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Abstract

Stress and disengagement from meaningful occupations are barriers graduate students face daily. This mixed methods study aimed to investigate the effectiveness of the nine-minute Huntington Occupational Mindfulness and Engagement (HOME) protocol for occupational therapy (OT) graduate students to re-engage in meaningful occupations. Participants (N=29) were selected through a convenience sample at a Midwestern university's OT doctoral program and randomly assigned to either an experimental HOME Protocol group or a control journaling group. Students completed the Coping Orientation to Problems (COPE) Inventory and the Perceived Stress Scale (PSS) as pre and post assessments and received training in the assigned protocols. For four weeks, participants utilized their designated protocols at least one time per week. Following data collection, optional focus groups provided insight into participants' perceived engagement and use of the protocols. Data analyzed through paired *t*-tests and independent samples *t*-tests demonstrated significance in the reduction of stress levels ($d=-1.595$; $pd=1.106$; $p=.001$) for the experimental group using the HOME Protocol. No significant difference was found between change scores of the experimental and control groups. Qualitative data revealed themes of *Habit Formation, Management of Stress and Overwhelming Feelings, and Re-focus for Re-engagement in Activity*. Integrated analysis of qualitative and quantitative data supported the HOME Protocol as a beneficial tool for students' re-engagement in meaningful activities. The pilot study suggested positive benefits for increasing engagement and decreasing stress levels when using the HOME Protocol. Further research is indicated to determine its effectiveness when expanded to other academic programs that allow for a larger, more diverse sample.

Keywords

Stress, engagement, disengagement, students, mindfulness, occupation

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Stress, Mindfulness and Occupational Engagement: A Pilot Study of the HOME Protocol

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ABSTRACT

Stress and disengagement from meaningful occupations are barriers graduate students face daily. This mixed methods study aimed to investigate the effectiveness of the nine-minute Huntington Occupational Mindfulness and Engagement (HOME) protocol for occupational therapy (OT) graduate students to re-engage in meaningful occupations. Participants (N=29) were selected through a convenience sample at a Midwestern university's OT doctoral program and randomly assigned to either an experimental HOME Protocol group or a control journaling group. Students completed the Coping Orientation to Problems (COPE) Inventory and the Perceived Stress Scale (PSS) as pre and post assessments and received training in the assigned protocols. For four weeks, participants utilized their designated protocols at least one time per week. Following data collection, optional focus groups provided insight into participants' perceived engagement and use of the protocols. Data analyzed through paired *t*-tests and independent samples *t*-tests demonstrated significance in the reduction of stress levels ($d=-1.595$; $p<.001$) and increased levels of engagement ($d=1.106$; $p=.001$) for the experimental group using the HOME Protocol. No significant difference was found between change scores of the experimental and control groups. Qualitative data revealed themes of *Habit Formation*, *Management of Stress and Overwhelming Feelings*, and *Re-focus for Re-engagement in Activity*. Integrated analysis of qualitative and quantitative data supported the HOME Protocol as a beneficial tool for students' re-engagement in meaningful activities. The pilot study suggested positive benefits for increasing engagement and decreasing stress levels when using the HOME Protocol. Further research is indicated to determine its effectiveness when expanded to other academic programs that allow for a larger, more diverse sample.

Introduction

Graduate students encounter high levels of stress during their academic programs which may greatly influence their overall health and well-being (Evans et al., 2018). *Stress*, defined as the inability to cope with a perceived threat to one's mental, physical, emotional, and spiritual well-being (Oswalt & Riddock, 2007), can impact physical and mental health, well-being, and energy levels for completing daily activities and schoolwork (Evans et al., 2018). Occupational therapy (OT) education may heighten student stress due to the high demands of graduate education. Coping strategies may be beneficial to students during stressful educational activities. A common coping strategy described in the literature is *mindfulness*, defined as nonjudgmentally and purposefully focusing in the present moment (Cho et al., 2016). Students can use mindfulness to promote improved school performance and overall health (Balwant, 2018). Like mindfulness, *occupational engagement* involves "being completely present in mind, body, and spirit; demonstrating passion and meaning" (Kennedy & Davis, 2017, p. 105). In the field of OT, *engagement in occupation* refers to "the performance of occupations as the result of choice, motivation, and meaning within a supportive context" (American Occupational Therapy Association [AOTA], 2020, p. 76). Students engage in the occupation of formal education during their didactic coursework; however, their level of occupational engagement may vary during the program due to a variety of contextual factors (Chipchase et al., 2017; Karacul, 2018). There are many different mindfulness techniques and coping skills described in the literature that address stress (Yusufov et al., 2019) or engagement (Yun et al., 2020). However, research is limited on the use of a mindfulness protocol to help students recognize signs of stress and disengagement and prompt re-engagement in meaningful activities and occupations. For the purposes of this study, *disengagement* involves the loss of focus and investment in an occupation or activity that has personal meaning, and *re-engagement* refers to the resumption of a person's focus and investment in an occupation or meaningful activity following disengagement.

Literature Review

Stress and Stress Reduction

Stress may come from either significant life events or chronic stressors. A high level of stress has been commonly reported by doctoral students, with school and educational factors being significant contributors (Evans et al., 2018). Literature suggested a clear need for addressing student stress in graduate programs. A variety of stress reduction interventions were effective for decreasing perceived stress and anxiety of graduate students, including coping skills training, cognitive-behavioral therapy, relaxation training, psychoeducation, and social support (Yusufov et al., 2019). Studies have supported the positive impact of various mindfulness training programs and interventions. Mindfulness-Based Stress Reduction (MBSR) was developed by Kabat-Zinn (1982) to help people address mental and physical tensions through practices including mindful breathing, yoga, body scan, meditation, and staying focused on the present in everyday life. Benefits of MBSR for college students noted in research have included decreased anxiety (Dundas et al., 2016; Yusufov et al., 2019) as well as self-reports of being able to stay calm during academic performance and being able to stay focused for longer periods of time following training (Hjeltnes et al., 2015).

Specific elements of mindfulness have also been found to be valuable for stress reduction of college students when implemented apart from full MBSR training programs. Progressive muscular relaxation techniques were found to reduce anxiety and perceived stress (Chellew et al., 2015; Hubbard & Blyler, 2016). Mindfulness techniques that included training on focused breathing, body scan, and either a prayer or loving-kindness meditation were found to be effective in decreasing reported stress (Ford & Garzon, 2017). According to Cho et al. (2016), mindful breathing practice had an impact on reducing test anxiety and increasing positive automatic thoughts over time. When individuals practiced deep breathing techniques along with focusing on emotions, sensations, or truth, they were able to actively engage in mindfulness meditation (Grant, 2020; Kopel & Habermas, 2019).

Engagement and Disengagement

Kennedy and Davis (2017) explored the construct of *occupational engagement* from the viewpoints of OTs and discussed a continuum from disengagement to complete engagement (e.g. a person is fully engaged) in an occupation or meaningful activity. They identified seven essential elements and influencers of occupational engagement, including: a sense of readiness; purpose or meaning of the occupation (or daily life activity); the level of participation (active or passive); motivation and interest; one's mental health status and cognitive capacity; level of challenge and feedback to match one's abilities; and support of the physical, social, and institutional environments. According to Kennedy and Davis (2017) the elements and influencers of occupational engagement rely on aspects of a person's spirit, mind, and body, as well as a supportive context. This holistic view of occupational engagement is consistent with the definition of "engagement in occupations" within the Occupational Therapy Domain and Process, 4th edition (OTPF-4; AOTA, 2020). The OTPF-4 further describes engagement in occupations as involving "a transactional interaction of the mind, body, and spirit" (AOTA, 2020, p. 6). In a transactional interaction, changes to any one component of the mind, body, or spirit influence the other components. Additionally, both internal (e.g. personal factors) and external influencers (e.g. environmental factors) can potentially impact a person's engagement in occupations along the continuum (Kennedy & Davis, 2017).

Disengagement in students may appear as a lack of motivation or interest in coursework (Chipchase et al., 2017). Although student disengagement may fluctuate over time, varying degrees of disengagement may be noted depending on contextual factors in a classroom or across an entire course of study (Chipchase et al., 2017). Karacul (2018) suggested that lack of encouragement and lack of fulfillment of basic needs in the learning environment were factors that may contribute to lower levels of motivation. According to Kennedy and Davis (2017), a person can be engaged in daily life activities with only extrinsic motivation, however, a lack of both intrinsic and extrinsic motivation results in disengagement. Furthermore, disengagement may be viewed on a continuum or as a mode of occupational engagement, depending on various personal, occupational, and environmental factors (Kennedy & Davis, 2017).

Engagement Strategies

Strategies to increase student engagement have been the focus of several studies. Yun et al. (2020) investigated the use of motivational regulation strategies for student engagement in learning in traditional versus online course delivery (Yun et al., 2020). *Motivational regulation* is defined as "the activities through which individuals purposefully act to initiate, maintain, or supplement their willingness to start, to provide work toward, or to complete a particular activity or goal" (Wolters, 2003, p.190). According to Yun et al. (2020), motivational regulation strategies, including enhancement of personal significance, mastery self-talk (goal-oriented approach), and environmental control to reduce distractions, were used by graduate students to increase behavioral, emotional, and cognitive engagement during traditional classes. In contrast, performance-avoidance self-talk (comparing performance to that of peers) was used more often by undergraduate students as a motivational strategy (Yun et al., 2020). Researchers noted multiple functions of self-talk that may impact student engagement through its influence on motivation, self-regulation, and self-reflection (Oleś et al., 2020; Yun et al., 2020). Journaling, as a method of self-reflection, promoted students' self-efficacy regardless of the type of journaling implemented (Fritson, 2008). Flinchbaugh et al. (2012) examined the effectiveness of a combination of gratitude journaling and four stress management techniques (deep breathing, progressive muscular relaxation (PMR), guided imagery, and positive self-talk). While the combined strategy protocol did not have a significant effect on classroom-related stress as anticipated, it did lead to increased levels of meaningfulness and engagement for students (Flinchbaugh et al., 2012). Physical activity was also studied as an engagement strategy. Blasche et al. (2018) incorporated stretching, aerobic exercise, and relaxation into structured rest breaks and found that these elements were associated with increased vigor and decreased fatigue in university students.

Mindfulness techniques appeared to have a positive effect on academic engagement, attentiveness, and on-task behaviors by training the brain to be less reactive to external stimuli and more focused on the objective of mindfulness (Cornell, 2019). Although research conducted by Miralles-Armenteros and colleagues (2019) discovered no direct relationship between mindfulness and academic performance among undergraduate students, they found compassion and engagement to act as mediators of academic performance. The study suggested that mindfulness techniques increased compassion and engagement of the students, which may have led to an improvement in their academic performance (Miralles-Armenteros et al., 2019). Additionally, mindfulness, stress, and occupational engagement were explored with OT graduate students (Henton et al., 2021). The students identified stress, academic responsibilities, and limited use of coping strategies as factors that negatively affected their engagement in meaningful activities. Key findings suggested the students viewed mindfulness as a coping strategy, and the study supported a stronger connection between mindfulness and occupational engagement.

An abundance of research revealed the effectiveness of specific mindfulness techniques for college students (Barbosa et al., 2013; Dundas et al., 2016; Hjeltnes et al., 2015; McConville et al., 2017); however, specific programs that succinctly and effectively implemented strategies to encourage graduate student re-engagement in meaningful occupations or activities were not found.

Purpose of Study

Stress and disengagement from meaningful occupations are barriers graduate students face daily. Research supports the use of stress reduction and engagement strategies to address these barriers. The purpose of this study was to examine the effectiveness of a novel mindfulness protocol for OT graduate students to utilize as a strategy to decrease stress and to promote re-engagement in meaningful activities and occupations during their OT education.

Methods

Study Design

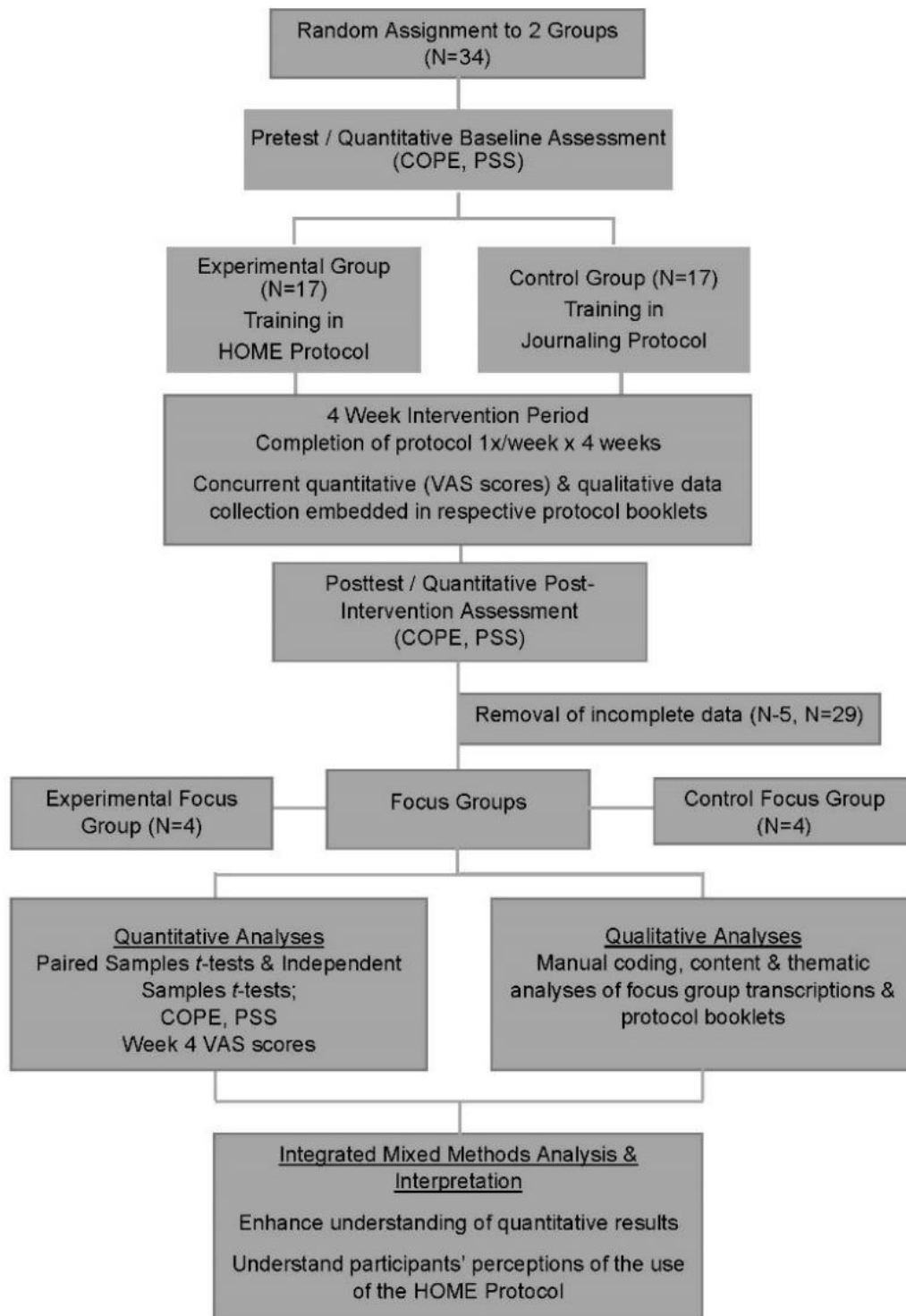
The study utilized a mixed methods experimental design to examine participants' reported levels of stress and occupational engagement before and after using a specific mindfulness and engagement protocol for four weeks. The design included random assignment of the convenience sample to the experimental or control group. An explanatory approach examined quantitative and qualitative data through triangulation of all data sets. The study employed an integrated mixed methods analysis and interpretation to enhance the understanding of quantitative results and the participants' perceptions of the use of the protocol. Refer to Figure 1.

Sample

Following university institutional review board (IRB) approval, researchers recruited students on a voluntary basis from an occupational therapy doctoral (OTD) program in the Midwestern United States through email and flyers. Inclusion criteria consisted of being a student in the OTD program, attending a two-hour training session, completing the designated protocol at least one time per week for the four-week duration of the study, and completing both pre and post assessments. Exclusion criteria included students outside of the university, students of the university unable to attend the training session or unable to complete the designated protocol at least one time per week throughout the four-week study duration, and those unable to complete the pre and post assessments. The study posed minimal risk to participants, with the greatest risk being emotional distress due to internal reflection on the study measures. The names of the 34 participants were randomly assigned to the experimental or control groups. Names were matched with random number identifiers to ensure anonymity. A list of participant names and corresponding numbers as well as any identifying information was kept in a locked drawer within the university building. Of the 34 initial participants, five participants did not complete the full duration of the protocol, causing them to be excluded from the study.

Figure 1

Mixed Methods Experimental Design



Instrumentation

Data was collected through several instruments administered at the beginning of the study and following completion of four weeks of the intervention. Additionally, data was collected each time the mindfulness and engagement protocol was implemented by the participant during the four weeks of the study.

Perceived Stress Scale (PSS)

The PSS is a 10-item questionnaire developed to assess global perceptions of stress and the degree to which situations in one's life are perceived as stressful (Cohen et al., 1983; Cohen & Williamson, 1988). Support for the use of the PSS as a reliable and valid tool to assess perceived stress in university students has been provided in the literature (Lee, 2012; Roberti et al., 2006).

Coping Orientation to Problems Experienced (COPE) Inventory

The COPE is 60-item self-report instrument designed to assess ways that people respond to stress (Carver et al., 1989). The chosen scales to be analyzed for this study were behavioral disengagement and mental disengagement, both considered to be part of avoidant-oriented coping (Litman, 2006) and inversely correlated with theoretically more functional strategies such as active coping and planning (Carver et al., 1989).

Huntington Occupational Mindfulness and Engagement (HOME) Protocol

The HOME Protocol is a newly developed nine-minute mindfulness and engagement protocol designed to decrease stress and to promote re-engagement in meaningful occupations of daily life by applying mindfulness strategies in a specific, timed format. The protocol requires special training for students: a) to recognize times of disengagement in occupations, and b) to learn how to apply specific mindfulness strategies to increase re-engagement in meaningful occupations (refer to Appendix A). The HOME Protocol Checklist (refer to Appendix B) provides a structured self-assessment of the student's perceived level of stress and engagement, as well as the perceived level of challenge and meaning of the activity in which they recognize disengagement. Four visual analogue scales (VAS) are embedded in the first minute and final minute of the HOME Protocol to record students' self-assessments pre and post intervention in the following areas: stress, engagement, challenge, and meaning.

The HOME Protocol was originally developed by primary researchers, Laura Gerig, Patricia Henton, and Kathryn Close, based on their prior research of stress, mindfulness, and occupational engagement conducted from 2019 to 2020. Face validity of the instrument was obtained through expert review by two faculty of an OT doctoral program with extensive teaching and clinical experience. Two main elements of the HOME program include: 1) recognizing occupational disengagement and 2) promoting re-engagement in meaningful occupations through the application of mindfulness strategies. The HOME Protocol guides students to practice self-reflection and mindfulness by nonjudgmentally and purposefully focusing in the present moment using the following strategies:

1. Reflect – 1 minute for self-reflection and self-talk
 - The reflect component is completed at the beginning of the protocol to prompt students to respond to self-reflective questions about their feelings and the meaning of the activity/occupation from which they have become disengaged.
2. Reset – 2 minutes for breathing (stillness/silence) and body check
 - *Reset* prompts the student to practice deep breathing while completing a body check to identify possible areas of muscular tension and/or pain.
3. Reach – 3 minutes for stretching and progressive muscular relaxation
 - *Reach* prompts the student to practice stretching and PMR to become aware of areas of tension in the body and reduce muscular tension and/or pain
4. Renew – 2 minutes for breathing (meditation/gratitude)
 - *Renew* prompts the student to practice deep breathing to engage the body while focusing the mind and spirit through meditation and/or gratitude meditation.
5. Re-engage – 1 minute for self-reflection and self-talk
 - The re-engage component is completed at the end of the protocol to guide students to respond to self-reflective questions about their feelings and the personal meaning of the activity/occupation from which they had become disengaged.

Hypotheses

The null hypotheses proposed:

H₀₁: There will be no statistically significant differences between groups for the Perceived Stress Scale (PSS) and the Coping Orientation to Problems Experienced (COPE) Inventory change scores pre- and post-intervention.

H₀₂: There will be no statistically significant differences between groups for the visual analogue scales (VAS) stress or engagement change scores in the fourth week.

H₀₃: There will be no statistically significant differences within groups for reported stress or engagement immediately after the use of the HOME Protocol in the fourth week.

Procedures

The primary researchers with an educational background in school psychology and general training in mindfulness and associated techniques worked with the research team to create protocol training sessions for the experimental and control groups. Two of the primary researchers and developers of the HOME Protocol were directly involved

in the training sessions for both groups that took place on February 3, 2021. Each group began by signing an informed consent and completing a demographic form and baseline assessments of the COPE and PSS. After the completion of the pretest assessments, participants were provided training in one of two mindfulness-based approaches, which occurred in two separate rooms. Participants were blinded to their assignment to the experimental or control group. The control group received training on the importance of identifying self-talk and journaling strategies as alternative mindfulness techniques to address re-engagement after disengagement. The experimental group received training in utilizing the specific nine-minute HOME Protocol developed for this study (see Appendix A). Scripts were written by researchers for use in training to ensure standardization for future studies. Both groups were provided with booklets containing protocol sheets corresponding to their assigned mindfulness approach and were asked to fill them out at least one time per week over the following four weeks. Each protocol began and ended with a self-assessment of the participant's level of stress, engagement, difficulty of activity, and meaningfulness of activity as measured on the four VAS. Additionally, participants were asked to respond in writing to open-ended questions about other feelings they were experiencing and the meaning of the activity in which they had become disengaged. Participants received an email reminder each week to complete their assigned protocol. Names of participants were entered into a drawing for two \$50 gift cards each time the protocols were completed as an incentive to complete the study for the duration of the four weeks. At the end of the four weeks, participants were asked to return their booklets and complete the COPE and PSS post-test assessments.

Two voluntary focus groups (one experimental and one control) were gathered one week post-intervention to gain insight on perceived engagement and use of the assigned protocols throughout the study period. Focus group questions were developed by researchers and reviewed by two expert reviewers. The questions addressed how the protocols were used in daily life (i.e. time of day, activities/occupations prompting its use) and student perceptions about the effects of using the protocols. The focus groups occurred in a setting that afforded privacy to the researchers and the participants and lasted approximately 20 minutes. Participants signed a focus group informed consent before beginning the process. The focus groups both utilized a semi-structured, open-ended interview format. A set of prompts with follow-up questions were the same for both groups and generated information on feelings and emotions experienced during the completion of the protocols. A researcher recorded objective and reflective observations during the focus group session. Content from the focus groups was recorded, transcribed, and kept on password-protected devices.

Data Coding and Analysis

Participants were provided with a numerical identifier through a random number generator to replace all personal information and ensure confidentiality. Participants provided their completed protocol booklets during post-test data collection.

Demographic data were analyzed using descriptive statistics. PSS and mental and behavioral engagement COPE scores were calculated using standard scoring procedures. VAS booklet recordings were hand-measured in millimeters by six researchers using six identical rulers. After the completion of the protocol, measurements and scores were input into a spreadsheet to organize pre and post intervention data for the four categories of the VAS: stress, engagement, challenge, and meaning. Quantitative data of the COPE, PSS, and the protocol VAS pre and post test scores were analyzed through paired samples *t*-tests and independent samples *t*-tests using SPSS software.

Qualitative data obtained through the protocol booklets and focus groups were examined through an inductive process of thematic analysis and triangulation. Six researchers independently reviewed qualitative data from open-ended responses within the protocol books and from the focus group transcriptions. The researchers reviewed the focus group transcriptions multiple times while listening to the audio recordings to verify accuracy and enhance credibility. An in-depth analysis of qualitative data included the following steps: (a) independent reading of all qualitative data, (b) independent coding of content through highlighting key words and phrases, and (c) independent generation of potential themes. Triangulation of data occurred through (a) collective review of individualized themes and review of codes, (b) collective discussion of themes and subthemes in order to reach consensus, and (c) integration of quantitative and qualitative data sets, based on the mixed methods experimental design procedures outlined by Creswell and Plano Clark (2018). Three researchers formally reviewed all data sets and transformed qualitative data through frequency counts of common terms used by participants to enhance the interpretation. They first conducted individual content analyses to identify trends across all data sets, and then met as a group to discuss findings until achieving full consensus.

Trustworthiness of the study was addressed through various strategies. To enhance credibility, the researchers used a variety of methods, including triangulation of multiple sources of data and a team of six researchers. The study utilized verbatim quotes to represent the participants' perceptions of the protocols. To improve dependability of the findings, the researchers performed the stated procedures (as outlined in the methods), and three researchers completed a full review of the data to verify all findings for the mixed methods interpretation. The researchers enhanced confirmability by consulting faculty with expertise on the design, data analyses, and interpretation. A data consultant, independent of the research team, provided technical support for the statistical analyses and verified the results. A team of three researchers triangulated all findings to achieve consensus of the final mixed methods interpretation.

Results

Of the 34 participants, five participants were excluded from the study due to not completing the full duration of the protocol. Data from 29 participants (experimental $n=15$; control $n=14$) were analyzed.

Demographics

Table 1 shows the demographic data of the sample including age, gender, and pre-intervention scores for the COPE and the PSS. The experimental and control groups had similar demographics with the exception of pre-intervention stress reported on the PSS, with the control group identifying higher levels of stress.

Table 1

Descriptive Statistics of Sample

Variable	Experimental N=15	Control N=14
Gender		
Female	93.3% (n=14)	92.9% (n=13)
Male	6.7% (n=1)	7.1% (n=1)
Average Age	23.9 (± 1.4)	24.2 (± 1.8)
COPE Pre-Intervention Score		
Mental Disengagement	10.8 (± 2.8)	12.9 (± 2.3)
Behavioral Disengagement	5.7 (± 1.4)	5.9 (± 1.3)
PSS Pre-Intervention Score	17.8 (± 5.6)	22.6 (± 3.8)
<i>Note. (N=29)</i>		

Quantitative Data Analysis

Data sets from the control and experimental groups were determined to be normal distributions using the Shapiro-Wilk test of normality. To test the first hypothesis, the researchers used independent samples *t*-tests to compare change scores pre- and post-intervention between the experimental and control groups. Pre and post intervention data from the COPE and PSS showed no statistically significant differences between these groups. Therefore, the researchers retained the first stated null hypothesis (H_{01}).

In order to examine the immediate impact of using the protocols, change scores were established between VAS data collected in the first and last minutes of completing the protocol. Week 4 data was selected as the focus because the researchers determined that by the fourth week of use, the participants would be most familiar with implementing their protocols. To test the second hypothesis, VAS change scores for stress and engagement during week 4 were compared between groups using independent samples *t*-tests and showed no statistically significant differences. Thus, the researchers retained the second null hypothesis (H_{02}).

To test the third hypothesis, week 4 VAS change scores within the experimental and control groups were also examined using paired samples *t*-tests. Table 2 reports the analysis of VAS scores for week 4 involving stress and engagement levels following use of the mindfulness protocols. Changes in stress and engagement levels analyzed through paired *t*-tests were found to be statistically significant for the experimental group, with large effect sizes for decreased stress levels ($d=-1.595$; $p<.001$) and

increased engagement levels ($d=1.106$; $p=.001$) following completion of the protocol in week 4. The researchers rejected the third stated null hypothesis (H_{03}) as there were statistically significant differences for reported stress and engagement immediately after the use of the HOME Protocol in the fourth week.

Table 2

Paired Samples t-tests from Quantitative Analysis (Week 4 VAS)

Variable	Experimental N=15	Control N=14
Stress		
Cohen's <i>d</i>	-1.595	-0.435
Mean	-21.40	-8.857
<i>t</i> value	-6.178	-1.627
Sig (2-tailed) <i>p</i>	.000*	.128
<i>df</i>	14	13
Standard error	3.464	5.445
Engagement		
Cohen's <i>d</i>	1.106	0.385
Mean	18.067	12.714
<i>t</i> value	4.285	1.440
Sig (2-tailed) <i>p</i>	.001*	.173
<i>df</i>	14	13
Standard error	4.216	8.826
<i>Note. (N=29) *p < .01</i>		

In contrast, week 4 VAS change scores within the control group showed no significant changes for stress ($p=.128$) or for engagement ($p=.173$) using paired *t*-tests. Changes in challenge and meaning levels did not yield significant differences within either the experimental or control groups.

Qualitative Data Analysis

Qualitative data from both participant protocol booklets and focus group transcriptions produced three major themes of *Habit Formation*, *Management of Stress and Overwhelming Feelings*, and *Re-focus for Re-engagement in Activity* (refer to Table 3 for representational quotations).

Habit Formation

All participants in the experimental and control focus groups reported recognizing their disengagement from activities and the need to “take a break,” which was terminology used by members of both groups. Participants in both focus groups reported applying the mindfulness strategies of their protocols as a break following their disengagement, however, habit formation was only reported by the experimental group.

All participants in the experimental HOME Protocol group expressed that regular use of the protocol led to the formation of a routine or automatic, informal use of the protocol in daily life. Participants reported incorporating the HOME protocol into their daily lives naturally without requiring the email reminder. One participant in the experimental group stated, "...starting around the same time I noticed a point that I would get to of 'okay, I should probably take a break,' and it was nice to do this as my break" (lines 32-34).

In contrast, participants in the control focus group did not report their journaling protocol leading to habit formation. One participant in this group stated, "it wasn't like a top priority, it just didn't quite become that habit" (line 97-98). Control group participants also noted needing reminders to participate in the journaling protocol weekly.

Management of Stress and Overwhelming Feelings

Participants in both focus groups described using their protocols during high stress moments. They noted that the protocols allowed them to have times of self-reflection and increased their self-awareness to recognize their high levels of stress and overwhelming feelings. Participants of the experimental focus group reported that the HOME Protocol helped to lower "stress levels and feelings of being overwhelmed" (lines 40-42). Participants in the control focus group shared that the use of their protocol did not seem to decrease levels of stress. One participant stated, "I don't know that my scale of overwhelm or stress necessarily [*pause*] transitioned a ton" (lines 171-172).

Participants in the experimental focus group noted that using specific sections of the protocol, such as PMR, stretching and deep breathing, was also beneficial for reducing feelings of stress, anxiety, and anger and for addressing the wide array of emotions. Participants described using the HOME Protocol techniques informally, such as "in the car" (line 25) or in between classes at school (lines 72-73). One participant stated, "Even when I didn't have it with me I would kind of utilize some of the techniques..." (lines 20-21). In contrast, several participants in the control group reported increased stress during the journaling mindfulness strategy, as it seemed to promote reflection on all of the things they needed to do. Participants described using their journaling time to make "to-do lists" (lines 142-145). One participant wrote, "I want to be perfect and I think that is increasing my stress" (Participant 802, p., section 2).

Re-focus for Re-engagement in Activity

Participants in both focus groups reported being able to focus their minds and thoughts during the implementation of their protocols. Only the experimental focus group noted their increased focus helped them to reflect on re-engaging in the activity from which they had disengaged. These participants reported being able to "re-focus on what I was doing" (line 41) and being "mind-focused on the task at hand" (lines 119-120). The experimental focus group further described analyzing the meaning of their activities. One experimental group participant noted, "[I] realize the meaning of it in the time and not just thinking 'oh I need to stretch through this to get this over with' it's a 'oh I need to stretch through this to re-focus my mind'" (lines 118-121). All participants in the experimental focus group indicated positive attitudes and a willingness to use the HOME Protocol for re-engagement.

Participants in the control focus group stated that their journaling protocol helped them to focus their minds on the thoughts they had journaled rather than re-focusing on the activity from which they had become disengaged. One participant noted, “the first half [of journaling] was me just rambling on and then I think a lot of times the second half of my writing was just like making a “to-do” list so like we’re going to focus on this first and then just organizing my thoughts of what else I needed to get done” (lines 142-145). Participants reported enjoying the journaling activity as it allowed them to express their “feelings and thoughts” (lines 188-190).

Integrated Mixed Methods Analysis and Interpretation

The study investigated student perceptions of the HOME Protocol as a re-engagement strategy through an integrated mixed methods analysis. Participants of both focus groups reported using their respective protocols during times when they experienced stress, busyness, and overwhelming feelings. The experimental group reported that the HOME Protocol helped them to reduce stress and focus on the activity from which they had disengaged. This finding was evident in the analysis of VAS change scores within the experimental group, which showed a statistically significant decrease in stress ($d=-1.595$, $p<.001$) and an increase in engagement ($d=1.106$, $p=.001$) following use of the HOME Protocol in week 4. Participants in the experimental group indicated that the HOME Protocol aided re-focus that led to reflection on re-engagement in the activity from which they had disengaged.

In contrast, the control group reported their protocol was used as a coping strategy for journaling their overwhelming feelings of stress, but it did not seem to decrease their stress levels or affect engagement. This finding was observed in the analysis of VAS change scores of the control group, which showed no significant changes for stress ($p=.128$) or engagement ($p=.173$) following use of their protocol in week 4. Participants in the control focus group reported their protocol led them to focus on the thoughts they had journaled. Although participants in both focus groups described that their protocols helped them re-focus, only the experimental group reported increased engagement.

Qualitative data from protocol books and focus group transcripts were transformed through frequency counts of common terms used by participants. Frequency counts were highest for reports of stress (experimental group, $f=32$; control group, $f=28$) and overwhelming feelings (experimental group, $f=15$; control group, $f=21$), followed by self-awareness and self-reflection (experimental group, $f=33$, control group, $f=17$). These findings suggested that participants of both groups perceived a high level of stress and overwhelming feelings, as well as self-awareness and self-reflection during the study. While both protocols seemed to promote self-awareness, participants in the experimental focus group reported that this self-awareness helped them reflect on re-engagement; whereas the control group noted increased stress by focusing on overwhelming feelings they had journaled. Frequency counts were notably smaller for other terms. Refer to Table 3 for frequency counts.

Table 3*Qualitative Themes*

Qualitative Themes	Experimental			Control		
	Representative Quotations	Protocol books (f)	Focus Group (f)	Representative Quotations	Protocol books (f)	Focus Group (f)
Theme 1: <i>Habit Formation</i>	“I also realized that I had kind of a sort of pattern when I think I did the stuff each week because, whatever day it was, it was around the same time that I had like the disengagement from whatever I was working on [...] I could only go so long, and with starting around the same time I noticed a point that I would get to of ‘okay, I should probably like take a break,’ and it was nice to do this as my break.” (lines 24-34).	N/A	6	“[...] it was just like that extra thing that wasn’t already a habit or routine so like it takes about 30 days for something to become a routine or a habit and this was four weeks you know, it wasn’t, it was about 30 days [*laughs*] if you did it every single day, you know, um but just because it wasn’t like a top priority it just it didn’t quite become that habit” (lines 95-98).	N/A	6
Theme 2: <i>Management of Stress and Overwhelming Feelings</i>	“...it was often when I felt overwhelmed that I was getting disengaged so it helped a lot.[...] and it kind of um lowered my stress levels and feelings of being overwhelmed” (lines 40-42). “I got very self-aware during this. Like, the activities I realized more how stressed I was in the situations.[...] and once I started this I was so self-aware and I was like you know what I could really benefit from this and it was really nice” (lines 112-115).	Stress=21 Overwhelm=9 Self-awareness =28	Stress=11 Overwhelm=6 Self-awareness =5	“It made you really become self-aware about the overwhelming feelings but how much just being a student and having the responsibilities that we do” (lines 26-28). “Something I did notice was that even though I just had that time to think and feel, I didn’t always necessarily like decrease my overwhelm, [...] I don’t know that my scale of overwhelm or stress necessarily [*pause*] transitioned a ton” (lines 168-172).	Stress=17 Overwhelm=7 Self-awareness =13	Stress=11 Overwhelm=14 Self-awareness =4

Qualitative Themes	Experimental			Control		
	Representative Quotations	Protocol books (f)	Focus Group (f)	Representative Quotations	Protocol books (f)	Focus Group (f)
<p>Theme 3: <i>Re-focus and Re-engagement in Activity</i></p>	<p>“I felt like I could re-focus on what I was doing” (line 41)</p> <p>“Doing this it made me realize when I’m doing those things its helping me not just kind of like resituate but its helping me be more mind-focused on the task at hand and realize the meaning of it in the time and not just thinking “oh I need to stretch through this to get this over with” it’s a “oh I need to stretch through this to re-focus my mind” (lines 118-121).</p>	N/A	6	<p>“The 7 minutes was long, but it was also just like the first half was me just rambling on and then I think a lot of times the second half of my writing was just like making a “to-do” list so like we’re going to focus on this first and then just organizing my thoughts of what else I needed to get done” (lines 142-145).</p> <p>I just like the idea of just being able to have a journal or just something where you can [...] spill everything out and just have all of your feelings and thoughts out” (lines 188-190).</p>	N/A	11
<p><i>Note.</i> Qualitative data from protocol books and focus group transcripts were transformed through frequency counts (f) of common terms used by participants. Not applicable (N/A) – not evaluated within the protocol books.</p>						

Qualitative data from protocol books and focus group transcripts were transformed through frequency counts of common terms used by participants. Frequency counts were highest for reports of stress (experimental group, $f=32$; control group, $f=28$) and overwhelming feelings (experimental group, $f=15$; control group, $f=21$), followed by self-awareness and self-reflection (experimental group, $f=33$, control group, $f=17$). These findings suggested that participants of both groups perceived a high level of stress and overwhelming feelings, as well as self-awareness and self-reflection during the study. While both protocols seemed to promote self-awareness, participants in the experimental focus group reported that this self-awareness helped them reflect on re-engagement; whereas the control group noted increased stress by focusing on overwhelming feelings they had journaled. Frequency counts were notably smaller for other terms. Refer to Table 3 for frequency counts.

Discussion

The aim of the study was to examine the effectiveness of a novel mindfulness protocol for OT graduate students to utilize as a strategy to reduce stress and to promote re-engagement in meaningful activities and occupations during the didactic component of their education. To accomplish this, the study compared the effects of the HOME Protocol to those of an alternative journaling protocol. Perceived stress and engagement were outcome variables that were measured following 4-weeks of implementation of the mindfulness protocols. The study also qualitatively investigated OT students' perceptions of the HOME Protocol as a re-engagement strategy.

Perceived Stress and Stress Reduction

Findings from the study suggest that the OT graduate students perceived a high level of stress and overwhelming feelings during the study period. It appeared that the students' perceived stress was mostly related to the typical demands of graduate education, which is supported by prior research (Evans et al., 2018). The control group reported higher stress levels than the experimental group before the intervention period began. Following completion of the mindfulness protocol intervention, the participants in both groups continued to report high stress levels on the PSS post assessment (see Table 1). The researchers expected that the stress levels of the experimental group would decrease following use of the HOME Protocol due to the mindfulness strategies embedded in the protocol. Although overall stress levels did not show statistically significant changes between the two groups, findings supported in-the-moment stress reduction for the experimental group as indicated by within group VAS change score differences following immediate use of the HOME Protocol in week 4 of the study ($d=-1.595$; $p<.001$). As previously mentioned, researchers determined week 4 to be the most significant week for measuring changes before and after immediate use of the protocols because the students would be most familiar with implementing their protocols during the final week of the study. Although the control group reported higher levels of stress than the experimental group at pre assessment, no statistically significant changes in reported stress levels resulted following immediate use of the control journaling protocol. A similar finding was reported by Flinchbaugh et al. (2012) with journaling having no significant effect on reducing classroom-related stress. However, in the current study, the focus group data suggest the control protocol may have increased

some participants' stress levels immediately following completion of their journaling protocol. Some participants in the control focus group reported journaling their overwhelming feelings and making to-do lists of things that needed to get done, which may have increased perceived stress levels.

Students in the experimental focus group reported that the mindfulness strategies within the HOME Protocol were beneficial for handling stress and overwhelming feelings. These findings are consistent with prior research of coping skills and relaxation training (Yusufov et al., 2019), and specific mindfulness techniques (Chellew et al., 2015; Ford & Garzon, 2017; Hubbard & Blyler, 2016) that reported decreased perceived stress among students trained in these strategies. In a similar way, the HOME Protocol integrates various mindfulness strategies, in the reset, reach, and renew components of the protocol, to aid relaxation and stress reduction.

Disengagement and Re-engagement

The OT graduate students in the study reported a low to moderate level of behavioral and mental disengagement before and after the four weeks of the study. The OT students participated in the mindfulness study during the first half of the semester when classes were first starting, so it is possible that these students were more engaged in their academic courses during this time period when learning new course content. Multiple factors may have impacted students' perceived levels of engagement or disengagement, including factors pertaining to the class or course of study (Chipchase et al., 2017), as well as intrinsic and extrinsic motivation (Karacul, 2018; Kennedy & Davis, 2017).

The researchers expected that the engagement levels of the experimental group would increase following use of the HOME Protocol because of the mindfulness strategies embedded in the short nine-minute protocol. These strategies, such as deep breathing, PMR, self-talk and self-reflection, have been found to increase student engagement (Cornell, 2019; Flinchbaugh et al., 2012; Miralles-Armenteros et al., 2019; Oleś et al., 2020; Yun et al., 2020). Additionally, stretching and relaxation techniques within structured breaks were found to increase students' vigor and reduce fatigue (Blasche et al., 2018). Although overall engagement levels did not show statistically significant differences between the two groups, findings revealed an increase in engagement for the experimental group immediately after use of the HOME Protocol. This was indicated by within group differences of VAS change scores in week 4 of the study ($d=1.106$; $p=.001$).

Following intervention, the participants in both focus groups reported the ability to recognize moments when they disengaged from their activities and needed a break. It was interesting to find that all focus group participants used the same terminology of "take a break" when describing disengagement. Participants also recognized various personal signs of disengagement in their protocol booklets, including feelings of being stressed, overwhelmed, tired, bored, anxious, and frustrated. The students often used their respective mindfulness protocols when they experienced disengagement that was associated with education-related stress.

Overall findings of the study suggest the HOME Protocol was effective for decreasing stress and increasing engagement levels immediately after its use. These findings are consistent with previous research supporting the use of mindfulness techniques by students to reduce stress or to encourage engagement for improved school performance, well-being, or health (Balwant, 2018; Barbosa et al., 2013; Blasche et al., 2018; Chellew et al., 2015; Flinchbaugh et al., 2012; Ford & Garzon, 2017; Hubbard & Blyler, 2016; Yun et al., 2020; Yusufov et al., 2019).

Perceptions of the HOME Protocol as a Re-engagement Strategy for OT Students

One of the primary purposes of implementing the HOME Protocol is to promote occupational engagement in meaningful activities, which is a core construct in OT (AOTA, 2020; Kennedy & Davis, 2017). Thus, the researchers investigated OT students' perceptions of the HOME Protocol as a re-engagement strategy. After students recognized their disengagement from an occupation or activity, the HOME Protocol provided self-reflection and a series of timed mindfulness strategies to promote re-engagement. Following completion of the mindfulness strategies, the HOME Protocol prompted students to re-engage in the occupation or activity through deeper reflection on the personal meaning of the activity (What is the personal meaning of this activity to me?). The OT students reported within their HOME Protocol booklets more positive perspectives of the meaning of the activity from which they had disengaged. They often connected the personal meaning of an educational activity (such as studying, listening to a lecture, or completing an assignment) to a larger personal goal, which frequently included their future careers as occupational therapists. The OT students who used the HOME Protocol reported increased self-awareness and self-reflection that helped them reflect on re-engagement.

The OT students appeared to use positive self-talk in their HOME Protocol reflections following completion of the mindfulness strategies, despite not receiving training on self-talk as did the control group. In their HOME Protocol booklet reflections, OT students frequently focused on the personal significance of the educational activity (from which they had disengaged) and their personal interest of learning to become an occupational therapist. The students who used the HOME Protocol also appeared to use mastery self-talk by focusing on a specific goal of the activity to achieve an immediate or future educational outcome. The OT students' use of self-talk was consistent with previous literature in which graduate students used two intrinsic motivational strategies to increase engagement: enhancement of personal significance and mastery self-talk (goal-oriented approach) (Yun et al., 2020). Self-talk and journaling were strategies specifically used within the alternative mindfulness protocol of the control group; however, the control protocol did not yield significant effects on students' engagement. According to Oleś et al. (2020), self-talk may be viewed as a complex intrapersonal communication with various functions, including self-regulation, self-instruction, self-reflection, and motivation, among others. The combination of self-reflection and mindfulness strategies within the HOME Protocol may have helped students view their educational activities in a more positive way. Previous literature suggests that mindfulness strategies may assist students with positive thinking during stress-related educational activities (Cho et al., 2016). It is possible that the HOME Protocol may

promote positive self-talk during self-reflection on the meaning of the educational activity following participation in the mindfulness strategies of the reset, reach, and renew components of the protocol. Further research is needed to explore students' use of positive self-talk during the HOME Protocol and its effect on student re-engagement.

Mindfulness strategies used within the HOME Protocol were intended to increase focus in the present moment. In the study, participants of both groups reported that their mindfulness protocols helped them focus on the present moment. However, only the HOME Protocol group reported that this focus led them to re-focus on the activity from which they had disengaged, thus prompting the re-engagement process. Focus group data suggest that the HOME Protocol helped the OT students re-engage in meaningful activities and occupations after experiencing disengagement and provide support for its use as a re-engagement strategy. The OT students seemed to report overall positive effects of partaking in the HOME Protocol and noted that the HOME Protocol increased self-reflection, helped them to acknowledge disengagement, decreased their stress, and increased their re-engagement in activities. These findings are consistent with the positive effects of mindfulness for improved academic performance or engagement, as reported in previous literature (Cornell, 2019; Miralles-Armenteros et al., 2019).

HOME Protocol Use in Everyday Life

The HOME Protocol was designed to help OT students reduce their stress levels and re-engage in meaningful activities and occupations of daily life. The study suggests that OT graduate students generally describe disengagement from activities within the occupational category of formal education, such as studying, assignments, and lectures. Settings that the participants described completing the HOME Protocol generally consisted of school and home. One focus group participant described completing the HOME Protocol informally in the car when they did not have the protocol book with them.

The researchers explored how OT students applied the HOME Protocol as a re-engagement strategy, but they did not anticipate the formation of a habit within a short 4-week study period. However, a subtheme of *Habit Formation* emerged as participants in the experimental focus group described using the HOME Protocol on a more routine basis. This finding is surprising given the short duration of four weeks. Most participants in the study applied their respective protocols once per week for 4 weeks; however, one outlier appeared in the data for daily use of the HOME Protocol. Participants who used the HOME Protocol found themselves informally applying the protocol in their daily lives during times when they were highly stressed, disengaged, or needing to take a break. The informal or partial use of the protocol occurred when participants did not have their booklets in front of them and suggested that some of the strategies in the HOME Protocol, such as PMR, stretching and deep breathing techniques, were starting to be used as coping mechanisms for handling stress and busy schedules. As noted by Chipchase et al. (2017), multiple external and internal factors may lead to disengagement. This may account for the informal or partial use of the HOME Protocol by the students, depending on the specific contexts in which they became disengaged.

In contrast, participants in the control focus group reported that their respective journaling protocol did not become a habit during the study. Habit formation should be further investigated in future studies of the HOME Protocol.

Previous literature suggested possible challenges for implementing mindfulness programs, including various training and time requirements (McConville et al., 2017). In contrast, the nine-minute HOME Protocol was designed to require minimal time requirements for training and implementation of the protocol. OT students reported a common challenge of needing a physical copy of the booklet to complete the mindfulness protocol. The identified challenges may lead to further development and advancement of the protocol in future research.

Limitations

Generalizability and transferability were impacted by the small convenience sample size consisting of OTD students in their early-mid-twenties, of whom 93% were female. While the researchers attempted to bolster trustworthiness of the study's findings with various strategies, there are limits to the inferences that can be made in the pilot study. The protocol also had a short duration of four weeks, and most of the participants completed the protocol for the minimum number of times required. Lastly, students may have experienced increased stress related to coursework as the semester progressed, which may have impacted stress levels reported in the study.

Implications for OT Education and Future Research

The results of the study suggest that OT students may experience heightened levels of stress due to the high demands of OT education. Without appropriate coping strategies, the high stress levels may impact OT students' health and well-being and challenge their abilities to complete schoolwork and daily activities (Evans et al., 2018). Students may benefit from training in coping strategies, relaxation, and mindfulness techniques to manage high levels of stress (Chellew et al., 2015; Ford & Garzon, 2017; Hubbard & Blyler, 2016; Yusufov et al., 2019) during their OT educational programs. The HOME Protocol is a novel mindfulness protocol based on prior research of stress, mindfulness, and occupational engagement. The protocol focuses on occupational engagement and integrates a holistic view of the mind, body, and spirit, supported in OT literature (AOTA, 2020; Henton et al., 2021; Kennedy & Davis, 2017). The protocol is designed to decrease stress, and to promote OT students' re-engagement in meaningful activities and occupations of daily life by applying mindfulness strategies in a succinct manner. Special training is required to learn how to recognize disengagement from occupations and how to apply specific mindfulness strategies to increase re-engagement in occupations throughout the day. The initial results of the pilot study support the use of the HOME Protocol to reduce in-the-moment stress and increase engagement for OT graduate students, suggesting that it may be a beneficial tool for promoting re-engagement in occupations. However, further research is recommended to validate the results of the study.

Participants in the study were limited to OTD students, warranting further research among a broader population to examine a more holistic, generalizable array of data. This could also be achieved through studying the effectiveness of the HOME Protocol with OT students of varying graduate degrees. A study should be completed which examines the use of the HOME Protocol in an online or computer application format because it was indicated by participants that the book formatting was not the most conducive to their lifestyles.

Conclusion

The pilot study suggested positive benefits for the HOME Protocol as a strategy to reduce OT student stress and promote re-engagement. Participants demonstrated significant in-the-moment changes in stress and engagement after implementing the protocol. Further research is indicated to determine its effectiveness when expanded to other academic programs and a larger, more diverse sample. The HOME Protocol offers a unique coping strategy for OT students experiencing high levels of perceived stress and disengagement from meaningful activities. The occupational focus of the protocol that blends mindfulness with occupational engagement demonstrates potential value for personal and professional health and well-being.

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Appendix A

Huntington Occupational Mindfulness and Engagement (HOME) Protocol

Purpose: to train students in the use of an occupational mindfulness and engagement protocol which focuses on (1) recognizing occupational disengagement and (2) re-engaging in meaningful occupations through the use of mindfulness strategies.

(1) Recognizing Occupational Disengagement

During meaningful occupation or activity, the student will learn to recognize various signs of occupational disengagement, such as:

- Reduced participation in the activity
- Decreased focus or attention during the activity
- Daydreaming or attending to other activities
- Stopping or withdrawing from the activity

(2) Re-engaging in Meaningful Occupations

“Take a break” for:

1) Internal observation/reflection on occupation (self-talk)

Reflect and ask self-reflective questions about my feelings related to stress, engagement, and the activity/occupation.

2) Stillness/awareness of the current moment (mindful engagement on body)

Reset and breathe by practicing stillness & silence while taking deep breaths and conducting a body check to identify areas of muscular tension and/or pain.

3) Engagement in stress reduction activity (mindful engagement on body)

Reach and stretch (practice full body stretches) and/or progressive muscular relaxation.

4) Engagement in stress reduction activity (mindful engagement on body/mind/spirit)

Renew and breathe (practice meditation/gratitude).

5) Re-engagement /reflection on occupation (self-talk)

Re-engage by asking self-reflective questions about my feelings related to stress, engagement, and the activity/occupation.

Appendix B

HOME Protocol Checklist

<p>ONE (1 minute)</p>	<p>Reflect – Ask:</p> <p><input type="checkbox"/> How am I feeling?</p> <p>Not at all stressed _____ Extremely stressed</p> <p>Not at all engaged _____ Extremely engaged</p> <p><input type="checkbox"/> How do I feel about this activity?</p> <p>Not at all challenging _____ Extremely challenging</p> <p>Not at all meaningful _____ Extremely meaningful</p> <p><input type="checkbox"/> What is the meaning of this activity?</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> Other feelings I have:</p> <p>_____</p> <p>_____</p>
<p>TWO (2 minutes)</p>	<p>Reset - Breathe (Stillness/Silence) & Body Check</p>
<p>THREE (3 minutes)</p>	<p>Reach – Stretch & Progressive Muscular Relaxation</p>
<p>TWO (2 minutes)</p>	<p>Renew - Breathe (Meditation/Gratitude)</p>
<p>ONE (1 minute)</p>	<p>Re-engage – Ask (1 minute)</p> <p><input type="checkbox"/> How am I feeling?</p> <p>Not at all stressed _____ Extremely stressed</p> <p>Not at all engaged _____ Extremely engaged</p> <p><input type="checkbox"/> How do I feel about this activity?</p> <p>Not at all challenging _____ Extremely challenging</p> <p>Not at all meaningful _____ Extremely meaningful</p> <p><input type="checkbox"/> What is the meaning of this activity to me?</p> <p>_____</p> <p>_____</p>