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Abstract

Given the high levels of stress in college students and its impact on academic achievement, a purposefully designed curriculum-based mindfulness stress reduction program was implemented for entry-level occupational therapy students to support student mental health. The small-scale, seven-week study, used a combination of mindfulness-based stress reduction strategies, including a meditative technique known as inquiry-based stress reduction (IBSR), and coping strategies using the Occupational Performance Coaching Model to help students cope with their stress levels. Sixteen student participants explored a variety of stress reduction strategies to best suit their individualized needs. Strategies included phone applications, podcasts, guided meditation, yoga, mindfulness of breath, and inquiry-based stress reduction techniques. Emotional intelligence-based occupational therapy principles were reinforced, including the therapeutic use of self, client-centered care, and occupation. A mixed-methods research design was used to measure changes in student stress levels from pre to post-intervention using the Perceived Stress Scale (PSS) and a post-intervention instructor-developed survey. Results from the overall score of the PSS were statistically significant ($t=3.29$; $p< 0.05$) indicating a significant reduction in participants' perceived stress levels. On the instructor-developed survey, 100% of the students ($N=16$) who participated in this mindfulness training felt it was helpful: 81% ($n=13$) of the participants rated it very helpful and 19% ($n=3$) rated it as somewhat helpful in reducing their stress levels. These results suggest that mindfulness-based interventions may be effective in reducing perceived stress in occupational therapy students. Educators might consider integrating student stress coping strategies early in their occupational therapy programs.

Keywords

Students, mindfulness, coping, stress, Occupational Performance Coaching Model

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Building Stress Resilience and Wellbeing: Introducing Mindfulness Training to Reduce Stress in Entry-Level Occupational Therapy Students

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ABSTRACT

Given the high levels of stress in college students and its impact on academic achievement, a purposefully designed curriculum-based mindfulness stress reduction program was implemented for entry-level occupational therapy students to support student mental health. The small-scale, seven-week study, used a combination of mindfulness-based stress reduction strategies, including a meditative technique known as inquiry-based stress reduction (IBSR), and coping strategies using the Occupational Performance Coaching Model to help students cope with their stress levels. Sixteen student participants explored a variety of stress reduction strategies to best suit their individualized needs. Strategies included phone applications, podcasts, guided meditation, yoga, mindfulness of breath, and inquiry-based stress reduction techniques. Emotional intelligence-based occupational therapy principles were reinforced, including the therapeutic use of self, client-centered care, and occupation. A mixed-methods research design was used to measure changes in student stress levels from pre to post-intervention using the Perceived Stress Scale (PSS) and a post-intervention instructor-developed survey. Results from the overall score of the PSS were statistically significant ($t=3.29$; $p< 0.05$) indicating a significant reduction in participants' perceived stress levels. On the instructor-developed survey, 100% of the students ($N=16$) who participated in this mindfulness training felt it was helpful: 81% ($n=13$) of the participants rated it very helpful and 19% ($n=3$) rated it as somewhat helpful in reducing their stress levels. These results suggest that mindfulness-based interventions may be effective in reducing perceived stress in occupational therapy students. Educators might consider integrating student stress coping strategies early in their occupational therapy programs.

Introduction

Across the country perceived stress among college students is high. Over 64% of college students report higher stress levels than the general population, and occupational therapy students experience higher levels of stress than those in many other disciplines (Soja et al., 2016). First-year college students are especially susceptible to increased stress due to a combination of personal and academic stressors (Govender et al., 2015). According to Govender et al. (2015), in addition to academic stressors, students face different combinations of other stressors including social, financial, family and commuting, which tend to increase as students' progress through their academic program. Stress can negatively impact students' ability to achieve self-regulation to cope with their academic demands (Greeson et al., 2014), as well as their memory, judgment, and self-esteem (Soja et al., 2016). High stress levels have been associated with physical, mental, and emotional distress (Stillwell et al., 2017) as well as psychological distress, including depression and anxiety, which in turn negatively impact behavior and academic performance (Yang et al., 2018). Students with high stress levels may exhibit negative behaviors including self-blame, self-isolation, detachment, and distancing, and may experience more frequent need for medical intervention to manage stress than students with lower stress levels (Greeson et al., 2014).

In recent years, there has been an explosion of mental health conditions across college campuses. Student well-being has become a greater priority for colleges and universities (Ketchen Lipson et al., 2018). One in every three college students is diagnosed with a mental health problem with depression and suicidal idealization on the rise (Ketchen Lipson et al., 2018). These precipitating factors are concerning and are causes for faculty to seek proactive programming to further develop student's stress management.

Pedrelli et al. (2015) described the importance of implementing stress reduction programs to prevent psychopathology and substance abuse, which peaks during young adulthood, and suggest that educational institutions implement strategies to support students. Without programming to assist students in identifying coping methods, students may experience chronic stress, leading to immune dysregulation and disease (Wolfe & Serpa, 2015). Soja et al. (2016) suggested that educators ought to create assessment strategies and explore stress reduction programs to support students with school demands and life-based changes.

Literature Review

A review of the literature in this area revealed promising methods of delivery of stress reduction interventions when designing a client-centered, evidence-based stress reduction program for entry-level occupational therapy students. The literature supports mindfulness interventions to reduce perceived stress in the targeted population and shows some critical factors to keep in mind when designing programs (de Vibe et al., 2013; Falsafi, 2016; Hjeltne et al., 2015; Kinser, et al., 2016). For example, some researchers have found that longer practices or a greater number of sessions can hinder engagement (Banerjee et al., 2017). On average, 4- to 8-week programs appear

to be best as recommended in the literature (Bamber & Morpeth, 2018; de Vibe et al., 2013; Falsafi, 2016; Greeson et al., 2014; Hjeltne et al., 2015; Kinser et al., 2016; Yang et al., 2018). Additionally, interventions need to have flexibility to elicit students' participation and should be meaningful to each student (Bamber & Morpeth, 2018).

Mindfulness practice has been noted to fit naturally into the context of everyday occupation. White et al. (2020) conducted a systematic review of the literature investigating the extent of connections being made among related disciplines (occupational therapists, nursing, psychology, etc.) with occupation-based interventions and mindfulness. They recognized opportunities to blend mindfulness practice with everyday occupations as an overlay to practice settings or the frame of reference of choice. The authors described a natural connection between mindfulness and occupational engagement (White et al., 2020). When mindfulness is routinely integrated into everyday life, the practice during times of non-stress builds the capacity to draw upon these techniques in stressful situations. This habit building creates resiliency in persons, particularly college aged students in as little as 10 minutes of purposeful mindfulness practice per day (Greeson et al., 2014).

Mindfulness-Based and Inquiry-Based Stress Reduction

The practice of mindfulness-based stress reduction (MBSR) helps individuals learn to recognize habitual, unhelpful reactions to difficult circumstances and learn to bring an interested, accepting, and nonjudgmental attitude to all experiences (Center for Mindfulness in Medicine, Health Care, and Society, n.d.). Mindfulness integrates the skill of paying attention to the present moment without judgment, and functions as a promising tool for managing stress (Greeson et al., 2014). First developed by Jon Kabat-Zinn, MBSR helps individuals attend to the task at hand (Greeson et al., 2014). Greeson et al. (2014) found that after practicing mindfulness in the university setting, college students demonstrated a significant reduction in stress. The use of mindfulness-based interventions has been widely noted to be effective in decreasing stress among college students (de Vibe et al., 2013; Falsafi, 2016; Greeson et al., 2014; Kinser et al., 2016; Yang et al., 2018).

Used in conjunction with or separate from MBSR, which is a cognitive behavioral approach, Inquiry-Based Stress Reduction (IBSR) has been described as meeting thoughts with understanding. First described in 1986 by Bryon Katie, this meditative mindfulness approach known as "The Work" consists of four questions (known as turnarounds) to identify and question the thoughts that cause suffering (Luff & Ledingham, 2017). Using a "Judge Your Neighbor" worksheet, stressful thoughts are identified and written down on paper. With this simple meditative process, student participants are led to a different reality and conclude that it was their thinking (perception) that was causing them stress rather than the situation. Persons who apply this method and integrate it into their everyday routines are happier, report less stress, have improved quality of life, and improved psychosocial well-being (Smernoff et al., 2015).

Currently many mindfulness-based applications are also available for electronic use. Students find smartphone applications motivating, flexible, reasonably priced, and socially acceptable (Greeson et al., 2014). Smartphone mindfulness practice applications demonstrate a good retention rate with high enrollment (Greeson et al., 2014; Yang et al., 2018). Findings support the use of a smartphone application and its appeal to young adults in the university setting as an effective means to reduce stress (Greeson et al., 2014; Yang et al., 2018).

The Occupational Performance Coaching Model

The Occupational Performance Coaching (OPC) model uses collaborative problem solving to assist individuals to identify and implement effective ways to achieve their goals (Graham et al., 2009). Using a client-centered approach, individuals are guided to identify, implement, and assess their own solutions using the problem-solving framework (Kessler et al., 2014). Kessler et al. recommended that when implementing this model instructors should act as guides, maintain a culturally sensitive approach, and enable student participants to solve their occupational performance stress-related problems to achieve self-identified goals. This coaching model was selected for this study to enable the occupational therapy student participants to choose which mindfulness-based interventions aligned with their individual beliefs, values, contexts, and environments. The following research question guided this study: Does participation in a structured stress reduction management program decrease perceived stress in entry-level occupational therapy students?

Methodology

A mixed-methods design was used in this study to examine changes in student perceived stress level from pre to post intervention. The Institutional Review Board reviewed and approved the study and all student participants provided informed written consent. The study included a seven-week intervention integrated into one of the curriculum courses. The intervention used the OPC Model and included specific instruction on mindfulness as a practice, how to recognize stressful thoughts, didactic content, and mindfulness practice within.

Participants

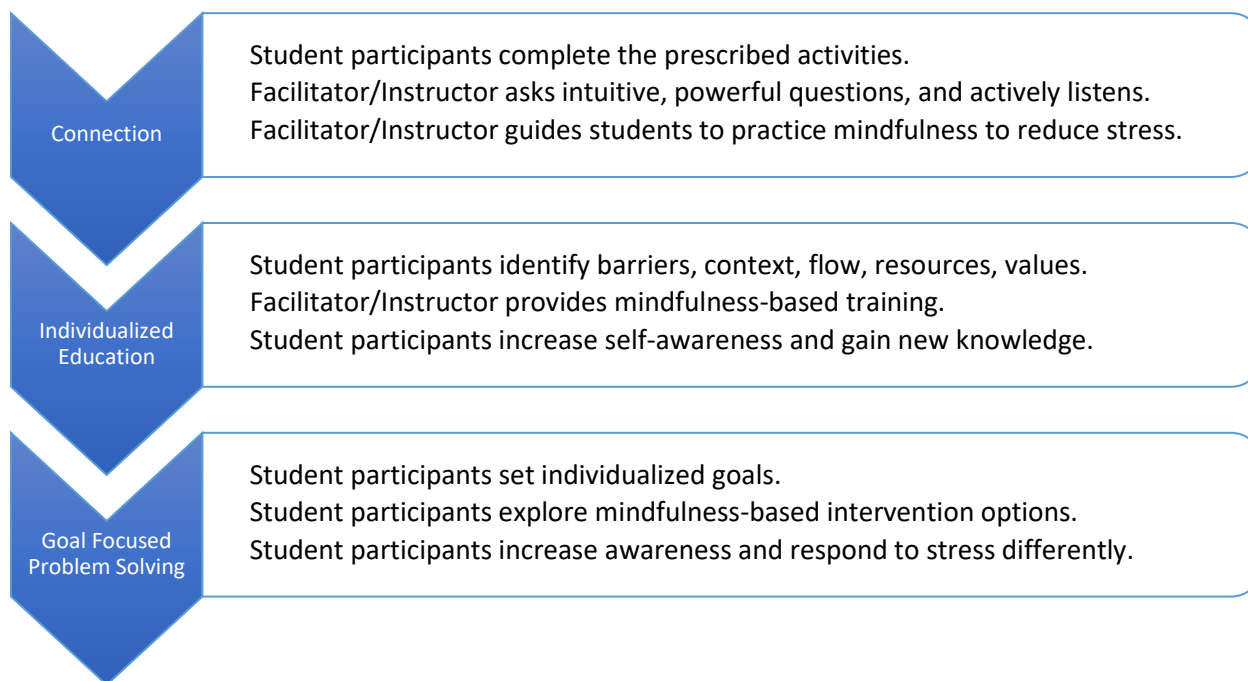
All nineteen occupational therapy student participants in the course signed informed consent to participate in the project. To be included in the study, students had to be enrolled in the first author's "Therapeutic Use of Occupation" course in the fall semester of 2019 and working towards a master's in Occupational Therapy. Recruitment of student participants occurred during the incoming occupational therapy student orientation in August and was conducted by an occupational therapy instructor not affiliated with the study. Students were informed that the study's intervention would be integrated into one of their courses and would be completed by all students regardless of participation in the research study. However, students were informed their participation in the data collection portion of the study was voluntary and that the results of the study would include only data from those who provided written informed consent.

Student participants' identity remained confidential during and after the study by self-selecting a 4-digit identification number of their own choosing. Students were also informed that participation or lack of participation would have no influence on their grades.

Seventeen student participants completed pre- and post-intervention surveys. Two student participants were absent on the final day, and one student participant used an identification number that did not match the pre-intervention PSS, and therefore their scores are not displayed here. Sixteen of the students enrolled in the course completed all facets of the study. The sample ($N=16$) was generally homogeneous in gender (94% female), age (19-30 years), professional pursuits, and academic interests.

Intervention

This study took place in the context of the Therapeutic Use of Occupation course. The intervention was delivered to all students in the course and divided into three phases, as shown in Figure 1. Each phase began with whole-class instruction followed up with one-on-one coaching while each student participant continued to work on his or her assignments. During the *connection* phase, the course instructor provided whole-class instruction to all student participants, and then individually monitored student participants' completion of the introductory activity. The goal during this phase was to create a connection between the instructor and each student participant. During the *individualized education* phase, the instructor introduced the concept and practice of mindfulness to the whole class. Throughout this phase, the instructor taught all student participants various mindfulness-based intervention (MBI) and inquiry-based stress reduction (IBSR) techniques as a group. At least one new mindfulness technique was introduced each of the seven weeks to provide students' flexibility and choice as suggested in the published literature (Bamber & Morpeth, 2018). The instructor then met with each student participant individually to facilitate a client-centered approach. In the *goal-focused problem-solving* phase, all student participants were instructed to develop an individualized plan to continue mindfulness practice using his or her preferred methods. After whole-class instruction, the instructor floated among the classroom and provided one-on-one coaching during this final phase. Refer to Figure 1 for more specific details on each phase.

Figure 1*Occupational Performance Coaching Model Implementation*

The intervention began with the Connection phase, which took place during the first half of lab Week 1. The Individualized Education phase was initiated during the second half of lab of Week 1 and continued through Week 7. The Goal Focused Problem Solving Phase was initiated during the second half of lab of Week 6 and continued through the second half of lab Week 7. Each week consisted of one 1.5-hour lab. See Table 1 Weekly Intervention Activities on the next page. The educational sessions took place in a classroom and yoga room on campus. Occupational therapy principles of therapeutic use of self, client-centered care, and occupation were also emphasized in the context of the mindfulness-based intervention. In addition, opportunities to blend mindfulness practice into everyday occupations were embedded in the lecture portion of class. Participants were led in a guided meditation for 1-5 minutes at the beginning of each lecture, and student participants used breathing techniques prior to quizzes and tests both in a group setting and individually, once strategies were introduced.

The same format was used for each session during the seven weeks of the intervention. Student participants were expected to practice journaling and self-practice between sessions and complete an individualized mindfulness plan during the seven weeks. As suggested by Wolfe and Serpa (2015), formal practice is referred to as meditation and requires planning time and can apply to something we are already doing, such as eating. This mindfulness technique can be used to become more aware of emotions or thoughts in the moment (Wolfe & Serpa, 2015).

Table 1*Weekly Intervention Activities*

Week	Intervention
1	<p>Pre-intervention assessment</p> <ul style="list-style-type: none"> • Perceived Stress Scale <p>Activities: Coaching</p> <ul style="list-style-type: none"> • Visual representation of environmental factors • Why Mindfulness? Definition & Relevance <p>Practice:</p> <ul style="list-style-type: none"> • Emotions-Punching Bag, Journal <p>Discussion:</p> <ul style="list-style-type: none"> • Ground rules, expectations • Being mindful of what we are feeling <p>Journal:</p> <ul style="list-style-type: none"> • Emotions felt previous 24 hours and the next 48 hours <p>Self-practice options:</p> <ul style="list-style-type: none"> • Introductions to mindfulness phone applications
2	<p>Practice:</p> <ul style="list-style-type: none"> • Response vs. Reaction • Breath 1 Anchor <p>Activity:</p> <ul style="list-style-type: none"> • Inquiry-based Stress Reduction (ISBR) Judge Your Neighbor worksheet <p>Discussion:</p> <ul style="list-style-type: none"> • What is the difference between response and reaction? Were you mindful of sound? <p>Journal:</p> <ul style="list-style-type: none"> • How did it feel paying attention to your breath? <p>Classroom application:</p> <ul style="list-style-type: none"> • Group: Activity analysis: STOP mindfulness method activity analysis • Group: Activity analysis: Yoga mindful sequence activity analysis • Student led guided meditation from phone application 1-5 minutes daily
3	<p>Practice:</p> <ul style="list-style-type: none"> • It's Not Just About Me – It's About Us. • Heartfulness, Mindful Eating <p>Activity:</p> <ul style="list-style-type: none"> • ISBR Judge Your Neighbor Worksheet <p>Discussion:</p> <ul style="list-style-type: none"> • Who did you send good wishes to? • Did it feel awkward?

	<p>Journal:</p> <ul style="list-style-type: none"> • How do you feel now? <p>Classroom application:</p> <ul style="list-style-type: none"> • Group Activity analysis: STOP mindfulness method presentation/application to whole class • Group Activity analysis: Yoga mindful sequence application to whole class • Student led guided meditation from phone application 1-5 minutes daily
4	<p>Practice:</p> <ul style="list-style-type: none"> • Daily Classroom Guided Mindfulness Practice 1-5 minutes • Connection to Others • Past/Present/Future <p>Activity:</p> <ul style="list-style-type: none"> • ISBR Judge Your Neighbor Worksheet <p>Discussion:</p> <ul style="list-style-type: none"> • How does practicing mindfulness make your body feel? • How does it make your mind feel? • Do you spend more time in the past or future? <p>Journal:</p> <ul style="list-style-type: none"> • What do you think is the value of focusing more on the present moment? <p>Classroom application:</p> <ul style="list-style-type: none"> • Student led guided meditation from phone application 1-5 minutes daily
5	<p>Practice:</p> <ul style="list-style-type: none"> • Breathe • Body Scan • Sequential Mindfulness-based Stress Reduction Yoga <p>Discussion:</p> <ul style="list-style-type: none"> • What are you enjoying the most about mindfulness? • The least? <p>Classroom application: Intervention</p> <ul style="list-style-type: none"> • Student led guided meditation from phone application 1-5 minutes daily
6	<p>Practice:</p> <ul style="list-style-type: none"> • Loving Things • Body Awareness <p>Activity: Coaching</p> <ul style="list-style-type: none"> • Individualized • Mindfulness plan development <p>Discussion:</p> <ul style="list-style-type: none"> • When you are in the present moment, not the past or future, how do you feel? • Has practicing mindfulness carried over in other parts of your life?

	<p>How? When?</p> <ul style="list-style-type: none"> Do you think mindfulness affects your class? In what way? <p>Journal:</p> <ul style="list-style-type: none"> Journal response to strategies on mindfulness plan for 1 week <p>Classroom application:</p> <ul style="list-style-type: none"> Student led guided meditation from phone application 1-5 minutes daily
7	<p>Practice:</p> <ul style="list-style-type: none"> Mindful Walking Heartfulness for Self <p>Discussion:</p> <ul style="list-style-type: none"> What did you think about during your practice? How do distractions affect you? Does practicing affect the rest of your day? Wrap Up <p>Activity: Coaching</p> <ul style="list-style-type: none"> Complete individual mindfulness plans <p>Journal:</p> <ul style="list-style-type: none"> What is the most difficult emotion for you to deal with? How do you handle it? Why do you think mindfulness is being taught to entry-level occupational therapy students? How could mindfulness help your life? How could mindfulness help society? What do you think is the value of focusing on the present moment? <p>Post Assessments:</p> <ul style="list-style-type: none"> Perceived Stress Scale Instructor-Developed Survey <p>Classroom application:</p> <ul style="list-style-type: none"> Student-led guided meditation from phone application 1-5 minutes daily Submit week 7 journal reflection and individual mindfulness plan to the online classroom

Data Collection Measures

The Perceived Stress Scale (PSS) was used to measure student participants' perceived stress level pre- and post-intervention. This commercially available 10-item self-report scale is widely used to measure the perception of stress and has been shown to be valid and reliable (Cohen, 1994). The PSS uses a 5-point Likert scale, ranging from 0 (never) to 4 (very often).

An instructor-developed post-intervention survey located in the appendix was also used to collect data in this study. A 10-point Likert scale ranging from 1 (not at all helpful) to 10 (extremely helpful) was used with the question "how helpful did you find mindfulness training in decreasing your stress?" The survey also included four open-ended

questions to explore student participants' preferred stress reducing strategies; their intentions to practice mindfulness in the future; and their recommendations for use in future courses. The survey was peer-reviewed by another occupational therapy faculty member to promote content validity.

Quantitative Data Analysis

Descriptive and inferential statistics were used to analyze and summarize the quantitative data from the PSS. Pre- and post-intervention scores were compared individually and in aggregate to determine if student participants experienced any change in stress according to the PSS. An individual *t*-test was used on the full scale and individually to compare the pre- and post-intervention means to determine statistically significant differences. For the instructor-generated survey, the mean score for all student participants was calculated on the Likert-type item. Due to the small sample size, the Wilcoxon Sign Rank Test was utilized to analyze nonparametric statistics in aggregate mean comparing the pre- and post-intervention means to determine statistical differences and the magnitude of change on the small sample size.

Qualitative Data Analysis

Content analysis of the qualitative data was done by two researchers independently of each other and later together to reach consensus. The first step was to organize the data by listing all responses from the 16 student participants to each question. On average, student participants responded with one to two sentences per question. All responses to each question were read and searched for common phrases and assigned a code. Related coded words and phrases were grouped as potential themes. In this way, each researcher generated a short list of potential themes. Then together the researchers discussed the themes and reached a consensus regarding which themes applied to each area of the data. The researchers also compared the themes to those reported in literature to reduce bias. This approach adds trustworthiness and reliability to the results (Nowell et al., 2017).

Results

Changes in Student Perceived Stress Level

Pre-intervention data obtained from the PSS indicated that prior to intervention; all student participants experienced stress. When student participants were asked, "In the past month how often have you felt nervous and stressed?"(question #3), their pre-intervention score was 2.94. In the post-intervention, that number had decreased to 2.75, indicating a reduction in perceived stress as a result of the intervention.

A paired sample *t* test was performed comparing the pre- and post-intervention mean values for the full scale and each item on the PSS. Results indicate a positive statistically significant difference between the pre ($M=1.91$) and post ($M=1.69$) mean values ($t=3.29$; $p< 0.05$), indicating an overall decrease in perceived stress levels. Figure 2 shows comparisons for each item on the PSS, pre- and post-intervention. The results on item #2 (unable to control things"), #5 (feeling things were going your way"), and #9 ("angered because of things were outside of your control"), were statistically

significant indicating notable findings related to the change in perceived stress among the group of student participants demonstrating a positive change in student stress. Additionally, a non-parametric Wilcoxon signed ranked test revealed a statistically significant reduction in perceived stress following intervention with mindful-based intervention $z = 2.38$, $p = .04$, with a large effect size ($r = .57$).

Results from the PSS were corroborated by the instructor-developed survey results in which 100% of the students ($N=16$) who participated in the mindfulness training felt it was helpful: 81% ($n=13$) of the student participants indicated that the intervention was very helpful in reducing their stress levels and 19% ($n=3$) of the student participants indicated that the intervention was somewhat helpful in reducing stress levels. The mean overall score for the student participants on this instructor-developed survey question ("on a scale from 1-10, how helpful did you find mindfulness training in decreasing your stress") was 7.3 using a 10-point scale ranging from 1 (not at all) to 10 (extremely helpful).

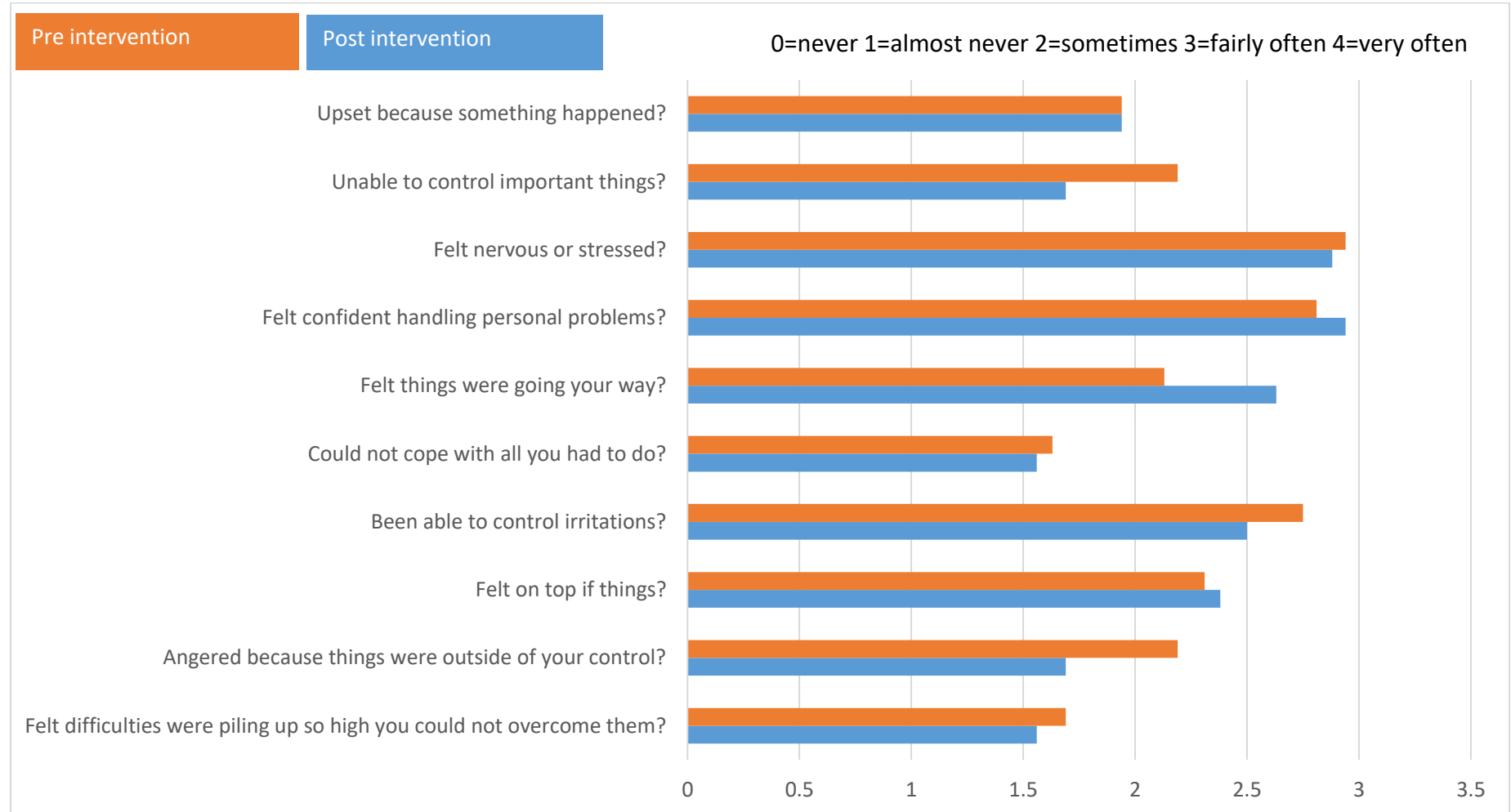
Four open-ended questions were also used to collect additional data on student participants' perspectives about the program in the instructor survey. One of the questions asked student participants to list what was most worthwhile about the project. The following three areas were most often mentioned:

- Learning a variety of strategies to reduce stress and anxiety ($n=12$)
- Developing an individualized mindfulness plan ($n=2$)
- The positive effect experienced with the application of mindful strategies ($n=2$)

A related question asked student participants to list their three most preferred mindfulness-based strategies and explain their preferences. The 16 student participants listed the following strategies learned during the intervention as most worthwhile: guided meditation ($n=12$), yoga ($n=10$), deep breathing ($n=9$).

The 12 student participants who identified guided meditation as a preferred strategy wrote that it allowed them to let go of thoughts and stress, focus on the present, and provided a calm and relaxed response. The 10 student participants who listed Yoga as a preferred strategy explained that Yoga created a relaxed environment, was a form of exercise, relieved stress, and made them feel calm. Nine student participants identified deep breathing as a preferred strategy and clarified that it was quick, calming, and decreased stress.

Another question asked whether student participants planned to use mindfulness-based strategies after the intervention was completed and why. One hundred percent of the student participants planned to continue to use mindfulness stress-reduction strategies. The reasons provided included it helped them to decrease stress and anxiety; provided them with a calming and relaxed response; and helped them think more positively.

Figure 2*Pre and Post-intervention Mean Scores for Each Item on the PSS*

*Indicates statistical significance when comparing pre- and post means. Items 4, 5, 7, and 8 from top to bottom are positively stated items.

In addition to the qualitative data gathered via the instructor survey, field notes were used to record verbal feedback during group discussions held throughout the intervention. During these discussions, 100% of all student participants expressed the benefits of using a variety of mindfulness techniques presented in the study and the value of receiving early intervention to manage stress and anxiety during the beginning of their academic program.

Themes Identified in Participant Responses to Open-ended Questions

Several themes were identified with student participants' responses to the open-ended questions. The qualitative data analysis process described above revealed two main themes: 1) student participants found the practice of mindfulness techniques **calming**, and 2) the incorporation of those techniques into student participants' daily lives was **convenient**. Student participant comments illustrative of the theme *calming* were: "I feel less anxious throughout my day," "helps me gather my thoughts and emotions to be able to proceed," and "slowed my mind." Comments related to the theme *convenient* were: "Can be done at home, on the road, everywhere," "it's something quick I can do," and "taking a few deep breaths is a quick answer to stress." These themes demonstrate student participants' views of mindfulness practice in an academic setting during the project.

Student participants reported that it was valuable to learn mindfulness-based coping strategies early in the occupational therapy program. In the instructor-developed survey, student participants shared intentions to continue to practice mindfulness even after the study was completed to manage stress throughout the program and in their lives outside of school. Specific reasons student participants shared were "because it helps relieve stress and gets me through my day in a more positive way" and "because it will help me calm my mind and body and allow me to think positively and not focus on the negatives."

Student participants' opinions were also elicited to identify ways in which mindfulness-based intervention could be more effective for entry-level occupational therapy students in the future and to provide recommendations according to the instructor-developed survey. Their recommendations included: providing class credit, starting each course with 5 minutes of meditation, providing a variety of settings to practice mindfulness, teaching mindfulness-based techniques at the beginning of class, and providing opportunities to choose to work independently or with a partner when learning IBSR techniques.

Discussion

The results of this study parallel and expand upon those of existing literature and support the effectiveness of mindfulness practice for decreasing perceived stress in a group of college aged students. In this study, the group experienced a statistically significant reduction in perceived stress as a result of the intervention. These findings align with current literature that mindfulness strategies when explicitly taught and practiced provide participants with an experience of calm. Once techniques become integrated into the students' habits then the convenience of use becomes even more

evident. The themes noted in this study (calming and convenient) correlate with published literature which provides solid evidence for using mindfulness-based intervention to decrease perceived stress among medical college students and health professionals (Kinser et al., 2016; Yang et al., 2018).

Although we did not set out to explore emotional intelligence, additional outcomes found through the instructor-developed survey were that student participants verbalized a greater connection with others consistent with improved emotional intelligence. These outcomes were illustrated by responses such as “Now that I can do it in my head, I have a better understanding on why someone might be acting the way they are; it's not all about the way I see things, there's a bigger picture” and “Helped me not jump to conclusions about people, and try to see things from their viewpoint.”

This study was specific to occupational therapy and was intentionally embedded into a course in the first semester of the occupational therapy program and integrated within the curriculum, making it accessible to all occupational therapy students. This correlates with the literature in that the timing of mindfulness programs should be early in the student's academic programming as this is the most stressful time and students need tools to manage stress (Govender et al., 2015). Similarly, it was positioned so that an early introduction to mindfulness-based intervention could establish the groundwork to promote a healthy transition to college, as described by Dvorakova et al. (2017).

The findings suggest that teaching mindfulness strategies from which students could choose provided personal coping skills that supported students in developing increased stress tolerance and heightened awareness for further application in stressful situations (White et al., 2020). The design of this study intentionally provided students with different mindfulness tools each week, time to practice, and time to decide if they found each strategy useful. Based upon published literature, the timing of the study was purposeful, in order to lay the foundation for first experiencing stress reduction for self and then the potential for application during fieldwork whereby the student could apply mindfulness as a therapeutic technique for clients (Govender et al., 2015; Greeson et al., 2014). Additionally, the design of provision of multiple tools to provide flexibility and choice was based on research (Bamber & Morpeth, 2018). Occupational therapy educators may consider embedding mindfulness stress reduction techniques into early courses so students can first experience it themselves then apply it as a therapeutic tool in their role as a future practitioner.

Occupational therapy educators may benefit from exploring and reflecting on approaches to introduce mindfulness-based practices into students' academic and clinical contexts to support their occupational performance and role assimilation in the classroom, labs, and fieldwork settings. Instead of introducing it as a stand-alone intervention, as students become skilled with their own mindfulness practice, educators may also begin to create natural connections in everyday life of mindful participation as

an overlay with a frame of reference to promote its application on occupational performance and engagement in all settings within the curriculum (White et al., 2020); further positioning occupational therapists as primary providers to provide authentic, client-centered, mindful interventions with daily occupations (White et al., 2020).

Research suggests that OPC may be used when working directly with clients among various populations with occupational performance barriers (Kessler et al., 2014; Kessler & Graham, 2015). Results of this study demonstrated that the OPC model may be effective when used in an educational setting with occupational therapy students. By modeling OPC as the instructor, the first author was able to facilitate the resources that each student found useful and empowered the students to help themselves to identify their needs and solutions during stressful events. This occupation-based and client-centered shared process allowed for collaborative analysis, reflective listening, and observation in the natural environment, encouragement, and feedback to guide participants to use the necessary skills and empower participants to generate their own solutions to meet their individualized needs. More importantly, it is designed and was utilized in this study to create an ongoing skill set so that participants can apply strategies to future environments and situations.

Limitations

This study was done by an instructor who may have had implicit bias related to the benefit of mindfulness. However, measures were taken to minimize bias. Participation was optional and there was no grade attached to participation. Confidentiality methods were utilized to avoid identifying which student reported specific responses and resulted in incomplete data collection because the student participant could not remember his/her 4-digit number and pre- and -post assessments could not be utilized for one participant. The study used purposeful sampling in a Midwest private college. It would be beneficial to repeat this study in other geographical areas and student populations. The author-developed survey was peer-reviewed but not tested or piloted. Some of the questions duplicated the same responses and could have been combined. Additionally, curriculum-based design may be subject to investigator and participant bias.

Recommendations for Future Studies

A short intervention with a longitudinal study or active research design with ongoing observations and/or assessments may ascertain sustainability of the utility of the techniques to see how the results affect the students throughout the program. The occupational therapy program could measure long-term effects of mindfulness intervention and its impact on perceived stress while on fieldwork and / or higher-level courses. Scheduling data collection during these peak times of student stress may be considered. Furthermore, research targeting the use of OPC in nontraditional settings, and its role in occupational performance, health and well-being would also be a valuable contribution to the existing body of knowledge. According to Greeson et al. (2014), other measurements could be considered, including the Self Compassion Scale (SCS),

Cognitive and Affective Mindfulness Scale-Revised (CAM-R), and Medical Outcome Study Sleep Scale (MOS SLP9) at baseline with repeated measures with an intervention group versus a control group to explore any differences in overall well-being and reduce the risk of bias.

Implications for Occupational Therapy Education

A permanent place for a mindfulness-based stress reduction program within an occupational therapy curriculum should be explored for new entry-level occupational therapy students. Mindfulness-based intervention is a key component to effectively adapt to change, navigate through adversity, and thrive. By adding mindfulness training in occupational therapy programs, occupational therapy students may cultivate a sense of stability when faced with significant stressors inherent in academics and early career experiences. Students who participate may have more clarity and a sense of calm when applying mindfulness techniques in their academic and professional roles. This method allows them to adapt with integrity to changing circumstances and respond with a thoughtful response to increasing demands instead of reacting with impulsive responses. Mindful-based techniques allow students to pause and create space to replace impulsive responses with thoughtful responses in stressful situations.

Educators are well positioned to bring programs like this and others to the educational setting using effective coaching methods that promote occupational performance and psychosocial wellbeing in college students. Blending a stress reduction program within the curriculum may prove to be helpful in preventing future occupational performance problems, generalizing, and transferring knowledge and skills among students through the use of the OPC process. Incorporating mindfulness into curriculum, creating physical and/or virtual spaces for students to practice may support ongoing practice. Educators could consider building mindful spaces such as a labyrinth path and a meditation room. The labyrinth path could be utilized throughout the school day to naturally blend in a relaxing walking meditation before or after a test and a retreat to mindful spaces allow for individual practice within students' natural environment. Finally, it is suggested that all educational programs consider staff and student training on mindfulness-based coping strategies to reduce stress to promote health and wellbeing in the workforce.

Conclusion

Mindfulness-based intervention is a contemporary technique prominent in the literature. This study begins to fill the gap in mindfulness research among occupational therapists and educators, and the results suggest that mindfulness-based intervention may be effective in reducing perceived stress among entry-level occupational therapy students, thus supporting student mental health. Further research is warranted to explore the use of mindfulness interventions over time in classrooms, labs, fieldwork settings, and the use of mindful participation in practice to enhance occupational participation (White et al., 2020).

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Appendix

Instructor-Generated Survey

Please complete the following questions.

1) On a scale of 1-10, how helpful did you find mindfulness training in decreasing your stress level?

1 – 2 – 3 – 4 – 5 – 6- 7- 8- 9 – 10

Not at all

Extremely helpful

2) List the top three preferred mindfulness-based strategies. Explain why you chose each one.

3) Do you intend to use mindfulness-based strategies after the project is complete? Why?

4) What did you find most worthwhile about the project?

5) What would you suggest faculty change when considering integrating mindfulness-based strategies into future coursework?
