2018. The research study is eligible for review under expedited category #7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description
Informed Consent.doc	Consent Forms
STAI	Surveys and Questionnaires
The Effect of Meditation on Perceived Stress in Individuals who are Patients in an Opiate Treatment Program .docx	Study Protocol or Grant Application

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

## APPENDIX D: Headspace Screenshot



