

OCCUPATIONAL THERAPY-BASED MINDFULNESS TO DECREASE STRESS  
AND IMPROVE SLEEP QUALITY AMONG UNIVERSITY STUDENTS

A Thesis submitted to the faculty at Stanbridge University in partial fulfillment of the  
requirements for the degree of Master of Science in Occupational Therapy

by

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Certification of Approval

I certify that I have read Occupational Therapy-Based Mindfulness to Decrease Stress and Improve Sleep Quality Among University Students by Patricia Paysan, Jancy Pen, Viluong Thai, Christina Young, and in my opinion, this work meets the criteria for approving a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy at Stanbridge University.

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Dedication

To our families and friends for your endless support.

## Abstract

Students enrolled in a professional program may commonly experience stress, which can decrease attention, affect decision-making skills, greatly impact their well-being as occupational individuals, and impede their academic performance. Lower sleep quality can interfere with a students' true academic potential as sleep deprivation is associated with memory deficits, impaired performance, reduced alertness, delayed responses, and higher levels of stress. Mindfulness training has been proven to improve not only mental health and psychological well-being, but also cognitive and academic performance so that students can be better equipped to apply their knowledge.

The purpose of this research study was to determine the effectiveness of occupational therapy-based mindfulness interventions for decreasing stress and improving sleep quality among university students. The interventions were conducted on selected participants and held once a week over the course of five weeks. Each session was 1.5 hours long with a specific theme, and the activities performed ranged from introspective journaling to meditation and yoga. The Self-Developed Stress Questionnaire and the Pittsburgh Sleep Quality Index Measure were administered pre- and post-study to determine stress and sleep quality levels amongst the participants. The results from the PSQI showed improvement in sleep quality in subscales such as decreased time to fall asleep, but the total sleep quality score was statistically insignificant. During the Post-Intervention Questionnaire, the participants reported having better quality sleep, reduced stress, and improved mood. Overall, occupational therapy-based mindfulness was found effective for decreasing stress and improving sleep quality among research participants.

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Occupational Therapy-Based Mindfulness to Decrease Stress and Improve Sleep Quality  
Among University Students

Students enrolled in a professional program may commonly experience stress, which can decrease attention, and affect decision-making skills (Stew, 2011). This stress can negatively impact their well-being as occupational individuals and impede their academic performance (Hindman, Glass, Arnkoff, & Maron, 2014). In an undergraduate study done by Britz and Pappas (2010), 50.8% of students reported being “often” or “always” stressed, with graduate science students demonstrating a significantly higher psychological distress (Hindman et al., 2014, p. 873). Furthermore, stress and anxiety that impact school performance and sleep quality may affect other areas of life, such as one’s personal relationships (Stew, 2011).

Students are often pressured to perform and live up to the expectations of others, so it is common for students to sacrifice sleep to spend more time studying toward achieving their careers. Sleep suspends consciousness to help the body and mind restore. This shows the importance of getting enough quality sleep as it plays a vital role in mental health, physical health, and quality of life. Sleep deprivation is found to be associated with memory deficits, impaired performance and alertness, and delayed responses (Sarraf & Dubey, 2016). Moreover, sleep deprivation creates higher levels of stress, which may result in reduced creativity, and increased neurotic and psychologically maladjusted behaviors. Furthermore, there is a significant difference found between professional students scoring higher stress levels compared to non-professional students (Sarraf & Dubey, 2016). Due to various factors such as academic rigor and personal life circumstances, students can

experience lower sleep quality, which impedes with their true academic potential as evidenced by lower academic scores (Sarraf & Dubey, 2016).

In reference to the *Occupational Therapy Practice Framework: Domain and Process*, 3rd edition (American Occupational Therapy Association [AOTA], 2014), rest and sleep have been labeled as one of the occupations under an occupational domain. The occupation of rest and sleep helps an individual to manage their health and engagement in other meaningful occupations such as social participation, education, work, and leisure (AOTA, 2014). Adequate amounts of sleep are needed to restore the body, which can be accomplished with the use of cognitive behavioral therapy (CBT) techniques, such as increasing awareness to manage and modify sleep quality (Tester & Foss, 2017). Because of strenuous mental and physical stressors, a student may jeopardize their need for sleep. Without appropriate sleep quality, a person's engagement in meaningful occupations can be negatively impacted, which may also result in higher levels of stress in various areas of life. A common source of stress is the pressure to do well in academic performance (Soja, Sanders, & Haughey, 2016). However, there is a lack of evidence-based coping strategies to decrease stress. Due to limited stress coping mechanisms and poor sleep quality, an individual's overall health and occupational engagement are impacted.

### **Statement of Problem**

Stress can reduce health practitioners' abilities to empathize and establish meaningful relationships with clients (Stew, 2011), which is a crucial factor for optimal treatment outcomes of their clients. As future health professionals, it is vital to have self-awareness to respond to challenging situations such as ethical healthcare dilemmas with insight and compassion (Stew, 2011). Mindfulness training has been proven to improve

not only mental health and psychological wellbeing, but also cognitive and academic performance (Stew, 2011) so that healthcare professional students such as occupational therapy can be better equipped to apply their knowledge and practice in the real world. Thus, mindfulness can hopefully translate to the students' future healthcare careers to build therapeutic relationships for the most favorable intervention outcomes of their prospective clients.

### **Literature Review**

Emerging adulthood, the developmental stage from the late teens through the 20s is the most dominant age group among college students. During this life stage, identity exploration may result to frequent changes and uncertainty, which can cause stress on an individual. Although the university's wide array of programs - associates to masters - may constitute students who surpass the emerging adulthood phase, the academic rigor and balance of other life areas embody the stressors commonly inflicted on students. Through mindfulness, the skill of learning to pay attention non-judgmentally in the present moment, offers a way to improve sleep (Wong, Ree, & Lee, 2016). Also, it helps with occupational well-being, reducing stress, and improving mood and academic performance in both college and graduate students (Greeson, Juberg, Maytan, James, & Rogers, 2014).

### **Types of Mindfulness Interventions**

Greeson et al.'s research (2014) evaluated the effectiveness of Koru, a mindfulness training program for college students and other emerging adults. Rogers and Maytan, researchers from the Department of Psychiatry and Behavioral Sciences at Duke University, developed *Koru* to address the disparity of teaching mindfulness to students who have time constraints, skepticism, and difficulty maintaining motivation. Koru

techniques were considered for one of our study's interventions and seemed fitting due to the similar student population and fairly short time frame that our study had. By utilizing a few Koru techniques and then tying them with occupational therapy focused mindfulness practice, we hoped that this may help with decreasing stress and improving sleep quality in our target population. Moreover, the Koru program teaches students mind-body skills such as breathing exercises, walking meditation, guided imagery, and eating meditation.

Similarly, occupational therapy as a holistic science has a strong part in mental health since the early 1900s (Gutman, 2011). In addition to attending the small group Koru sessions, practicing 10-minute daily meditations, and completing and returning a daily meditation log is also typically required of the program. The outcome measures utilized in Greeson et al.'s study, (2014) such as the Perceived Stress Scale (PSS) to measure perceived stress over the past month, influenced the creation of the researchers' self-developed stress questionnaire (SDSQ). Although our study had limited diversity, we hoped that the diverse location of southern California and the multiple programs offered at Stanbridge University had potentially included more diversity for more generalizability. Nonetheless, the Greeson et al.'s (2014) results showed that the Koru program was effective at reducing symptoms of stress, enhancing psychological well-being, and promoting sleep for emerging adults who were students in a university setting.

In their study, Hindman, Glass, Arnkoff, and Maron (2014) also applied mindfulness to examine its effect on university students by comparing formal and informal mindfulness for stress reduction. There is a slight distinction between formal and informal meditation as formal meditation are homogenous to those learned in-session, which involve setting aside 45 minutes for daily practice and mindful eating. Meanwhile, informal

mindfulness involves bringing mindfulness to everyday activities such as mindful walking and attending to lecture (Hindman et al., 2014), similar to the one used in the Koru study. The combination of formal and informal mindfulness also related to our study as we aimed to not only teach formal meditation but to establish mindfulness in everyday life using informal practice. The results from Hindman et al.'s study (2014) showed formal meditation as being superior at cultivating mindfulness; however, both interventions were found (formal and informal) equally effective in reducing stress. This provided evidence that informal mindfulness is just as critical as formal meditation to transfer mindfulness skills in day-to-day life. It may be that formal meditation allows individuals first to experience mindfulness at times of low stress so that it becomes easier to be mindful during elevated stress (Hindman et al., 2014). Nevertheless, our study tested the validity and reliability of these results by exercising our own methods such as journaling to qualitatively assess the effectiveness through the lens of our participants' personal experiences.

A research study investigated whether movement-based courses would improve mood, and stress levels to affect the quality of sleep and mindfulness in college students. The research team examined an array of different movement-based courses as a way to increase mindfulness versus the static practice of sitting and meditating (Caldwell, Harrison, Adams, Quin, & Greeson, 2010). This way, the researchers can blend the association between exercise and improved sleep quality with mindfulness-based training. Caldwell et al. (2010) hypothesized that movement-based therapies would increase mind-body awareness better, which can reduce stress. Of the modalities studied, researchers wanted to use Gyrokinesis, Taiji, and Pilates interventions to see an improvement in mindfulness, mood, and sleep quality.

The significance of this study, in relation to our research, is in examining the difference between movement-based versus static-based interventions and their effects on increasing sleep quality and reducing stress. A few of the intervention strategies we used were the walking meditation and static meditation with breathing techniques. The rigor of Pilates against a slower more methodical modality, such as Taiji, was important for our study in terms of deciding which mindfulness intervention out of the two will get the best outcome. The results in Caldwell et al. (2010) study indicate Taiji is the best method out of the three for increasing mindfulness, even though all three interventions saw improvement from baseline (Caldwell et al., 2010). The participants reported better sleep quality, greater relaxation, lower negative arousal, and an increase in positive energy levels. Though the study had positive results for all the interventions, the correlation on sleep quality and modalities was purely observational and based on correlating increased mindfulness with sleep quality (Caldwell et al., 2010). Though the researchers did employ the use of the Pittsburgh Sleep Quality Index (PSQI), it relied on correlating the questionnaire with the PSS. Though we used the PSQI and a self-developed stress questionnaire, we went a step further by utilizing a sleep diary as well. With this addition, we were able to retrieve more information about sleep quality as related to self-reported mood and stress.

A study by Caldwell, Emery, Harrison, and Greeson (2011) assessed the effect of taijiquan on mindfulness, mood, stress, self-regulation, self-efficacy, and sleep quality. The study found that although mindfulness meditation is beneficial, multiple studies have also discovered that physical activities such as yoga which incorporates mindfulness improved sleep. In the study, participants were engaged in a 15-week recreation or taijiquan course.



Taijiquan is a mindfulness technique that utilizes movements involving balance, aerobics, focus of immune function, strength, flexibility. A major aspect of taijiquan is the component of the mind to be able to concentrate or focus during mindfulness practice.

The study determined that taijiquan is an effective form of mindfulness and has a positive effect on behaviors such as stress and sleep. Our study also found a client-centered approach in which mindfulness techniques were modified based on the participant's needs, in addition to a structured 5-week program of occupational-based mindfulness intervention. Aspects of this study support the needs of participants who may prefer using mindfulness techniques that incorporate physical activities. The PSS and PSQI were also used in the study to assess mindfulness on stress and sleep. However, due to selection bias, many participants had lower mood and self-efficacy before enrollment in the classes. Therefore, they were unable to generalize their results. In contrast, our study had based participation selection on stress levels, sleep quality, and their experience with mindfulness. Nonetheless, according to Caldwell et al. (2011) practicing mindfulness can decrease stress and increase sleep quality.

The research conducted by Lo, Francis-Cracknell, and Hased (2017), examined the effects on a 4-Week Health Enhancement Program on stress levels and positive lifestyle quality on physiotherapy students. Researchers noted that health professional students have increased psychological distress and they do not seek mental health services to combat their problems. This could lead to emotional exhaustion and burnout. A preliminary study of the amount of stress for physiotherapy students showed 27% scoring above the threshold on the General Health Questionnaire (Lo et al., 2017, p. 143). The researchers sifted through interventions and found systematic reviews of Mindfulness Based Stress

Reduction (MBSR) had a significant influence on reducing stress. They also looked into CBT and relaxation interventions being employed on nursing, medical, psychology, and dental students. Researchers pulled from different modalities and created a Health Enhancement Programme, which includes stress release, mindfulness, and lifestyle modifications.

The ESSENCE program is an intervention created by Lo, Francis-Cracknell, and Hassed (2017) involved 1.5-hour tutorials and an additional 1-hour lecture. Each week, the program had a theme and a concept with behavioral change and lifestyle modification (Lo et al., 2017). For our study, we had specific themes and concepts for each week of intervention. The results of the Lo, Francis-Cracknell, and Hassed (2017) study indicated that there was a slight increase on the PSS Scores but were not statistically significant. The Fantastic Lifestyle Assessment scores did show a significant increase in a positive lifestyle. Although the participants positively received the program, the questionnaires involved an “I do not wish to answer” item which could have thrown off the data. The increase in workload in the curriculum could account in the slight increase in the PSS, and the researchers wanted the duration to last longer than four weeks. The Lo, Francis-Cracknell, and Hassed (2017) study had interventions that contained components of mindfulness, but it was not a central focus for intervention. Their study also used mindfulness as small component coupled with nutrition, behavior and lifestyle retraining. In our study, we had 90-minute intervention sessions that lasted for 5 weeks. The focus of our research was to use the participant pool of health professional students and see how the effects of mindfulness were different on sleep quality and stress levels considering the different rigors of each program.

The study conducted by Burrows (2017) focused on the learning aspect of mindfulness experiences among college students and teachers. Burrows (2017) used a three-phase phenomenological study with community college students receiving mindfulness meditation and teachers providing mindfulness meditation. Her findings indicated that mindfulness meditation may not always provide positive experience if the provider did not have the necessary training with mindfulness techniques. Although this study had a small sample size - 13 students and 15 teachers - greater number of students reported feeling discomfort and disturbed.

Mahmood, Hopthrow, and Moura (2016) divided their research into three studies to determine whether a 5-minute computer-mediated mindfulness practice would increase levels of state mindfulness. In the first study, fifty-four students completed a computer-mediated mindfulness practice and the Toronto Mindfulness Scale (TMS) in a lab setting at University of Kent, Canterbury, United Kingdom. The students TMS scores were measured before and after their mindfulness practice and showed those who were under mindful conditions scored higher than those in the control group. In the second and third study, the mindfulness practice was tested using a 5-minute via the internet. Mahmood et al. (2016) reported a significant increase in TMS scores in the mindful condition but not in the control condition. These findings indicate that having a 5-minute computer-mediated mindfulness practice can have a positive impact on individuals.

Reid (2013) centered around teaching occupational therapy students an introductory course of mindfulness for their own self-care and examining their outcomes. There were fifteen students in this study that participated in an 8-week online mindfulness course and completed a pre- and post-training survey. The study incorporated the

Mindfulness Attention and Awareness Scale (MAAS) to measure levels of mindfulness among the participants. Most participants reported an excellent understanding of the concept of mindfulness and maintained mindfulness practice after the study. In addition, students who had a low score in the pre-participation MAAS reported significantly higher scores in the post-participation MAAS. This indicates that the 8-week mindfulness practice benefited the students.

Zwan, Vente, Huizink, Bogels, and Bruins (2015) studied three different forms of interventions. The interventions included physical activity, mindfulness meditation, and heart rate variability biofeedback. Zwan et al. (2015) compared and determined the effect of the intervention to reduce stress and its related symptoms such as sleep. Participants were required to keep a journal and complete at-home exercises for an approximately 5-week period. Using the Depression Anxiety Stress Scale, PSQI, and Psychological Well-being measures, Zwan et al. (2015) determined all three interventions created beneficial effects on the stress levels of the participants. It showed that related symptoms such as depression and sleep quality were also improved. It further supports the need for creating client-centered interventions and confirms the effects of a 5-week intervention. It supports the need to ensure that participants should be able to enjoy their method of stress reduction. If a participant can choose their form of mindfulness practice, it may increase the likelihood of them adhering to and increase the efficacy of the intervention. Adherence is a crucial point for at-home self-administered mindfulness. Zwan et al. (2015) determined that providing short instructions for at-home practice may not be effective in teaching stress-reduction techniques. Since our program included informal at-home practices, it was

crucial for our participants to adhere to informal techniques outside of session and formal mindfulness techniques during session.

### **Statement of Purpose, Hypothesis, and Research Question**

The purpose of this research study was to evaluate the effectiveness of occupational therapy-based mindfulness, an individualized client-centered approach, to improve sleep quality and reduce stress levels amongst university students. We aimed to answer the question, does the use of occupational therapy-based mindfulness interventions decrease stress and improve sleep quality among university students? The priority population was based on a sample of students who are actively enrolled in a program at a health science University in Southern California. Furthermore, we anticipated positive outcomes for students to better manage stressful situations from increased awareness of the present moment - mindfulness - for improved quality of sleep and decreased stress levels. Lastly, it is vital to have self-awareness to respond to challenging situations with insight and compassion.

The study is consistent with the American Occupational Therapy Association and American Occupational Therapy Foundation Research Agenda. The Occupational Therapy (OT) Research Agenda emphasis the need of intervention-based research to create preventive, restorative, and compensatory methods to reduce problems in engagement of meaningful occupations (American Occupational Therapy Association & American Occupational Therapy Foundation, 2011, p. S5). It is necessary to create evidence-based research to support interventions that will assist in an individual's ability to engage in their occupation, such as sleep effectively. Continued research in a clinical, home, and community setting can create solutions and strategies needed to help individuals be aware

of their capabilities and cope with everyday stressors of life (American Occupational Therapy Foundation, 2018). The proposed research provides support to evidence-based interventions related to occupational therapy concepts which entail mindfulness exercises in decreasing stress and improving sleep quality among university students. The potential effect of the study may have helped promote positive changes within an individual's occupational performance, such as academic performance, social participation, and balancing personal, work, and educational responsibilities. Also, Stanbridge MSOT curriculum thread correlated with the study regarding utilizing an occupation-based focus, healthcare communication, ethics, and diversity (Stanbridge University, 2018). The study also ensured that ethical procedures are followed, documentation and communication are appropriate and accurate, and diversity of research materials and participants are considered.

### **Theoretical Framework**

Stress is a part of everyday life that involves a variety of negative thoughts, feelings, and reactions that accompany threatening or challenging situations. However, it is how one perceives, feels, and reacts to a situation that causes the event to be recognized as stressful. For example, common reactions to stress may include negative thinking (i.e., worrying), feeling (i.e., tightness in the chest), or behaving (i.e., yelling).

Our study focused on participants' inner thought processes that can affect their levels of stress and sleep. For this reason, we decided to use Cognitive Behavioral Therapy (CBT), a common frame of reference used for psychotherapeutic interventions that address behavior modifications and thought processes to develop self-awareness (Vaughn, 2014). It not only emphasizes cognitive restructuring and exposure activities but also stress

management techniques. More specifically, Dialectical Behavior Therapy (DBT), one of the many approaches within the Cognitive-Behavioral frame of reference, has four modules - core mindfulness, interpersonal effectiveness, emotional modulation, and distress tolerance (Linehan, 1993). Furthermore, DBT encourages individuals to communicate distress, with core mindfulness skills being one of the major four modules that shape DBT. Exercising DBT techniques have been effective for emotional dysregulation (Rizvi & Steffel, 2014), which can be common in times of stress. Students under stress are encouraged to communicate their distress with the aims of focusing on the role of cognition and behaviors, decreasing emotional dysregulation, and strengthening coping mechanisms. More specifically, mindfulness can teach students to pay attention in the moment, live life non-judgmentally and in the present moment.

Additionally, CBT bases itself on the belief that thought distortions play a considerable role in how one develops and maintains psychological behavior. Occupational therapists (OTs) use CBT methods to help clients develop individualized skills and strategies to manage anxiety. Cognitive Behavioral Therapy utilizes relaxation therapy methods that involve deep breathing, meditation, muscle relaxation, and visualization to change a client's reaction to anxiety-inducing situations (Vaughn, 2014). Occupational therapy interventions based on CBT methods can also include modification of activities of daily living, developing coping strategies, sleep regulation, sleep hygiene, and sensory integration (Vaughn, 2014). The Cognitive-Behavioral frame of reference implements similar techniques as mindfulness; therefore, utilizing CBT would be optimal for the study.

Multiple studies have discovered that CBT interventions improve sleep quality (Wong, Ree, & Lee, 2016) such as improving severe sleep problems like insomnia.

Since “mindfulness is the skill of bringing nonjudgmental awareness to what is happening in the present moment” (Wong, Ree, & Lee, 2016, p. 378), awareness can be practiced during daily activities but also when trying to sleep. Mindfulness can reduce the obstacles preventing a restful state. Studies have shown interventions combining mindfulness and CBT can further enhance treatment for individuals with severe sleep problems (Wong, Ree, & Lee, 2016).

Furthermore, mindfulness will strengthen effective cognitive restructuring by teaching new ways to process information and use coping strategies to alter negative thought distortions. With the power to maintain a sense of control and self-confidence through coping strategies such as mindfulness, it can deflect the way individuals think about stressful events. Cognitive Behavioral Therapy techniques like mindfulness can, therefore, help individuals with their ability to stay in the present moment without being diverted from performing meaningful occupations in everyday life.



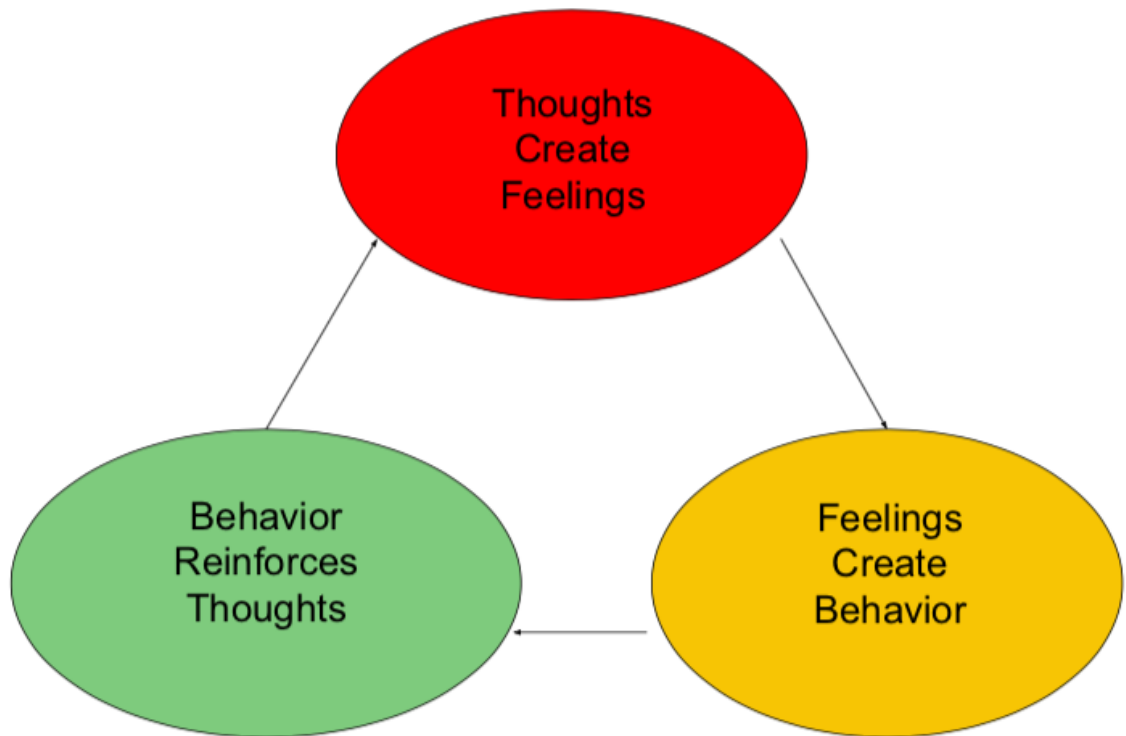


Figure 1. The Flow of CBT (Krupa et al., 2016)

## Methodology

### Study Design

This study utilized a pre-experimental design. Following the IRB approval (See Appendix N) and after obtaining the signed permission from the Stanbridge University's President (see Appendix M) researchers obtained a signed consent (see Appendix K) from all the recruited participants. All the selected participants completed a pre-intervention Self-Developed Stress Questionnaire (SDSQ) and PSQI (Buysse et al., 1989) to determine baseline data to determine their stress and sleep quality levels. The interventions were specifically designed to match each participant, which included mindfulness practice with researchers on site and self-administration at-home. After completing the 5-week

occupational therapy-based mindfulness intervention, a post-test PSQI and a post-intervention questionnaire were completed to determine the effectiveness of mindfulness on stress and sleep levels of participants.

Thus, we measured participants' pre-intervention sleep qualities using the PSQI, their perceptions on pre-intervention stress levels using the self-developed stress questionnaire, and their perceptions on post-intervention stress and sleep quality levels were further measured using a post-intervention questionnaire. At the end of the 5-week intervention, researchers generated some common themes and commonalities among participants by analyzing the post-intervention questionnaire through collective discussion. Additionally, researchers analyzed participants' written responses individually and then mutually agreed to each other's observations and thoughts.

### **Participants**

Researchers obtained site authorization (see Appendix M) and the thesis advisor scheduled rooms through the school's OT office for on-campus mindfulness sessions. Participants were chosen from a convenience sample at a health science University in Southern California. Recruitment was done through email blasts coordinated with the social media department on campus for more effective outreach. Posters and flyers (see Appendix O) were posted in common rooms and on-campus bulletin boards with sign-up information. Additionally, professors voiced in-class announcements regarding the opportunity to participate in the mindfulness study. Participation in this research was completely voluntary, and those interested expressed willingness to participate via the thesis group's email. A total of 15 students emailed their interest, but 6 participants provided consent forms (see Appendix K) and enrolled.

**Inclusion/Exclusion Criteria**

Inclusion criteria included the following: (1) active enrollment in a program at a university for the 2018 academic school year; programs include VN, RN, BSN, OTA, MSOT, PTA, and VT; (2) Mild to severe stress levels as measured on the SDSQ, (3) individuals who reported one or more of the following sleep difficulties - a. insomnia, b. low number of sleep hours, c. sleep quality differences since academic enrollment, and d. sleep cycle disturbances (4) students aged 18-50.

The following criteria excluded students who: (1) already practice mindfulness regularly (e.g., meditation, yoga, tai chi), (2) have certifications in mindfulness, (3) have health problems such as a. chronic obstructive pulmonary disease (COPD), b. epilepsy, c. past stress history (post-traumatic stress disorder (PTSD), abuse), and d. adrenal gland disorders, or (4) are taking medications that increase blood pressure, and (5) peers in the same cohort as the researchers.

**Intervention**

To ensure proper implementation of occupational-based mindfulness, researchers carefully selected, reviewed, and practiced the exercises before scheduling the participants for the first week of intervention. Participants attended 90-minute mindfulness training sessions led by researchers once a week for five weeks (see Appendix A). The occupational-based mindfulness training sessions were conducted on campus in a classroom or lab on the grounds of Stanbridge University. Each session had some aspects of Mindfulness-Based Stress Reduction (MBSR) exercises that were personalized to each individual. Homework for daily mindfulness training included daily journaling of practiced mindfulness, hours and quality of sleep; formal mindfulness such as at-home meditations,

mindful walking, mindful eating, and body scans; everyday mindfulness exercises through empathetic, active, and compassionate listening. Participants were encouraged to meet or contact researchers outside of group intervention if they have any questions. Researchers were available 30 minutes after each group seminar to answer any questions or concerns.

**Week 1 - Introduction.** Prior to attending the first day of intervention, the five attending participants were emailed the pre-intervention scales - SDSQ (see Appendix C) and the PSQI (see Appendix D). The five participants arrived with the completed and printed pre-intervention scales but signed consent forms in person. The session then proceeded with an introduction on the purpose of the study. The explanation included a 20-minute education on overall mindfulness, its effects on stress and sleep quality amongst university students, and its relation to them as future healthcare professionals. Next, participants created a personal intention statement to preface their five-week experience towards a set goal. One of the researchers then led the participants to a guided mini meditation for them to reflect on their personal intention statements; a body scan followed, which taught individuals to be present of how the body feels through bodily sensations. Mindful eating educated participants on how to control compulsive eating by strengthening the muscle of presence to increase awareness and enjoyment of food choices. Various food types and textures- raisin, chocolate m&ms, dry mango, sour gummy worms - enforced the experience as Participant 5 stated that she really tasted and appreciated the food more. Lastly, daily sleep diaries (see Appendix B, Sleep Diary) and journal reflections were introduced, which was specifically designed to assess the sleep habits and qualities of the participants throughout the five-week intervention. The researchers felt this yielded some important information on sleep qualities among university students.

**Week 2 - Stress Reduction Techniques.** Participants started the session with a guided meditation that was led by one of the researchers. Most participants laid on the ground on yoga mats except the singular male participant who preferred to stay on a chair. A researcher led all the participants outside for a *Walking with Mindfulness* exercise (see Appendix F) where participants were instructed to walk with intention the first time and to walk regularly the second time with focus on a clear mind. Next, everyone returned inside the classroom to use mats for the introductory yoga exercise with emphasis on poses that are known to provide stress relief while increasing the quality of breath. For example, child's pose is a resting posture that quiets the mind and eases stress according to Health Perch (2016). The standing forward bend relieves stress, fatigue, and mild depression. Lastly, the twisted eagle pose wards off stress by improving focus and balance. After yoga, the participants were instructed to stay on their mats and lie face up while another researcher led a progressive muscle relaxation exercise. At the conclusion of each exercise, the participants were allowed to ask any questions and express their impression of the interventions. Participant 2 felt off-balance during the first Mindfulness walk, while the second walk allowed him to focus on his surroundings. Participant 3 said it felt good to tense her body and relax as it really helped her find calmness.

**Week 3 - Sleep Quality Techniques.** A researcher led the start of the session with a short presentation on resources that aid in sleep quality. Phone apps such as Headspace and Calm were provided as options to assist in daily homework exercises. The order of the intervention schedule was changed for scheduling purposes, with the sleep-inducing guided meditation following the resources. All participants laid on the floor face up while the researcher led the meditation with music playing softly in the background. The next

activity, the Sleep Fantasy segment, involved exploring different types of meditations and sounds to help induce sleep. The researcher invited the participants to try different types of essential oils before distributing sea salt soak packets for them to take home. Lastly, a researcher created an open forum for the participants to discuss sleep habits and the status of their sleep diaries. Recommendations were made, and any feedback was noted for any changes in quality of sleep. Participant 3 said that writing in her sleep journal made her feel better, and she wakes up less during the night due to mindfulness practice.

**Week 4 - Empathy and Compassion through Mindfulness.** The beginning of the intervention started with a short presentation on active listening led by the researcher. Two active listening exercises preceded where participants listened to each other recount a favorite childhood memory, followed by the listener recounting the story to the group. The participants were instructed to journal about their experiences that were deprived of active listening and what method of active listening could have been used in that situation. Next, a researcher led the participants on self-awareness training. It involved recounting a story that had a negative impact on the participant's life and finding ways to combat that story with a positive outcome (see Appendix G). The journaling activity for self-awareness training focused on having one column of negative and intrusive thoughts from past situations and one column of positive thoughts to combat the negative. Participant 5 shared how a toxic relationship made her feel bad about herself and caused negative thoughts to surface every day. The activity gave her perspective on her inner thoughts and how they affected her. For the interest of time, the last journaling exercise was explained to the participants so they can practice it at home. The researcher instructed the participants to write and reflect about an experience where they felt gratitude. An empathy and

compassion meditation was led by the researcher at the end that involved positive loving affirmations for the participants to repeat in their head. At the close of the intervention, the participants fed each other and offered a drink to each other as instructed by the Thesis Advisor to simulate empathetic and compassionate care in the health professional world.

**Week 5 - Graduation.** On the last day of our intervention, we were expected to conduct a 90-minute mindfulness session at a beach but were unable to due to scheduling conflicts. To accommodate the change, researchers completed a mindfulness meditation within the Stanbridge campus after reviewing and discussing all interventions used in the study. The meditation focused on body scanning and relaxation. Participant 3 reported her mood was better since starting the mindfulness session. She tried the weighted blanket and stated that it calmed her down after a stressful day. Participant 8 stated she enjoyed the Mindful Walking exercise, which allowed her to slow down. Participant 5 told the researchers that her sleep had improved and the Empathy training she received stopped some persistent negative thoughts that she used to have every day. Participant 2 reported better sleep quality and rediscovered yoga through the program as the participant added mindful yoga to her daily morning routine. Participant 6 says she now practiced Mindful eating after learning about it during Week 1. She also started using essential oils to help her fall asleep after the Sleep Seminar. Lastly, in order to generate qualitative themes using thematic analysis, researchers collectively debriefed with the participants and looked into the patterns and similarities of the sleep diary and journal.

All the intervention sessions including the pre-intervention assessment and the questionnaire were performed under the direct supervision of a licensed occupational therapist and a thesis advisor. The post-intervention assessments were also performed

under the thesis advisor's supervision on the last day of intervention. Throughout the intervention process, the researchers emphasized client-centered mindfulness through active and empathetic listening of the participant's needs and interests. Utilizing client-centered mindfulness techniques helped researchers and participants build rapport that enabled trust for complete transparency of thoughts and opinions.

### **Outcome Measures**

**Self-Developed Stress Questionnaire.** Self-developed Stress Questionnaire (see Appendix C) is a self-developed "yes" and "no" based questionnaire in which the potential participants answered some simple questions about their stress; their knowledge and willingness to learn about occupational therapy-based mindfulness interventions for alleviating their stress as a university student, and if they are interested in participating in this study.

**Pittsburgh Sleep Quality Index (PSQI).** The Pittsburgh Sleep Quality Index (see Appendix D) contained nine questions that effectively assessed and measured the quality and pattern of sleep in adults (Buysse et al., 1989). The components of the PSQI questions comprised of subjective sleep quality questions that addressed subscales in sleep latency, duration, disturbance, use of sleep medication, and daytime dysfunction over the last month. Dr. Buysse from the Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine was contacted and provided permission to use the scale (see Appendix J). PSQI has adequate internal consistency and test-retest reliability. It also has adequate content and good construct validity.

**Sleep Diary.** The researchers have self-created a custom sleep diary for this study's purpose. The sleep diary was used to measure self-reported sleep and waking behaviors,



i.e., the time of going to sleep and waking up, the rate of restfulness and sleep quality (see Appendix B).

**Post-treatment Questionnaire.** The researchers created and administered the post-treatment questionnaire on all of the participants, post-intervention (see Appendix E). The questionnaire was administered to all participants to assess their experience regarding the impact of mindfulness on stress levels and sleep quality. The questionnaire administered provided subjective experiences that qualified the effectiveness of occupational therapy-based mindfulness techniques among students. The questionnaire also generated some common themes that were experienced among all the participants.

### **Data Analysis**

Descriptive statistics such as frequency (count and percentage), central tendencies (mean, median, and mode), variations (range, variance, and standard deviations), were determined between pre- and post-test results of the PSQI assessments. All statistical analysis was computed through SPSS including, positions (percentile ranks, and quartile ranks) for demographics such as gender, age, and other factors. Graphs were created to show a comparison of data between pre- and post-intervention. Inferential statistics compared the raw data collected from the pre-test and post-tests based on the results of the outcome measures, which determined the effect of mindfulness on sleep quality. SPSS and Microsoft Excel were used to calculate a paired sample t-test to see if there were significant differences between the pre- and post-intervention mean scores. The t-value was used to compare to a p-value of .05. Various themes were generated after completing the post-intervention questionnaire based on stress and sleep quality and weekly discussions with the participants. Themes were also generated by comparing the pre-intervention SDSQ

with the post-intervention questionnaire. This provided some qualitative findings to our study. Lastly, thematic analysis was determined using the sleep diary and journaling.

### **Ethical and Legal Considerations**

The integrity, reliability, and validity of the research findings relied heavily on adherence to ethical principles to assure that researchers followed the appropriate guidelines for issues such as human rights, compliance with the law, conflicts of interest, safety, and health standards.

To respect the participants' autonomy, decision-making, and dignity, a signed consent form (see Appendix K) explaining the study and the Research Subject/Participants Bill of Rights (see Appendix L) was necessary for all interested individuals enrolled in a program at Stanbridge University. Risk factors were taken into consideration when recruiting, i.e., medical complications such as epilepsy, COPD, past stress history (PTSD, abuse). Use of codes were provided for participant anonymity for data collection. Participant consent for release of photos was also obtained.

To ensure confidentiality was maintained, all treatments of information including identifiable data, extension of privacy, agreements of maintenance and who has access to the data, and any information related to Family Education Rights and Privacy Act (FERPA) protocols that the participants had disclosed with the research team were not divulged to others without permission in any way that has not been given prior consent. Formal notes were kept in a secure locked unit within the occupational therapy office at Stanbridge University; only researchers and the thesis advisor had access. During the informed consent process, participants were notified of the precautions taken to protect the confidentiality of the data and of the parties who will or may have access (e.g., research team, IRB). The

participants decided about the quality of the protections. The participants determined if they will accept the possible release of private information to the researchers and interested parties. Additionally, the participants had the right to drop out of the intervention at any moment. Copyright permission for the PSQI was obtained through contact via email.

The outcome measurements of the conducted assessments ensured participants anonymity as well. Instead of using the participant names, they were referred to by number. As stated previously, all private information was kept in a secure locked unit within the occupational therapy office at Stanbridge University, and only researchers and the thesis advisor had access.

### **Results**

Based on our study's results, there were changes in stress levels and sleep quality from the mixed results of quantitative and qualitative data. Although there were no significant changes in the overall sleep quality using PSQI, subscales within the PSQI displayed positive changes such as increased hours of sleep per night, decrease in number of minutes to fall asleep, and overall sleep quality. According to the pre-and-post PSQI scores, four participants displayed improved sleep quality, a subscale within the PSQI; one participant (participant 6) who showed no change already had a low score indicating good sleep quality. However, we were unable to receive a post-PSQI score from one participant who dropped out on week 3 (participant 4). Moreover, the self-developed stress questionnaire (SDSQ) and the post-intervention questionnaire also signified decreased stress levels using the mindfulness techniques taught in our intervention. While analyzing the SDSQ, all participants chose the option strongly agree when asked if occupational therapy-based mindfulness decreased their stress levels.

## Demographics

As assumed before the intervention, our participants were predominantly female (see Figure 2). Initially, seven students expressed interest via email and submitted available times and dates for intervention. However, two dropped out upon the first mindfulness session (participant 1 and 7), a new female participant joined on week two (participant 8), and one female dropped out on the third week (participant 4). Thus, there was a total sum of 6 participants (five females and one male) at the beginning and 5 participants (four females and one male (participant 2) at the end of the study. All of the participants were in their mid to late twenties except for participant 4, who was in her forties (see Figure 3). Furthermore, education levels slightly varied. Four female participants were current graduate students, and two participants were enrolled in an associate degree program - one male (participant 2) and the one female who dropped out (participant 4) (see Figure 4).

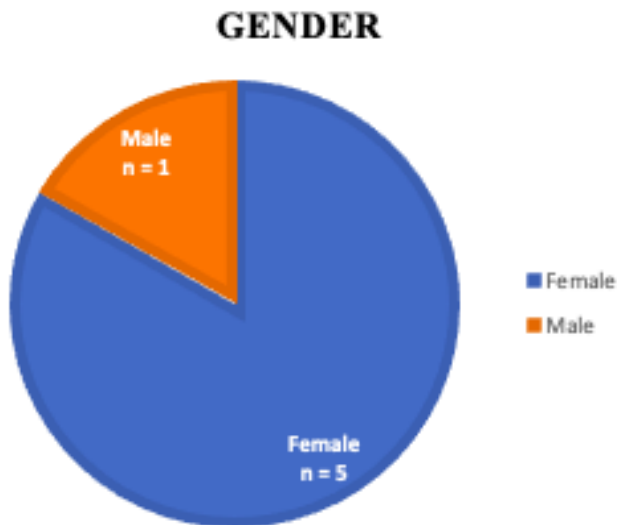


Figure 2. Gender of Participants

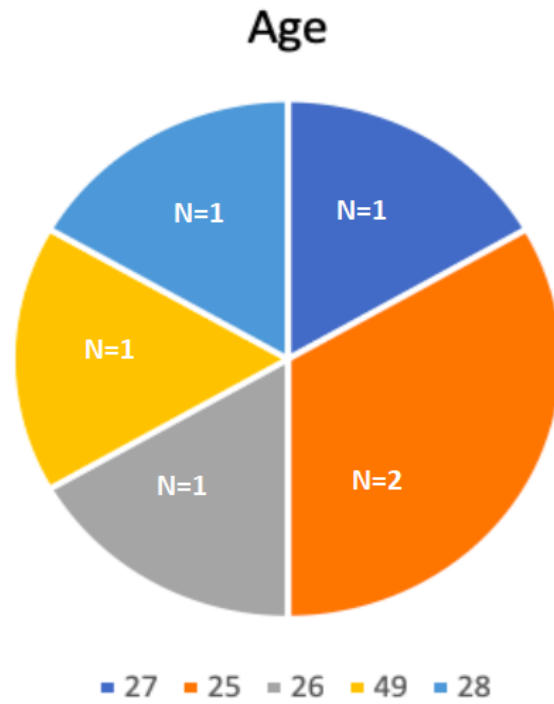


Figure 3. Age of Participants

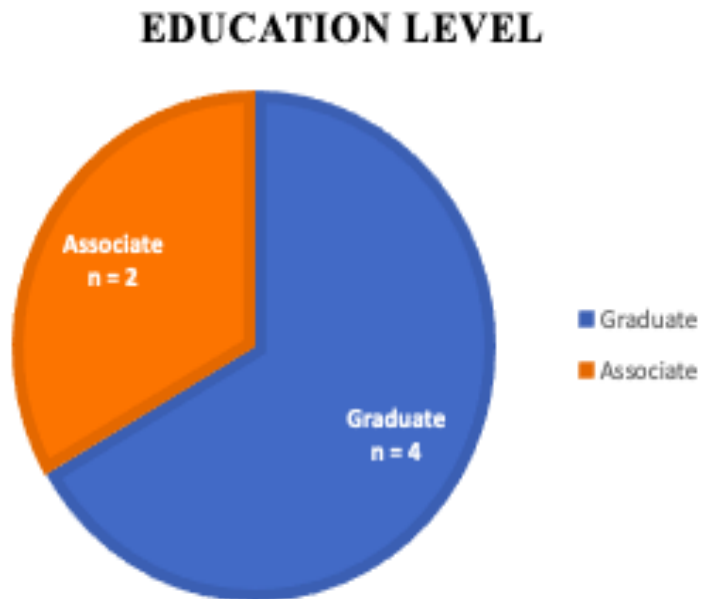


Figure 4. Education Level of Participants

### Quantitative Findings

Based on the PSQI scoring, participants who took medication to improve sleep did not change. However, the standardized PSQI scoring specifies that a lower score signifies better sleep quality. As indicated by the total PSQI scores, the mean of 6.5 for both pre-and-post intervention displayed improved sleep quality after five weeks. Additionally, the average pre-intervention PSQI score of 8.5 decreased to the post-intervention score of 4.6 (see Figure 5), which further demonstrated the positive effect of mindfulness for improving sleep quality. Uniquely, participant 4 displayed constancy within pre-and-post-test results due to her familiarity and practice with mindfulness, per participant report.

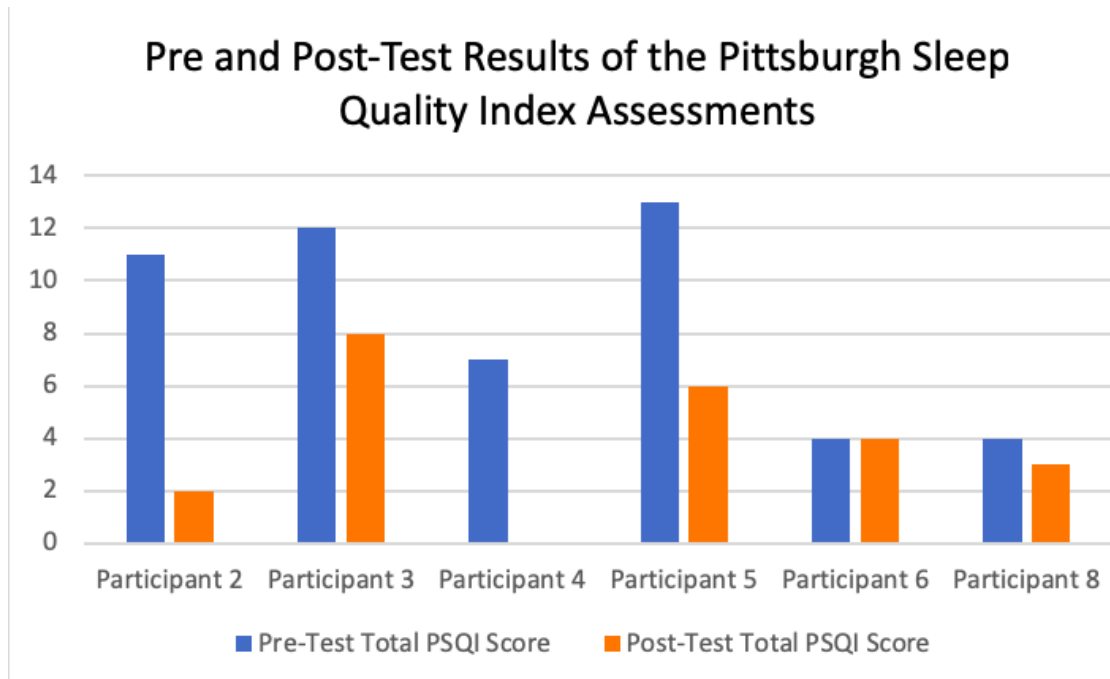


Figure 5. Pre and Post-Test Results of the Pittsburgh Sleep Quality Index Assessments

The PSQI showed results of a pre-intervention mean score of 8.5, a median of 9, a mode of 4, and a range of 9. The post-intervention showed a mean score of 4.6, a median of 4, there was no mode, and a range of 6 (see Table 1). A low PSQI score indicates

better sleep quality. These findings revealed that occupational therapy-based mindfulness improved the participant's overall sleep quality.

Table 1

*Mean, median, mode of PSQI*

	<u>Pre-intervention Score</u>	<u>Post-Intervention Score</u>
Mean	8.5	4.6
Median	9	4
Mode	4	N/A
Range	9	6

Results from the post-intervention questionnaires (see Table 2) showed participants' mean scores ranging from 4.3-4.9, median scores ranging from 4.3-5, and mode scores of 5. These findings indicated that all participants perceived occupational therapy-based mindfulness as a positive impact on their stress levels and sleep quality.

Table 2

*Post-Intervention Questionnaire*

<u>Post-questions</u>	<u>Participant 2</u>	<u>Participant 3</u>	<u>Participant 4</u>	<u>Participant 5</u>	<u>Participant 6</u>	<u>Participant 8</u>
Question 1	5	5	N/A	5	5	5
Question 2	5	4	N/A	4	4	5
Question 3	5	4	N/A	5	4	5

Question 4	5	5	N/A	4	3	4
Question 5	4	4	N/A	4	3	4
Question 6	5	5	N/A	5	5	5
Question 7	5	4	N/A	4	4	4
Question 8	5	3	N/A	5	5	5
Question 9	5	5	N/A	5	5	5
Question 10	5	5	N/A	5	5	5

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Results

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Mean	4.9	4.4	N/A	4.6	4.3	4.7
Median	5	4.4	N/A	5	5	5
Mode	5	5	N/A	5	5	5

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Table 3 reflected the quantitative information of participants who took medication occasionally to assist with sleep quality. Sleep quality significantly increased from pre-intervention to post-intervention, and sleep disturbance significantly decreased from pre-intervention to post-intervention.

According to the paired samples t-test, the overall score for the PSQI of both pre- and post-test showed an improvement in sleep quality but was not statistically significant. However, the subcategories of the PSQI did show an improvement. The subcategories of sleep disturbance and dysfunction were statistically significant. Sample sizes may be a little too small for advanced statistical techniques.



Table 3

*Paired Sample t-Test*

		<u>Paired Differences</u>		
		<u>Mean</u>	<u>Std. Deviation</u>	<u>Std. Error Mean</u>
Sleep Quality	PSQISLPQUAL – PSQISLPQUAL2	1.0000 0	.70711	.31623
Medication	PSQIMEDS – PSQIMEDS2	.00000	1.00000	.57735
Sleep Disturbance	PSQIDISTB_1 – PSQIDISTB_1_2	1.2000 0	.44721	.20000

**Qualitative Findings**

The researchers generated four common themes based on the subjective data received from sleep diaries and verbal discussions - 1) improved sleep quality, 2) stress reduction, 3) most effective intervention - empathy and compassion, and 4) self-awareness in personal relationships - the subjective data received from sleep diaries and verbal discussions. Based on the Post-intervention Questionnaires, the participants found a similar positive outcome for each theme from occupational therapy-based mindfulness. All participants strongly agreed that occupational therapy-based mindfulness techniques helped them in decreasing their stress levels and increasing their sleep quality.

In analyzing sleep quality, one participant mentioned they experienced increased quality of sleep after five weeks of occupational therapy-based mindfulness with a duration of sleep and restfulness after they woke. Another participant said they began using essential oils, which has significantly improved his or her sleep quality. The findings determined that 23 percent of participants believed mindfulness was most beneficial in improving sleep

quality (see Figure 6). All participants experienced increased quality of sleep through occupational therapy-based mindfulness and positive impact with their academic activities.

For stress reduction, two participants claimed their mood has improved and experienced decreased stress levels after participating in yoga and meditation. They plan to implement these activities in their daily life. Another participant began using a weighted blanket for stress reduction. They claim the weighted blanket assisted them with reducing stress after a stressful day at school. Findings indicated that 27 percent of participants believe mindfulness was most beneficial in stress reduction (see Figure 6).

Empathy made a significant impact on all participants by allowing them to share their thoughts and help them positively express negative thoughts. Findings determined that 25 percent of participants believe that empathy intervention was the most effective (see Figure 6). A participant said she enjoyed sharing her thoughts and had a better understanding of the difficulties of being vulnerable after hearing other participants speaking. Another participant said they would blame others for her mistakes in the past, but after the mindfulness intervention, they started to be more mindful about how they are treating others and how they could change their situation.

Lastly, findings indicated that 25 percent of participants believe mindfulness was most beneficial in improving self-awareness in personal relationships (see Figure 6). Participants found improvement with self-awareness by sharing their thoughts during the five weeks on intervention. One participant said they did not dwell on negative thoughts influenced by their past relationship anymore and have become more supportive of herself. In addition, the same participant mentioned they have begun enjoying the sun again and feels happier.

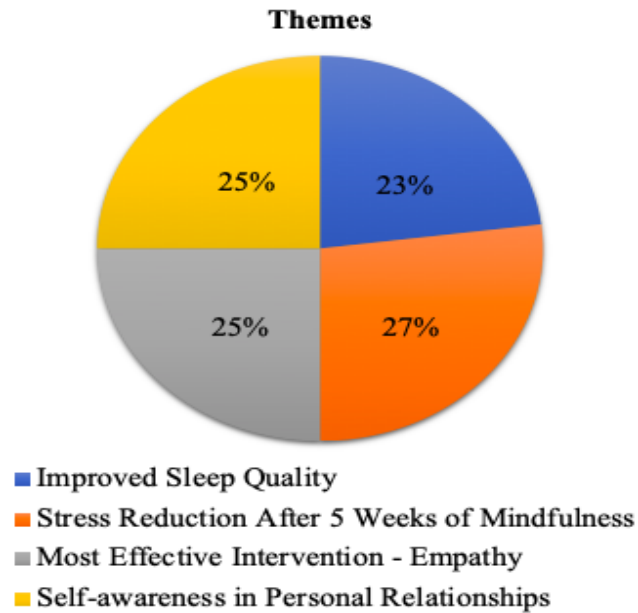


Figure 6. Post Intervention Questionnaire Themes.

### Discussion

Extraordinary expectations and requirements to succeed in high-level education can make it difficult for people to perform in everyday life at the best of their abilities. It is common for students to experience high levels of stress and decreased sleep quality. These factors can affect an individual's occupational performance, social relationships, and overall well-being (Stew, 2011). Utilizing mindfulness exercises has been shown to be an optimal exercise to improve stress and sleep (Wong, Ree, & Lee, 2016).

Occupational therapists have used a Cognitive Behavioral FOR to help clients develop self-management skills, manage anxiety, and control emotions (Cole & Tufano, 2008). Cognitive behavioral therapy looks at why the client behaves in various ways, as well as the internal thought process that can affect a client's occupational performance and well-being (Cole & Tufano, 2008). A client's state of mind can affect their emotional and behavioral regulations. Occupational therapists have used relaxation training, visualization, self-instruction, and other methods that are based on CBT to help work on a

client's mindset (Cole & Tufano, 2008). Mindfulness exercises also have a similar goal of creating awareness of inner thought patterns. Practicing mindfulness has been shown to improve sleep quality and decrease stress levels (Wong, Ree, & Lee, 2016). Therefore, utilizing CBT with OT client-centered concepts to create a mindfulness intervention can benefit individuals who are unable to manage stress and sleep factors.

The purpose of our study was to determine the effects of a client-centered occupational therapy-based mindfulness intervention on stress and sleep quality within university students. It is important to improve a student's occupation of rest and sleep to help improve or prevent the decline of health and their ability to engage in other meaningful occupations (AOTA, 2014). Based on the quantitative and qualitative findings of our study, mindfulness was found to be an effective intervention to reduce stress and improve sleep quality. Participants were also able to apply the mindfulness exercise to aspects of their daily life. Occupations such as social participation and education were positively impacted. The findings indicated that mindfulness can be generalized to many settings and situations. Although all participants experienced positive effects from the study, they were diverse in their opinion of which mindfulness exercises were most effective and how it helped with stress and sleep. Indication of specific mindfulness exercises may be more beneficial to participants if they are able to practice their preferred choice of mindfulness. Also, sensory tools such as essential oils and weighted blanket assisted in improving stress and sleep quality. The use of calming scents assisted in creating a relaxed setting allowing participants to feel more comfortable and release unnecessary physical and mental tension. Having a supportive and safe environment to share and express their thoughts and feelings seemed to improve the participants' sense of well-being.

### **Limitations**

Although our study recruited participants from Stanbridge University from various fields of study (e.g. OT, OTA, PTA, RN, VT, and VN), the following limitations ensued: (1) the population of students was dominantly female, (2) the criteria for recruitment requires a specific range on the PSQI, which might have resulted in selection bias, (3) sample size was too small to reflect significant results, (4) participants availability was slightly difficult to manage due to school, work, or personal life which caused scheduling conflicts for on-site mindfulness interventions, (5) participants dropped-out due to various reasons (i.e., scheduling conflicts). There was also a possibility for participants' compliance and adherence to at-home mindfulness practice to cause discrepancies in data, resulting in skewed representation of intervention effects. The study was not blinded due to the small sample size and familiarity between participants and researchers on campus. The possibilities of discrepancies were not confirmed, it was assumed by researchers that all participants completed the at-home mindfulness exercises.

### **Implications and Conclusion**

We created a 5-week occupational therapy-based mindfulness program to reduce stress and improve sleep quality among university students. The study's intended outcome was to show a positive effect of mindfulness in reducing stress and increasing sleep quality. Our study incorporated a client-centered and CBT concept to assist in improving participant pre- and post-test results on the PSQI and self-made stress questionnaire (SDSQ). The sleep diary and journal helped determine any changes within the participants' thought process, internal and external habits, sleep quality, and stress levels that may have resulted from the study's intervention. A qualitative post-intervention questionnaire (see Appendix E) was given to assist in analyzing participants subjective responses to the

intervention. The generated themes determined that participants believed that mindfulness assisted in stress reduction, improving sleep quality, and self-awareness in personal relationships. Participants also believed that empathy-based mindfulness exercises were the most effective intervention. The findings indicated that occupational-based mindfulness had a positive impact on stress and sleep quality.

For future replication of our study, researchers can utilize a 5-week intervention schedule to ensure that participants are able to experience the effects of occupational-based mindfulness exercises. It may be beneficial for researchers to increase the duration of intervention, such as a 6-week or 10-week schedule. By doing so, participants may have different results. Occupational therapists who are interested in utilizing mindfulness will be able to compare and determine what may be the most effective intervention schedule based on the results. It is recommended to have a larger sample size, as well as a more diverse population to assist in better understanding the effects of the study. Separating participants into various experimental and controlled groups that focus on specific occupational-based mindfulness intervention should be considered. Creating specific groups may assist in determining which mindfulness exercise is most effective in reducing stress and improving sleep quality. Resources such as body scans, visualization, walking meditation, and setting personal intention statements can be used to integrate mindfulness techniques. Setting personal intention statements at the beginning of the intervention gave the participants an achievable goal to further their progress. The meditations can be formal or informal. Researchers can use the PSQI, the self-developed stress questionnaire, and post-intervention questionnaire to measure if occupational-based mindfulness reduces stress and improve sleep quality. It is also recommended for future researchers to use the

Perceived Stress Scale (Cohen, 1994) to better assess the effects of occupational therapy-based mindfulness techniques on participants' stress levels.

In conjunction with the centennial vision (AOTA, 2017), mindfulness in the occupational therapy profession can promote healthier behavioral habits by strengthening the power of being present in everyday moments and activities. Through mindfulness, health practitioners are more able to socially connect with individuals from diverse backgrounds in a calm and clear manner. There are many people who need help with controlling their stress and sleep levels. Occupational therapists are one of the few medical professionals who can truly focus and assist clients in improving their stress and sleep. Rest and sleep are considered an occupation; and stress can impact a person's functional and occupational well-being. Based on the results of our study, occupational therapists are able to discover and explore the use of occupational-based mindfulness to reduce stress and improve sleep quality within their clients or themselves. Overall, stress and sleep factors can greatly affect occupational well-being; occupational therapy-based mindfulness is a method that may help. It is important to conduct further research within this area of concern to truly understand and determine the effects of mindfulness on stress and sleep quality.

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### Intervention Schedule

#### Intervention Schedule for Occupational Therapy Based Mindfulness Training

<b>Pre-Intervention Preparation</b>	<b>Time Allotted</b>	<b>Description</b>
Pre-Intervention Scales	~15 Minutes	Performing Self-Developed Stress Questionnaire and Measurement of Pittsburgh Sleep Quality Index on all the selected participants
Mindfulness Preferences, Concerns, and Questions	~15 Minutes	Interviews with participants to see mindfulness preferences and check the schedule to ensure 5-week participation.
<b>Week 1 - Introduction/ Education</b>	<b>Time Allotted</b>	<b>Description</b>
PowerPoint	~ 20 Minutes	Introduction to mindfulness and the study's learning objectives
Create a Personal Intention Statement (Personal Mission Statement)	~ 15 Minutes	Personal Intention Statements relating to decreasing stress levels and improving sleep quality (Altman, 2014)
Body Scan/ Meditation	~ 15 Minutes	Scanning different bodily sensations using mindfulness
Mini Meditation	~ 1-5 Minutes	Guided Meditation lead by Researcher
Introduction to Mindful Eating	~ 20 Minutes	Healthy snacks will be provided for mindfulness eating exercise, focusing on texture, smell, and taste of food (Bays, 2009).
Introduction to Mindful Journaling Introduction to Sleep Diary Journaling	~ 15 Minutes	Organizing and discussing what goes into the journal and what the daily homework will be (Ward, 2017).
<b>Week 2 - Stress Relief</b>	<b>Time Allotted</b>	<b>Description</b>

Stress Relief Visualization Exercise	~ 15 Minutes	Researchers' led visualization exercises with a goal-directed focus on setting an intention, imagining images, and reciting mantras.
Walking Meditation	~ 20 Minutes	It will include participants' walking in their present environments with full body awareness and use of mindfulness.
Basic Yoga Poses/ Muscle relaxation	~ 40 Minutes	Static and Dynamic basic yoga poses for releasing stress (Hollister, 2017)
Stress-relief Breathing Techniques/ Stress Coping Strategies	~ 15 Minutes	Deep breathing exercises that include visualizing the tensed body parts, carrying your breath to that part and then loosening and relaxing it to relieve stress (Altman, 2014)
<b>Week 3 - Sleep Seminar</b>	<b>Time Allotted</b>	<b>Description</b>
Education about electronic and low-cost resources	~ 15 minutes	Teaching access to different apps and websites that provide information on sleep preparation and where to acquire materials needed, such as candles, aromatherapy oils, or Epsom Salt for baths.
Creating "The Perfect Sleep Fantasy"/ Sleep regulation	~ 20 Minutes	Helping participants creatively describe the most fantastical sleep space. Finding ways to make the present sleep situation have elements of the "Fantasy." (i.e., Sleeping in a mansion by a waterfall = listening to waterfall sounds on headphones while looking at pictures of grandiose mansions). Participants will listen to different sounds and watch videos to help them decide which audiovisuals individually helps them relax.
Sleep Inducing Breathing Techniques	~ 15 Minutes	Deep Breathing Practice lead by the researcher (Altman, 2014).
Sleep Diary	~ 20 Minutes	Discussing more on Sleep Diary to organize and analyze the quality and quantity of sleep, the participants are experiencing.

Sleep Prep Check	~ 20 Minutes	Discussing and exploring sleep preparation activities, matching what the participant does before sleep and whether it is effective in promoting sleep. Making goals to improve sleep preparation to enhance sleep quality and rest.
<b>Week 4- Developing Empathy/ Compassion for the Alleviation of Stress</b>	<b>Time Allotted</b>	<b>Description</b>
Active Listening Training	~ 25 Minutes	Active Listening training will include practicing listening to another person's talk and absorbing their message and repeating word for word what their partner says. (Altman, 2014)
Self-Awareness Training	~ 20 Minutes	These self-awareness techniques will focus on catching negative thoughts or ruminating on history and diverting it to positive thoughts or good memories (Altman, 2014).
Empathy and Compassion Training	~ 25 Minutes	Participants will be reflecting on their actions and the actions of others during Empathy and Compassion training (Altman, 2014).
Empathy Visualization Training	~ 20 Minutes	Visualization exercises which will include setting an intention and imagining images or repeating mantras to focus on a goal of empathy and compassion. Lead by the researcher.
<b>Week 5- Graduation Week</b>	<b>Time Allotted</b>	<b>Description</b>
Recap and Review	~ 30 Minutes	Reviewing Mindfulness techniques through each theme from week 1 to 4.
Mindfulness in Nature	~ 30 Minutes	Ocean Breathing at the Beach (based on availability), Practicing Mindfulness outside. *due to scheduling conflicts mindfulness meditation, focusing on body scanning and relaxation, was conducted within the Stanbridge campus.

Feedback Session	~ 30 Minutes	Feedback and final debriefing. Any comments, suggestions, and experiences will be shared individually or collectively.
<b>Post-Intervention</b>	<b>Time Allotted</b>	<b>Description</b>
Post- Intervention Scales	~ 20 Minutes	Measurement of the Pittsburgh Sleep Quality Index, post-intervention.
Post- Treatment Questionnaire	~ 10-15 Minutes	Researchers' created a formal questionnaire asking questions on participants' overall experiences, changes in their stress and sleep qualities levels, etc.

Altman, D. (2014). *The Mindfulness Toolbox*. Eau Claire, WI: PESI Publishing & Media

Appendix B

**Sleep Diary**



Sleep Diary Week 1 (new page for each week)

	Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	What time did you go to bed last night?							
2	How long did it take you to fall asleep? (rough estimate)							
3	How many times did you wake up in the middle of your sleep?							
4	What time did you wake up in the morning?							
5	What time did you get out of bed?							
6	On a scale of 1-5, how rested do you feel after getting up in the morning? (1 being poorly rested, 5 being very rested)							
7	On a scale of 1-5, how would you rate your <b>quality</b> of sleep? (1 being poor quality, 5 being high quality)							
8	Additional Comments/Reflection							

## Appendix C

**Self-Developed Stress Questionnaire**

Participant # \_\_\_\_\_ Age \_\_\_\_\_ Sex \_\_\_\_\_

Please answer the following questions as Yes or No

- |  |   |   |
|--|---|---|
| 1. I have some level of stress which I would like to work on.  | Y | N |
| 2. In general, attending college can be stressful.   | Y | N |
| 3. I think, as a college student, I would benefit from stress management techniques.                       | Y | N |
| 4. I want to learn some ways to manage my stress.  | Y | N |
| 5. I have not used mindfulness as a stress relieving method before.  | Y | N |
| 6. I would like to learn and apply occupational therapy-based mindfulness techniques to work on my stress. | Y | N |
| 7. I would like to be a part of this study to help me with my stress.                                      | Y | N |

Appendix D

**Pittsburgh Sleep Quality Index (PSQI)**

Subject's Initials \_\_\_\_\_ ID# \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ AM  
 PM

**PITTSBURGH SLEEP QUALITY INDEX**

**INSTRUCTIONS:**

The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions.

1. During the past month, what time have you usually gone to bed at night?  
 BED TIME \_\_\_\_\_
2. During the past month, how long (in minutes) has it usually taken you to fall asleep each night?  
 NUMBER OF MINUTES \_\_\_\_\_
3. During the past month, what time have you usually gotten up in the morning?  
 GETTING UP TIME \_\_\_\_\_
4. During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)  
 HOURS OF SLEEP PER NIGHT \_\_\_\_\_

*For each of the remaining questions, check the one best response. Please answer all questions.*

5. During the past month, how often have you had trouble sleeping because you . . .
  - a) Cannot get to sleep within 30 minutes
 

Not during the past month _____	Less than once a week _____	Once or twice a week _____	Three or more times a week _____
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  - b) Wake up in the middle of the night or early morning
 

Not during the past month _____	Less than once a week _____	Once or twice a week _____	Three or more times a week _____
------------------------------------	--------------------------------	-------------------------------	-------------------------------------
  - c) Have to get up to use the bathroom
 

Not during the past month _____	Less than once a week _____	Once or twice a week _____	Three or more times a week _____
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- d) Cannot breathe comfortably  
 Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_
- e) Cough or snore loudly  
 Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_
- f) Feel too cold  
 Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_
- g) Feel too hot  
 Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_
- h) Had bad dreams  
 Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_
- i) Have pain  
 Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_
- j) Other reason(s), please describe \_\_\_\_\_  
 \_\_\_\_\_

How often during the past month have you had trouble sleeping because of this?

- Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

6. During the past month, how would you rate your sleep quality overall?

- Very good \_\_\_\_\_
- Fairly good \_\_\_\_\_
- Fairly bad \_\_\_\_\_
- Very bad \_\_\_\_\_

7. During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

8. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

9. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

No problem at all \_\_\_\_\_

Only a very slight problem \_\_\_\_\_

Somewhat of a problem \_\_\_\_\_

A very big problem \_\_\_\_\_

10. Do you have a bed partner or room mate?

No bed partner or room mate \_\_\_\_\_

Partner/room mate in other room \_\_\_\_\_

Partner in same room, but not same bed \_\_\_\_\_

Partner in same bed \_\_\_\_\_

If you have a room mate or bed partner, ask him/her how often in the past month you have had . . .

a) Loud snoring

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

b) Long pauses between breaths while asleep

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

c) Legs twitching or jerking while you sleep

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

d) Episodes of disorientation or confusion during sleep

Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
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e) Other restlessness while you sleep; please describe\_\_\_\_\_

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Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
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## Appendix E

**Post-Intervention Questionnaire**

1. Occupational therapy-based mindfulness has decreased my stress levels and increased sleep quality.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
2. Practicing mindfulness has helped with improving my academic performance.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
3. Practicing informal and/or formal mindfulness helped with my overall mood, i.e. increased positivity and overall happiness.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
4. I noticed that I could fall asleep faster than before.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
5. I noticed that I retain focus longer and more effectively when doing academic work.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
6. I will continue practicing mindfulness to combat my stress.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
7. I feel more well rested when I wake up in the morning.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
8. I was able to use mindfulness when encountering a difficult stressful situation.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
9. I would recommend mindfulness techniques to my family and friends.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**
10. Occupational therapy-based mindfulness should be included in our curriculum.  
**Strongly Disagree   Disagree   Neutral   Agree   Strongly agree**

## Appendix F

## Walking Meditation

**HANDOUT: GROUND-SURFING (MINDFUL WALKING)**

**Instructions:** Use this portable method of getting present when you are in transition and feeling anxious as you walk from one place to another. Consider using this practice when walking from the car to your office, walking from the car to entering your home, or even when walking into that staff meeting.

To begin with, 1) find a place that is quiet, where you can take up to fifteen steps in any direction, and 2) practice next to a wall just in case you lose your balance since you will be moving more slowly than normal.

You can do this practice in two ways. Try each of the methods below for three minutes and see which one works best for you:

**Ground-Surfing with Intention:**

*As you prepare to walk, set an intention for each step and movement you take. This can be a mental intention, said silently. For example, you can set the intention to “take a step with my right foot,” after which you will follow up by taking that step. As you take the step you will observe and notice very closely how it feels as your foot lifts up, moves forward, touches down, and even how it feels as you shift the weight from one side of the body to the other. In other words, this is really a simple three-step process of 1) setting an intention, 2) following up with an action, and 3) noticing and observing the movement in detail. It’s that easy!*

*Usually, you can set an intention for each step, and also set an intention for every time that you turn the body in a new direction. That mental intention can be stated just as “turning, turning.”*

*Spend three minutes walking down a hallway or corridor in your home or office, then turning and walking back. Setting an intention will naturally slow you down. It will also tend to keep your mind from thinking other thoughts. If, however, your mind has thoughts or gets distracted, simply return to stating your intention for each step and return to the walking. Try this in the morning as a way to walk to the bathroom, or during other times of the day.*

*Note that you can use intention while walking at normal speed as well! In this case, simply state the word “walking, walking” as you move, placing full awareness on the legs, the feet, the arms, and the entire body as it moves.*

**Ground-Surfing with Full Presence:**

*For this practice, you don’t need to think of anything or set any mental intention. Instead, you will imagine placing your full awareness in the body itself. It is as if your consciousness moves into your legs and feet, and you can notice each little movement and be fully engaged with it—just as if you were a surfer riding a wave in Hawaii! Only this time you’re surfing the ground, noticing every little change in how your feet contact the carpet, wood, or grass that you walk on. See how each surface affects how you surf it.*

*Let your body and movement become fluid and enjoy the ride as you immerse yourself in this dance of movement. Have you ever seen someone practice tai chi, yoga, or dance? Let walking slowly (or even at normal speed) embody the same graceful movement as these practices: By moving in this way you take the body off auto-pilot and flow with each movement and moment. Enjoy the ride!*

Altman, D. (2014). *The Mindfulness Toolbox*. Eau Claire, WI: PESI Publishing & Media



Appendix G

Changing Your History

**HANDOUT: CHANGE YOUR (HISTORY) CHANNEL**

**Instructions:**

Our personal stories play a significant role in our lives, but if an old (and perhaps painful) story has been playing in your head for a long time, then it might be time to find a different story to focus on—or at the very least, take a break from the old story so you can get a breather! While the old story is there for a reason (and you can always choose to return to it at anytime), it's essential to know that you also have the *choice* to revise the old story, or find other valid stories that help you recognize your strengths and feel more in charge of your life.

The purpose of this handout is to help you become aware of your stories and think about using them in a new way. The following questions will guide you through the process of exploring and considering new ways of dealing with an old, repeating story. Remember, too, that this is just one approach for dealing with the old story. There are many methods for reappraising and releasing the pain of trauma or abuse.

What follows are six different practices for investigating your stories in new ways. As you use each practice, think of it as putting the TV remote in your hand. Each method gives you a way to click the remote and switch from the old story (or history channel) to a new one whenever you want to. Happy story-creating and story-telling!

**Practice 1: Count the Old Story and Refocus Away from It**

Have you ever thought of counting the number of times that the old, unhappy story comes up during the course of a day?

a) **For the next seven days, keep track of your old stories (on a sheet of paper, mobile device, etc). Each time the story appears to you, mark this down.**

Also, just because a thought or story pops up in your head doesn't mean that you need to respond to it. Like a broken record, you can lift the needle off the record player and put on a new tune!

b) **After you count the story, change the channel to a different, more supportive story by using one or more of the following practices.**

Don't worry how many times the old story comes up. Just work on changing the channel when it does.

**Practice 2: Find Supportive Stories of Safety and Calm**

Spend some time to think about a story from your past where you felt safe, secure, and calm. Maybe you were with someone who made you feel safe—even if it was a grade school teacher, grandparent, or friend. Write the story down below. Remember it in as much detail as possible. Even if it represents a small event, allow yourself to savor, enjoy, and re-experience it. Be sure to include the sights, sounds, smells, and sensations of that safe and calm memory.

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## Appendix H

## Surf the Body (Body Scan)

**HANDOUT: SURF THE BODY (THE BODY SCAN)**

Find a quiet place where you can sit or lie down for several minutes as you follow along with the steps outlined below. **Please Note**—If you suffer from trauma or experience severe discomfort that you feel you can't tolerate while surfing the body, you can always open your eyes and stop. You are always in control whenever you do this practice.

**Instructions:**

**Here are some orienting thoughts before starting.** You will be placing your attention on your body. The purpose of this activity is not to relax, but to increase your awareness and notice any body sensations that may be present from moment to moment. If you feel discomfort at any time, you can remind yourself that this is simply a sensation. The sensation does not define who you are. You are simply observing signals, and you may notice that the awareness of sensation of pain is not the sensation or pain itself, but just awareness. This may lead to greater understanding about discomfort or pain.

**If at any time any sensation feels overwhelming, you can open your eyes and stop, or move to another body part where there is no pain or negative feeling.** Know, however, that by resting with the discomfort, you are allowing yourself to bear witness to the feeling and sensation that exists, and experiencing the fullness of what is occurring. If you have pain in a certain area of the body—such as your neck or shoulders—you may find that focusing on that area increases the sensation. Again, you can always move focus to another part of the body and return to the painful area later.

**Remember that this practice may or may not produce relaxation.** It will be different each time you practice it. You are encouraged to let go of expectations as part of this practice. This is a very proactive process by which you are actually scanning the motor and sensory cortex of your brain. It's kind of like massaging the brain and body from the inside out.

- 1) **To begin, center your mind on your body's presence.** Take three deep breaths and feel your diaphragm move. Feel how marvelous it is that each breath fills your lungs, sends oxygen to your muscles and organs, and sustains you. You may want to wiggle your toes and feel how effortlessly they follow your command. Take a few moments to feel grateful for this body, this extraordinary gift that you possess.
- 2) **You are going to use your imagination with the practice.** Let's imagine, for example, that your breath could carry your awareness into any part of the body. Let's try now, by taking that first breath. Picture the breath going down the left side of the body and bringing your awareness with it. Bring the breath down the left leg and into the left foot and all way out to your toes. Let your full awareness settle into the toes. Just notice whatever sensations are rising and falling. If there's no sensation, that's okay too. You don't need to create one. As you do this, you can spend a moment to acknowledge how your toes have been masterfully constructed to help you walk and carry your weight. Picture your toes from the inside, filled with muscles, tendons, and bones, all working in concert. Feel a sense of gratitude and thankfulness to them. As you breathe, you may even visualize them filling up with the breath, bringing even more awareness to this part of the body. Do this now for a few moments. When you are ready to move on to the next part of the foot, exhale to release your attention on the toes.  
*Optionally, if you want, you may take a moment to send gratitude and appreciation to each part of the body as you go through this exercise.*
- 3) **Take time to now breathe into the soles of your feet, to the balls of the feet and the heel.** Bring full awareness to this part of the feet. Feel any sensations in the soles. Sense the tendons and tissue that are below

the skin. Notice any feelings or signals from inside this part of the body. Again, you can optionally give thanks to the soles of your feet for supporting your body and for allowing you to feel sensations as you walk and move and stay active. Or, you can just continue to sense each part of the body. Again, exhale to release awareness on this part of the body.

- 4) **Now, with your next breath, you will carry awareness down to the ankles, taking time to fully experience any sensations that are present.** You can imagine the inside of this part of your body, how it is both flexible and strong enough to help you pivot and change directions. Allow yourself to let go of any sensation so as to contact the next sensation as it appears. In this way you can contact new sensations as they appear in this moment, and the next, and the next. If your mind wanders off at any time, that's okay. Just notice where your mind has gone—you can label it as "mind wandering" or "thinking," and then bring your attention back to the moment-by-moment focus of the ankles. You can label wherever the mind goes—if it has a picture in the mind's eye, just label that as "seeing." If a sound hijacks your mind, just label that as "hearing," then return to the sensing of the body.
- 5) **Continue to move up the left side of the body.** Take a breath and picture that breath bringing awareness to each part as you sense the shin/calf, knee, hand, lower arm, upper arm, shoulders, back, spine, neck, and then the head (face, skull, and scalp). After reaching the top of the body, you can complete the body scan by moving down the right side of the body until you reach the toes of the right foot.
- 6) **The extremities can be surfed or, optionally, you can also scan internal body parts, including the heart, intestines, stomach, genitals, kidneys, liver, spine, and brain, as well as other sense organs that assist in your well-being.**  
 Feel your connection to each of these parts that help to make a joyful and fulfilling life possible.
- 7) **When you have completed this practice by addressing all your body, let yourself rest for a few moments in the presence of it.** Give thanks and ask for your body to guide you in doing what is best for it. Let your body know that you will pay attention to the signals it sends you, and that you will follow up any warning signals by getting check-ups and taking care of it through learning about health and preventive measures. By now, you may really be smiling and ready to face the day (or night, as the case may be). This is a wonderful ancient practice that will help you find the strength to do what is right for your body—and the rest of you.

**In Conclusion:**

During the day, be more aware of your body; it really will let you know when it is happy and when it is not. I know several people, for example, who have told me that they feel less energetic when they drink too much caffeine. It is easy to make corrections if you take the time to become good friends with your body.

**Reflections:** How can you make the body scan part of a daily practice? When do you think would be a good time to use this?

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## Appendix I

## Creating a Personal Intention

**HANDOUT: CREATING A PERSONAL INTENTION STATEMENT**

**Instructions:** Use this 3-step handout to write down a short statement related to an area in your life that you would like to improve or enhance. Have you ever done this before? If not, welcome to the club. Very few people consciously think about what values matter most to them and how this could change their lives. The nice thing about setting an intention (or personal mission statement) is that it is uniquely yours.

Below are several different life areas (with examples) of statements. A mission statement need only be a single paragraph (about 3-4 sentences long). As you begin, here are some guidelines:

- 1) Your mission statement does not have to be perfect! In fact, part of this assignment is that you go back over and over to rewrite and rework it. Personal statements take time to craft, so be patient with yourself and know that you will, more than likely, change it in the future.
- 2) Your mission statement *will not include specific goals*. This is a broader statement that relates to the values you want to bring to any area of your life. The goals come later.
- 3) Think about sharing your statement with those who you trust. Find out if others have statements like these. Or, you can examine the intentionality of someone you admire—this could be a historical figure, a friend, or a family member.

**Step 1.** Choose from one of the following LIFE AREAS for your Personal Intention Statement:

- Physical Health
- Emotional Health

**Example:** *My intention is to find balance each day so as to nurture my mental health. I will make time to notice and value the little things that are already at my side. Also, I will open myself to positive resources and others as a way of finding hope and resilience.*

- Parenting
- Marriage/Relationship

**Example:** *My intention is to create loving relationships that manifest the values of respect, cooperation, kindness, generosity, harmony, and ease. I commit myself to bringing patience, honesty, and transparency into the relationship.*

- Friendship
- Financial
- Daily Joy
- Career

**Example:** *My intention is to bring an attitude of deep appreciation and gratitude to my work. I will strive to have my work serve others in a helpful and supportive way.*

**Step 2.** Use the *values list* below to identify the values that matter to you. **Circle** those *value* words that matter to you and which feel right to include in your statement:

- trust
- patience
- respect
- forbearance
- generosity
- hospitality
- transparency
- attentive
- supportive
- acceptance
- self-acceptance
- curiosity
- empathy
- relational
- humility
- compromising
- friendliness
- loyalty
- appreciation
- gratitude
- patience
- peace
- kindness
- harmony
- hopefulness
- service
- nurturing
- altruism
- sensitivity
- prayerfulness
- faithfulness
- expressive
- grateful
- sharing
- willingness
- persistence
- openness
- caring
- compassion
- honesty
- humor
- cooperation
- joyfulness
- calmness
- understanding
- benevolence
- spirituality
- encouraging
- thoughtfulness
- gracious
- judicious/fair
- love
- tenderness
- reliability

If you have additional words or phrases not noted above, write these here:

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**Step 3.** Using the value words you chose, write a first draft below:

My Personal Intention Statement for (Family, Career, etc). \_\_\_\_\_ is as follows:

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**Reflections:**

1) How does it feel to have a personal intention statement? What is one way your commitment to this statement could create a positive difference for you or others?

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2) What specific goals or actions can you think of that would support your intention? Write these down below. Make sure these are small and simple goals to begin with! You can track your goals to make sure that you are supporting your intention to the best of your ability.

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3) Consider carrying your statement with you by writing it on an index card and looking at it several times daily. How can you develop a plan to accomplish this?

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## Appendix J

**Proof of Permission to use PSQI**

Sent on behalf of Dr. Buysse

Dear Patricia,

You have my permission to use the PSQI for your research study. You can find the instrument, scoring instructions, the original article, links to available translations, and other useful information at [www.sleep.pitt.edu](http://www.sleep.pitt.edu) under the Research/Instruments tab. Please ensure that the PSQI is accurately reproduced in any on-line version (including copyright information). We request that you do cite the 1989 paper in any publications that result.

**Note that Question 10 is not used in scoring the PSQI. This question is for informational purposes only, and may be omitted during data collection per requirements of the particular study.**

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Good luck with your research.

Sincerely,

Daniel J. Buysse, M.D.  
Professor of Psychiatry and Clinical and Translational Science  
University of Pittsburgh School of Medicine  
E-1123 WPIC  
3811 O'Hara St

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## Appendix K

**Consent Form****STANBRIDGE UNIVERSITY RESEARCH CONSENT FORM**

**Description:** You are invited to participate in a research study on occupational therapy-based mindfulness in reducing stress and improving sleep quality. These mindfulness training sessions will be conducted on campus either in a classroom or outside on the grounds of Stanbridge University. There is a possibility of conducting the last session of these interventions at the beach, but this is subject to the consensus of all the participants. If possible, video recording and photography may occur during the intervention sessions, particularly during graduation week. If recorded, then these videos and photographs will be electronically stored in a secure encrypted server.

**Your Time Involvement:** This study will be conducted over a period of 5 weeks beginning Oct/Nov 2018. Each session will be conducted once a week, and it will be 90-minute in duration. Some of the mindfulness interventions that you will be doing include- breathing exercises, walking meditation, basic yoga poses, body scanning, sleep-inducing techniques, and empathy visualization training, etc. You will also be asked to give an extra one hour prior to the start of actual interventions. This time will be reserved for pre-intervention testing on your stress and sleep quality levels using some assessment forms. Approximately another 30-45 minutes will be needed for a post-intervention assessment and a questionnaire immediately after the last treatment.

**Risks and Benefits:** The risks and discomforts associated with this research are extremely minimal. Typically, the use of occupational therapy-based mindfulness interventions does not carry risks, although some individuals may occasionally get anxious during these interventions. If at any time you feel any anxiety, you will be given immediate attention and you can either leave the session or come back at a later time. You will also have an option of completely withdrawing yourself from this research as participation in this research is completely voluntary. You may also seek assistance from Stanbridge Student Assistance program if you want.

By participating in this research, you may benefit from learning the use of mindfulness interventions in alleviating your stress levels and improving your sleep qualities. The study will also benefit us as researchers and the field of occupational therapy as it may yield some positive effects of mindfulness which can further be used for the benefit of future research in the field of occupational therapy.

**Confidentiality:** As a self-responsible person you are invited to sign this consent form if you completely wish at your own will. Once signed, this document will be stored in a locked cabinet in the occupational therapy (OT) administration office. All other necessary forms and data collected during the entire duration of the research and the participant related information will also be kept confidential by storing them in a locked cabinet in the OT administration office.



**Payment:** There will be no monetary payment for participation in this study. However, food and refreshments will be provided at each intervention session as incentives for participation.

**Participant Rights:** If you have read and signed this form you are consenting to participate in this study. Participation in this study is voluntary and you have the right to withdraw at any point without penalty. Your alternative is to not participate in this study. You have the right to refuse to answer specific questions. Your identity will not be disclosed at any time; by signing this consent form your identity will be disclosed in photographs or videotapes. The results of this study may be disseminated at professional conferences such as the Occupational Therapy Association of California (OTAC) symposium or the American Occupational Therapy Association (AOTA) conference and exposition or published in scientific journals.

**Contact Information:** If you have any questions about this research you may contact the Faculty Advisor: Vikas Sharma: (949)794-9090 Ext. 5530; vsharma@stanbridge.edu.

**Independent Contact:** If you are in some way dissatisfied with this research and how it is conducted, you may contact the Stanbridge University Vice President of Instruction, at vpinstruction@stanbridge.edu

(If applicable, complete the following)

**Indicate Yes or No:**

I give consent to be audiotaped during this study.

Yes  No

I give consent to be photographed for this study and for my photograph to be used in any materials (poster, video) resulting from this study.

Yes  No

I give consent to be videotaped for this study and for my image to be used in any materials (poster, video) resulting from this study.

Yes  No

I give consent for my identity to be revealed in any materials resulting from this study.

Yes  No

**Please keep a copy of this signed and dated consent form for yourself.**

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

## Appendix L

**Research Participant's Bill of Rights****STANBRIDGE UNIVERSITY RESEARCH SUBJECT/PARTICIPANT'S  
BILL OF RIGHTS**

Every person who is asked to be in a research study has the following rights:

1. To be told what the study is about and what will be measured;
2. To be told what will happen in the study and whether any of the procedures, drugs or devices are different from what would be used in standard practice;
3. To be told about important risks, side effects, or discomforts of the things that will happen to her/him;
4. To be told if she/he can expect any benefit from participating and, if so, what the benefits might be;
5. To be told what other choices she/he has and how they may be better or worse than being in the study;
6. To be allowed to ask any questions concerning the study both before agreeing to be involved and during the course of the study;
7. To be told what sort of medical treatment is available if any complications arise;
8. To refuse to participate at all before or after the study is started without any adverse effects. If such a decision is made, it will not affect his/her rights to receive the care or privileges expected if s/he were not in the study.
9. To receive a copy of the signed and dated consent form;
10. To be free of pressure when considering whether s/he wishes to agree to be in the study

**Independent Contact:** If you are in some way dissatisfied with this research and how it is conducted, you may contact the Stanbridge University Vice President of Instruction.

Appendix M

Site Authorization Form

Permission for Participant Recruitment

Stanbridge University MSOT Program

Thesis Site Authorization Form

Institution Program: Stanbridge University Master's in occupational therapy Thesis

Investigator's Name and Title: Jancy Pen, OTS; Trisha Paysan, OTS; Christina Young, OTS; John Thai, OTS; Vikas Sharma, OTD, OTR/L

Phone Number of Principal Investigator: Jancy Pen (559-824-4667), Christina Young (415-710-0512), John Thai (626-319-3395), Trish Paysan (661-400-9260)

Title of Research: Occupational Therapy Based Mindfulness to Decrease Stress and Increase Sleep Quality Among University Students

Description of Research: Student researchers are utilizing occupational therapy-based mindfulness interventions on campus once a week with university students to decrease stress and increase sleep quality. These interventions will be performed under the direct supervision of a thesis advisor and he is a licensed occupational therapist in the state of California. License # OT 1481

This facility and its representative will receive a copy of the IRB approved consent document if desired (not mandatory).

Researchers will contact and/or recruit participants at this location.

Stanbridge University Campus

This site has agreed upon the recruitment and data collection methods to be used in this study and will receive information on the outcomes of this study. The research will be completed by\_

November 2018/ December 2018

This investigator has permission to conduct research at:

Facility Name: Stanbridge University

Name: Mr. Yasith Weerasuriya

Position: CEO/President Stanbridge University

Signature: [Handwritten Signature]

Date: 10/8/18

Appendix N

**Proof of IRB Approval**



**IRB Reviewer Feedback**

<input type="checkbox"/>	<b>Reviewer Name:</b>	Sheryl Ryan
	<b>Student Name(s):</b>	Jancy Pen, Patricia Pavsan, Christina Young, Viluong Thai
	<b>Advisor Name(s):</b>	Dr. Vikas Sharma
	<b>Study Title:</b>	Occupational Therapy-Based Mindfulness to Decrease Stress and Improve Sleep Quality Among University Students
	<b>Study ID:</b>	077
	<b>Decision:</b>	<input checked="" type="checkbox"/> Approve
		<input type="checkbox"/> Minor Revisions
		<input type="checkbox"/> Major Revisions

**Reviewer Comments:**

All concerns have been resolved. Methodology, confidentiality, and consent have been clarified. Syntax and grammatical errors have been corrected. The revised application is very clear about the minimal risks, how names will be kept separate from data about participants, and how data will be analyzed.

This is an important study for all of us 😊 – looking forward to seeing your results.

**Sheryl Ryan** \_\_\_\_\_

Please type your name as electronic signature

## Appendix O

## Flyer

Feeling stressed?  
Lacking good sleep?  
**COME JOIN US!**

Occupational  
Therapy-Based  
Mindfulness to  
Decrease Stress  
and  
Improve Sleep  
Quality

Getting an education at a university can cause stress and sleep deprivation. For the benefit of our students, we are conducting a 5-week mindfulness program. This project is completely voluntary and there is no charge for participating. **Food and refreshments will be provided!**

**Who are we?**  
We are MSOT students who understand how juggling personal life and academics can impact our stress and sleep. We strive to help fellow peers with their stress and sleep habits through mindfulness techniques.

**Sign me up! When does it start?**  
Anticipated start date: Oct 22nd, 2018

**For how long?**  
90 mins/week for 5 weeks

**Interested?** Please contact us via an email:  
[staymindful@my.stanbridge.edu](mailto:staymindful@my.stanbridge.edu)