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Mindfulness Training's Effect On Stress, Attention, and Perfectionism and Their Relationship to Achievement Goals

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MINDFULNESS TRAINING'S EFFECT ON STRESS, ATTENTION, AND PERFECTIONISM AND THEIR RELATIONSHIP TO ACHIEVEMENT GOALS

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For Mom. Thank you for always being my fiercest advocate. You have never let me down or left my side, and your unwavering support was the driving force for this project. Thank you for your sacrifices and unmeasurable love.

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In recent years, the practice of cultivating mindfulness, a nonjudgmental awareness of the present moment, has made a resurgence in areas ranging anywhere from behavioral issues to work and academic productivity (Brown & Ryan, 2003a). The current study was focused on the relationships between mindfulness, achievement styles, stress, attention, and perfectionism at a single-sex, liberal arts institution. One hundred and five undergraduate, female students participated in this study. All participants were randomly assigned to either a mindfulness audio condition or a badminton audio condition as a control. Then, they were given measures relating to achievement goals, mindfulness capability, state mindfulness, mind-wandering, stress, attention, and perfectionism. There was a significant difference in state mindfulness levels between the two conditions after receiving the audio session. The mindfulness condition had significantly higher state mindfulness. When the data were separated into conditions, there was also a moderate, positive correlation between state mindfulness and mastery approach goals indicating a significant relationship. Additionally, with the entire data set, there was a weak, positive correlation between perfectionism and performance avoidance style. While there was a moderate, positive correlation between the perfectionism and performance avoidance style in just the mindfulness condition. It was shown that mindfulness training did change state mindfulness after the audio intervention, but had no significant effect on stress, attention, mind wandering, and perfectionism scores.

Keywords: mindfulness, performance avoidance, performance approach, mastery motivation, stress, mind-wandering, attention, perfectionism

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Mindfulness

Mindfulness has been defined as a practice that fosters open-minded awareness of the present moment and has become the universal solution to most problems ranging from behavioral issues to work and academic productivity (Brown & Ryan, 2003a). Mindfulness meditation was practiced for thousands of years in the Eastern world laying the foundation for many ancient texts and techniques (Dryden & Still, 2006). This form of meditation seems to have originated with Hinduism in 1500 BCE. It was used in the context of yoga, which then led to Daoism (Taoism) in 6th Century BCE, which then lent itself to Buddhism in 535 BCE. Mindfulness incorporated breath work and focus into daily activities of social and religious life. Not only have Hinduism and Buddhism used these practices, but it is also evident across Jewish, Muslim and Christian philosophy (Dryden & Still, 2006).

Over the last 40 years, there has been a resurgence in the use and conceptualization of the ancient technique, namely through the therapeutic applications of Jon Kabat-Zinn. He founded the Stress Reduction Clinic at the University of Massachusetts Medical School in the 1970s, which resulted in him creating the Mindfulness Based Stress Reduction (MBSR) program to help with physiological and psychological conditions (Kabat-Zinn, 1982). Currently, mindfulness is not solely used in clinical settings, but also in schools, prisons, and the workforce. Some speculate that using this meditative technique can advance every aspect of one's life including interpersonal relationships, stress, attention, and performance (Kabat-Zinn, 1982). There are various opinions on the relationship between performance, motivation and mindfulness. However, one of the leading views in this vein of research is that there is strong contrast between

the ideas of productivity and mindfulness. The perspective is that staying in the present focus and accepting one's current position is not conducive with accomplishing future tasks (Lyddy & Good, 2017). The "being" versus "doing" debate has gained traction in recent years and many researchers are beginning to examine if mindfulness could increase work and academic productivity, or if the practice of being mindful is detrimental to the end result. It is often never acknowledged that there will always be a conflicting division between nonjudgmentally accepting oneself and striving to achieve new goals. One of the main tenets of mindfulness is finding contentment with one's current situation, while task motivation is a stark contrast (Hafenbrack & Vohs, 2018).

Mindfulness and acceptance are complex ideas which have many possible areas to research. While there are various ways to teach, train and disseminate these lessons, there are three main programs that have been used in both community and clinical subgroups; mindfulness-based stress reduction (MBSR), mindfulness based cognitive therapy, and acceptance and commitment therapy (Cavanagh, Strauss, Forder & Jones, 2014). The usual results from mindfulness studies are glowingly positive. Yet, few researchers have examined the value of these practices in real life. With the increasing interest in this ancient practice, mindfulness meditation, mindful listening and other techniques are, "close to taking on cult status in the business world" (Brendel, 2015, p. 1).

There are various ways to measure mindfulness, namely: trait and state mindfulness. Trait mindfulness is a consistent attitude in which one focuses on their present situation in an accepting and nonjudgmental way *(*Hafenbrack & Vohs, 2018). This characteristic has been shown as a predictor for successful leadership outcomes, increased prosocial behaviors, and a lower rate of cruel or vengeful actions (Hafenbrack et al., 2019). State mindfulness, on the other

hand, is when acceptance is cultivated through a single meditative session (Hafenbrack & Vohs, 2018). Even though it is used on a case-by-case basis as compared to the ever-present actions of trait mindfulness, it can still invoke cognitive and behavioral changes within an individual. It has been shown that even one session of mindfulness meditation can improve interpersonal skills, negotiation processes and increase reading comprehension directly after interacting with meditative audio (Clinton, Carlson, & Swenseth, 2018; Hafenbrack & Vohs, 2018).

Mindfulness and Task Performance

Experiment 1

Researchers, Hafenbrack and Vohs, examined the effect of mindfulness training on task performance and task motivation; they conducted five separate experiments each containing approximately 100 participants (Hafenbrack & Vohs, 2018). The aim of the first two studies was to examine the effect of state mindfulness on task motivation and task performance with a component of mind-wandering. The instructions provided mindfulness breathing techniques, as they are often the entry point into the subject of mindfulness meditation. Additionally, the mindfulness meditation was compared to a group with instructions which promoted mind-wandering (Hafenbrack & Vohs, 2018). The reasoning for the in-depth examination of these specific factors is if an individual had a higher rate of mindfulness (focusing solely on the present moment), they would be less motivated to complete activities in the future. The recordings for both the mind-wandering comparison and the mindfulness condition were voiced by the same person. For the novel task, the participants were asked to complete anagram word puzzles (Hafenbrack & Vohs, 2018). Before completing the task, the participants were asked how motivated they were to complete the puzzles and how long they intended to spend on them.

The participants in the mindfulness audio condition reported less motivation than did the mind-wandering group.

Experiment 2

The second study was designed to replicate and expand on the findings from the first study. Once more, the researchers examined what they considered to be the "demotivating" effect of mindfulness audio. The task used in the second experiment required the participants to edit cover letters of a "job seeker" (Hafenbrack & Vohs, 2018). This experiment also included a behavioral measure of pleasant versus unpleasant activities and perceived motivation in the given circumstances. The study also diverged from the first in that, instead of using an online workforce to complete the assessments, the researchers used participants from France and the U.S. who were employed in traditional settings (physical workplaces). Once more, this experiment found that mindfulness meditation decreased motivation towards tasks, regardless of whether they were coded as pleasant or unpleasant.

Experiment 3

The third of the five experiments were similar to the first two, but it also included states of arousal and the potential of future focus as conditional effect of motivation (Hafenbrack & Vohs, 2018). There were also two comparison conditions in this study, one of which was the participants reading text, whereas the other was summarizing and writing about their activities. These tasks were chosen because they are both crucial to workplace engagement and success (Hafenbrack & Vohs, 2018). The researchers also used a different operationalized definition of their mindfulness activity, the body scan (another prevalent technique in the field of mindfulness work). Mindfulness did not impact performance on the behavioral task, however, it slightly improved the participant's performance on the novel task. Again, it was determined by the study

that mindfulness weakened task motivation. It also showed that task motivation can be decreased by body scan activities, and not just mindfulness breathing exercises (Hafenbrack & Vohs, 2018).

Experiment 4

The fourth experiment of the set included most of the previous study designs, however, it also included the component of having an incentive to perform well on a task. There is a positive correlation between incentive provided and how hard individuals work, so the researchers wanted to include this component to see if financial compensation could mediate the factor of mindfulness with motivation (Hafenbrack & Vohs, 2018). The participants were asked to complete a novel task, followed by a manipulation check and demographics survey. The tasks varied from editing cover letters, to reading new stories on a web browser, and writing about their experiences during the past month. Additionally, in the later experiments, versions of the tasks listed above were used as the independent variable (reading the news, writing about their month, etc.) and were then followed by a timed anagram task (Hafenbrack & Vohs, 2018).

The results showed that the mindfulness manipulation impacted current task motivation. However, the participants in the mindfulness condition solved significantly more anagrams compared with the reading control group and slightly more the writing control group. This was an unexpected finding. It was expected that the mindfulness manipulation would deleteriously impact task performance, but in fact, it benefitted the participants in that condition.

Experiment 5

The final experiment was an amalgamation of the various study components as listed above. Participants were given a mindfulness audio or a mind-wandering audio and were requested to record how detached they felt from their daily stressors. Next, the participants were

asked to perform a brainstorming task, which in this case, was to think of how many creative ways there are to use a brick. The final study was designed to examine why mindfulness did not reduce task performance when it decreased task motivation. Results showed that a possible explanation for this effect was that participants were able to detach from their daily stressors in the mindfulness audio condition, which allowed them to focus more on the present task (Hafenbrack & Vohs, 2018).

Among the five experiments and two meta-analyses conducted on whether state mindfulness influenced task motivation and task performance, three out of the five hypotheses were supported. It was found that state mindfulness decreased the motivation to engage in future tasks, however, there were no significant findings to indicate that any of the mindfulness conditions in the experiments had greater difficulty completing the tasks compared to the other groups such as reading, writing, or mind-wandering audio clips. The researchers provided a possible explanation for the divergence in the findings. They stated that while mindfulness practices reduce the motivation to complete tasks in the future, it also eliminates stressors allowing the individual to focus on the current task, resulting in increased performance compared to the control group (Hafenbrack & Vohs, 2018).

In a similar area of research, mindfulness was used as a moderator between polychronicity, (the preference to multi-task) and life-satisfaction, and work-life conflict (Weintraub, Pattusamy & Dust, 2018). Weintraub, Pattusamy, and Dust proposed that mindfulness serves as a mediating factor between excessive multi-tasking and life-satisfaction. The results of the study showed that individuals with higher levels of trait mindfulness were more capable and effective with higher levels of polychronicity (Weintraub et al., 2018). Current society demands that individuals have the ability to multitask effectively to continue the cycle of

over-working and production. It has been posited by Weintraub, Pattusamy, and Dust that this increased level of performance demand, and need for multitasking could increase the frequency of perfectionistic tendencies (Weintraub et al., 2018).

Mindfulness and Perfectionism

There are a few applicable studies that examine perfectionism and mindfulness. Researchers Wimberly, Mintz, and Suh (2016) used mindfulness–based therapy interventions with self-help books in the attempt to reduce levels of perfectionism and stress. The participants were divided into an intervention or control group (Wimberley et al., 2016). The intervention group completed pre-intervention measures of perfectionism, perceived stress, and mindfulness. Then, they received a mindfulness self-help book to read over the course of six weeks, after which the participants repeated the scales again. To assess longer-term affects, the participants in the intervention group completed the measures once more six weeks after the end of their testing period (Wimberley et al., 2016). The control/waitlist group took the assessments six weeks apart without the mindfulness self-help literature. Between the two groups, there were larger decreases in perfectionism and perceived stress for the intervention/self-help group. While both groups experienced a decrease in negative affect, the intervention group was able to decrease the effect to a greater extent than the control group (Wimberley et al., 2016).

Burns, Lee, and Brown examined the effect of transcendental meditation (TM) on self-reported measures of anxiety, stress, depression, and perfectionism in college students. This study was conducted in the northeast at a small, liberal arts college and contained 43 participants. The participants were required to take pre- and post-self-report assessments for stress, anxiety, depression, and perfectionism (Burns, Lee, & Brown, 2011). Then, they underwent consistent training sessions with a duration of a two-semester period. The trainings consisted of a 45-

minute lecture/ presentation, a one-on-one training block with a TM instructor, and four group lecture/presentations of 45-minutes each. It was found that after the transcendental meditation intervention the self-reported measures of college students for stress, anxiety, depression (not significantly), and perfectionism decreased. Namely, there were significant reduction in the pre- and post-self-reported scores for stress, trait anxiety and perfectionistic thinking (Burns et al., 2011).

Stress and Mindfulness

While mindfulness techniques may have positive influences in other factors of daily life, many have posited that mindfulness may reduce daily levels of stress. Over the last 20 years, there has been growing support and research for mindfulness-based stress reduction (MBSR), which incorporates group-intervention and mindfulness techniques to manage stress (Kabat-Zinn, 1982). It has been implemented in those suffering from chronic illnesses as well as healthier populations looking for ways to cope with and reduce daily stressors. There have been positive effects of regular meditation sessions, such as increased self-worth, self-respect, and emotional regulation (Kabat-Zinn, 1982). Many early reports propose health benefits for individuals with chronic ailments, cancer, anxiety, depression and many more as well as in the contexts of incarcerated individuals and students (Grossman, Niemann, Schmidt, & Walach, 2004).

Mindfulness-based stress reduction is a program where acceptance and awareness are key to provide a different lens with which to view the world, and thus, promoting healthier coping strategies. In a meta-analysis regarding the increased health benefits of MBSR programs, several clinical as well as non-clinical populations were examined (Grossman, et al., 2007). While the number of studies they were able to include in the analysis was relatively small (20), the findings

suggest that MBSR could provide a host of benefits for various individuals coping with stressful situations (Grossman, et al., 2007). In addition to learning strategies to overcome daily stressors, the physiological benefits of MBSR are numerous. Mindfulness-based stress reduction has been shown to assist individuals with sensory pain, physical impairment, anxiety, and medical symptoms. The program is conducted through teaching individuals the techniques of mindfulness in an 8-week course (two and a half hours per week). Research suggests that the employment of mindfulness can alleviate psychosomatic and psychiatric disorders through non-judgmental acceptance. The perceived success of such meditative practices has piqued the interest of researchers in determining the efficacy of such interventions (Grossman, et al., 2007). One such example is determining the effectiveness of these techniques in incarcerated populations as a way to cope with stress, regulate harmful and positive emotions, and help the inmates to develop skills they can use outside of prison to decrease the continuation maladaptive behaviors (Grossman, et al., 2007).

In one study focused on both male and female incarcerated populations, MBSR courses were presented in a variety of the drug units in Massachusetts Department of Corrections prisons. There were 113 courses offered, and 1,350 inmates completed the sessions. Before completing the MBSR intervention, all participants completed a self-report assessment on factors pertaining to self-image, aggression, and mood. After the course ended, a self-report survey was disseminated. The implementation of the MBSR module displayed significant improvements found in the areas of self-esteem, hostility and disturbances of mood. Among the significant results, the pre and post evaluation significance was greater in all areas for women than in men. The results provide an area for further study of mindfulness-based stress reduction techniques in correctional facilities (Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007). A purposed

justification of the in-depth examination of the effect was to see if the regular meditative sessions would provide the inmates with coping skills to avoid resorting to drugs and violence when confronted with intensely, emotional situations.

Attention and mindfulness

Being able to stay focused on a task without various distractions is often a key indicator of increased performance. A lack of focus, or mind-wandering is considered to be the shift in one's attention from the current situation or task to other, oftentimes, extraneous thoughts (Clinton et al., 2018). By definition, mindfulness could be considered the direct contrast to mind-wandering and there have been several studies examining this relationship. This notion was examined in a randomized controlled study, to see if the independent variable, a mindfulness training course, would decrease "mind wandering" and improve performance on the Graduate Records Examination (GRE) (Mrazek et al., 2013a). Results of the study showed that the participants in the 2-week mindfulness training program increased working memory capacity and reading comprehension scores (Mrazek et al., 2013a). In addition, the training program decreased the amount of distracted thoughts and stressors during the GRE and working memory inventories. Participants were screened in the beginning of the study to examine if they were prone to mind wandering, which improved after the mindfulness training session. Thus, even limited time with a mindfulness training program can cultivate a more focused atmosphere and increased cognitive functioning (Mrazek et al., 2013a). Mindfulness training programs have wide-ranging and diverse application in terms of cognitive performance and working memory, which could be examined further.

Lakey, Berry, and Sellers examined the relationship between mindfulness, attention, and performance and used a mindfulness meditation induction (MMI) to assess whether the

intervention assisted individuals with a P300-based brain computer interface (BCI) task. Brain-Computer Interfaces are devices that allow the users to execute commands with the variation of their brain signals (Lakey, Berry, Sellers, 2011). This type of non-invasive scanning technology, such as electroencephalogram (EEG), allows individuals to communicate without traditional methods (i.e. verbal communication). The P300 component describes the "positive deflection in the EEG" that peaks at 300 milliseconds after the display of the stimulus "presented with a low probability" (Lakey et al., 2011). The intervention (MMI) group had higher accuracy on the task which supports the idea that an increase in mindfulness produces higher concentration on the present task. In addition to the higher accuracy, the MMI assisted individuals in dismissing distractions and becoming acclimated to the task faster. Previous studies have also supported the theory that mindfulness interventions inhibit mind wandering, allow individuals to filter out distractions easier, and increase focus. From a neurological perspective, MMI is beneficial to brain regions with direct and indirect relationships with attention such as the amygdala. The amygdala plays a role in processing fear, preparing for emergency situations, is associated with stress and has other diverse features (Lakey et al., 2011). Mindfulness meditation induction has a benefit of amygdala regulation when presented with negative events. This type of regulation has been thought to be related to the decrease in cortisol (stress hormone), and improves a sign of relaxation and parasympathetic nervous system activation, vagal tone. Some have posited that relaxation can assist with focus and attention, which leads researchers to link that mindfulness meditation can affect attentional focus through emotional regulation, and decreased responses to negative stress (Lakey, et al., 2011).

Achievement Goals and Perfectionism

Achievement goals are one tool to explain how and why an individual may interact with an achievement situation (Kaplan & Maehr, 2007). An individual's underlying motivation may provide an explanation as to why they perform or act differently in various achievement settings (i.e. school, work, etc.) (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002). Achievement goals can further be broken down into the categories of performance and mastery, which can be further divided into: mastery-avoidance, mastery-approach, performance-avoidance and performance-approach. The three that will be studied in-depth throughout the study will be performance-avoidance, performance-approach and mastery-approach.

Mastery goals are held by individuals that are concerned with mastering material and are less focused on performance (Harackiewicz et al., 2002). Synonymously, these goals are often considered learning goals or task-focused. Consequently, master goals are often correlated with a better sense of emotional-regulation, critical thinking strategies, increased interest in topics. However, mastery goals are not often correlated positively with achievement measures, such as grades (Harackiewicz et al., 2002).

Performance, ego-focused, goals are shown by individuals who are more focused on the demonstration of their skills and abilities. Performance-approach goals refer to the style of individuals that want to demonstrate their competence and talents, whereas performance-avoidance goals refer to individuals who avoid demonstrating their skills for fear of failing in front of themselves or others (Elliot, 1999). Individuals with different achievement goals will prepare for and handle situations to test achievement in varied ways.

A previously under-researched intersection within the field of mindfulness studies, is the possible connection to performance goals and awareness of the present moment. Performance-

avoidance goals are behaviors that manifest from the need to avoid performing poorly. Performance-avoidance goal orientation has a damaging effect on performance (Darnon, Harackiewicz, Butera, Mugny, & Quiamzade, 2007). In contrast to performance-avoidance goals, performance-approach goals represent the desire for an individual to outperform others as their sole source of motivation. A study examining the difference between these two goal orientation styles indicated that performance approach goals can predict increased examination scores as opposed to those with performance-avoidance goals. Those who believe that they would rather do nothing than do something poorly, as a result, negatively predict exam scores (Darnon, Butera, Mugny, & Hulleman, 2009).

Previously, these types of studies only focused on multiple-choice questions as an outcome measure, but Darnon et al. included oral examination practices. An additional factor in the study was the role of perceived difficulty of the course and the examinations. After taking various measures on performance-avoidance and performance-approach styles, as well as rating the difficulty of the course, it was found that there was a significant, positive relationship between performance-approach scores and exam scores. The exact opposite was found for the performance-avoidance participants, with a significant, negative correlation in class performance. The results followed the pattern of the previous research studies with multiple-choice examinations, but now with the added component of perceived difficulty and oral examination components (Darnon, et al., 2009).

There were two studies conducted to examine the differences between performance-approach and performance-avoidance goal orientations. The first was designed with the component of including uncertainty, and the second study included the component of performance. In the first experiment, the performance-approach orientation groups led to better

outcomes when there is complete certainty about academic tasks (text interpretation) as compared to the performance-avoidance group. However, when a confederate in the study decided to disagree with participants which created uncertainty, performance-approach participants and performance-avoidance goals did not differ in performance (Darnon et al., 2007). In the second experiment, uncertainty was also shown to be a moderator in affecting performance-approach goals, even when they are self-set goals.

There have been theories that perfectionism is closely related to performance anxiety, to a debilitating extent. In a study using professional performers, Mor, Day, Flett and Hewitt, tested this hypothesis. Additionally, the researchers examined if personality traits impacted how individuals evaluate their own performance and how satisfied they are with their goal progression. The participants were given the Multidimensional Perfectionism Scale (Hewitt et al., 1991), a measure to test personal control, a measure of happiness while completing the task, goal satisfaction, a somatic measures of performance anxiety, and performance evaluation. The results showed that individuals who put pressure on themselves to be perfect, social perfectionism, and a lack of personal control showed more performance anxiety, physical signs of anxiety and lower levels of goal satisfaction. Low goal satisfaction was also related to higher levels of "self-oriented" perfectionism and low personal control (Mor, Day, Flett, & Hewitt, 1995). These results provide an interesting link that connects the impact of perfectionism and self-control on performance anxiety and goal satisfaction (Mor, et. al., 1995).

Current Study

While there have been numerous studies examining the implications of mindfulness practices, task motivation, and performance, there seems to be a gap in the research when discussing a possible relationship between mindfulness, and achievement goals. Although there

have been several studies focusing on mindfulness in a university setting, there have not been any conducted at a small, liberal arts, single-sex university.

The previous research concerning MSBR interventions in incarcerated populations illuminated an interesting finding that helped guide the current research. For all self-report assessment scores on factors such as self-esteem, aggression, and mood, there were greater improvements in all categories for female participants compared to their male counterparts. Among the significant results, the pre and post evaluation significance was greater in all areas for women than in men after an MBSR intervention. While it may be premature to compare populations of incarcerated women from the previous MBSR studies with a single-sex university environment, the two groups may yield similar results or show a distinctive pattern (Samuelson et al., 2007). Examining if mindfulness training has a positive effect in this unique population could present interesting findings to the inclusion of only female participants. The purpose of the current study was to examine if mindfulness training could have an effect on stress, attention, and perfectionism of the participants. A second aim is to examine if mindfulness has any relationship with performance avoidance, performance approach and mastery approach goal orientations. In order to accomplish these goals, participants will respond to various assessments in the areas of stress, mindfulness, attention, and perfectionism.

The findings from previous studies presented a basis for the hypotheses of the present research. The current study considered the following hypotheses: (a) there will be a positive correlation between performance approach goals with higher levels of state mindfulness/ mindfulness capability, (b) there will be a negative correlation between a state mindfulness/mindfulness capability and performance avoidance goals (c) there will be a positive correlation between the mastery motivation style and mindfulness, d) there will be a higher state

mindfulness with the mindfulness audio condition, e) there will be lower stress levels in the mindfulness audio condition, f) there will be lower mind-wandering scores in the mindfulness audio condition, g) there will be lower scores on the mindful attention awareness scale (indicating higher mindful attention) in the mindfulness audio group h) there will be lower levels of perfectionism in the mindfulness audio condition, i) there will be a positive correlation between performance avoidance goal style and levels of perfectionism, j) there will be a positive correlation between the number of extra-curricular activities for participants and perfectionism scores.

Method

Participants

One hundred and five undergraduates between 18 and 25 years of age (M = 20.94, SD = 2.73) were recruited through Facebook posts on the university class pages, a broadcast on the university announcement board, emails from undergraduate psychology professors, and flyers posted around the small, private, single-sex university in Virginia. To incentivize participation in the study, extra credit was awarded to students in applicable psychology courses. Additionally, all participants were entered into a drawing for a $25 Amazon gift card, and $10 vouchers for the university coffee shop and bistro (15). The data collected from the survey were from participants that identified as female, male (one participant), non-binary or agender. There was approval from the institution's human research review board before starting this research. The sample was 73.3 % White, 7.6% African American/ Black, 7.6% Asian, 3.8% Hispanic/Latinx, and 6.7% Biracial. The class years ranged from 2023 to adult students (Horizon) with the percentage breakdowns as follows: 17% Class of 2023, 17.1% Class of 2022, 28.6% Class 2021, 31.4% Class of 2020, 5.7% Horizon (adult learning program). Additional demographic questions were about: current

GPA, number of extra-curricular activities involved with (currently), and number of extra-curricular activities involved with (in the past academic year). All collected demographic data and variables were used for data analysis and various statistical comparisons. The demographics data were used to mainly investigate relationships pertaining to perfectionism and achievement styles.

Measures

Achievement Goal Questionnaire—Revised

The 12-item scale Achievement Goal Questionnaire-Revised was used to measure four different achievement styles (mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance) (Elliot & Murayama, 2008). It is split into four subscales: mastery-approach, master-avoidance, performance-approach, and performance avoidance. The questionnaire was a 5-point Likert-type (*Strongly Disagree-Strongly Agree*) with the anchors (*Strongly disagree to Strongly Agree*). Higher scores for each sub-section indicated higher levels of each particular achievement goal style. A sample question from the scale (mastery-approach subscale) was, “My aim is to completely master the material presented in this class” (Elliot & Murayama, 2008). The internal reliability for this scale and subscales is represented by the Cronbach’s Alpha calculated by the researcher. For this scale, all of the alphas calculated were in the acceptable range aside mastery approach (which was somewhat low). For Total_AGQ = 0.77, AGQ_Mast_Ap = 0.67, AGQ_Mast_Av = 0.71, AGQ_Perf_Ap = 0.71, AGQ_Perf_Av = 0.77 (Appendix A).

Short Inventory of Mindfulness Capability

The 12-item scale, Short Inventory of Mindfulness Capability was used to measure each participant’s capability of mindfulness (Duan & Li, 2016). The questionnaire was a 5-point

Likert-type (*Never or rarely true-Very often or always true*) with the anchors (*Never or rarely true-Very often or always true*). Higher scores indicated lower levels of mindfulness capability. A sample question from the survey was, "I make judgements about whether my thoughts are good or bad" (Duan & Li, 2016). The internal reliability for this scale and subscales is represented by the Cronbach's Alpha calculated by the researcher. For this and all subsequent scales, all of the alphas calculated were in the acceptable range. For Total_MC = 0.75, MC_Act_Aware = 0.88, MC_ Describing = 0.86, MC Non-judgment = 0.82 (Appendix B).

State Mindfulness Scale – Revised

The 12-item, State Mindfulness Scale – Revised, was used to measure each participant's level of state mindfulness (with subscales in body state mindfulness and mind state mindfulness) (Cox, Ulrich-French & French, 2016). The questionnaire was a 5-point Likert-type (*Not at all – Very much*) with the anchors (*Not at all to Very much*). Higher scores indicated higher feelings of state mindfulness. For the subscales of body and mind, higher scores indicate a higher state of body mindfulness and mental mindfulness. A sample question from the mind factor subscale was, "I noticed pleasant and unpleasant thoughts" (Cox et al., 2016). From the body factor subscale, a sample question was, "I focused on the movement of my body" (Cox et al., 2016). The internal reliability for this scale and subscales is represented by the Cronbach's Alpha calculated by the researcher. For Total_SMS = 0.83, SMS_Mind = 0.75, SMS_Body = 0.82 (Appendix C).

Stress Rating Questionnaire

The 5-item scale called Stress Rating Questionnaire was used to measure each participant's level of perceived stress (Edwards, Edwards & Lyvers, 2015). For each of the items, (calm to nervous; fearless to fearful; relaxed to anxious; unconcerned to worried;

comfortable to tense) the scale is 1 (*very (lowest item on the scale))* to 7 (*very (highest item on the scale)*) Higher scores indicated higher feelings of stress or tension, while lower scores indicated feelings of calm. The questionnaire was a 7-point Likert-type. For example (*Very Calm- Very Nervous)* with the anchors (*Very Calm- Very Nervous).* The internal reliability for this scale is represented by the Cronbach's Alpha calculated by the researcher. For SR = 0.84 (Appendix D).

Mindful Attention Awareness Scale

The 15-item assessment, Mindful Attention Awareness Scale, was used to measure each participant's level of mindful attention (Brown & Ryan, 2003b). The questionnaire was a 6-point Likert-type (*Almost always to Almost never)* with the anchors (*Almost always- Almost never*). Higher scores indicated higher levels of mindful attention. A sample question from the scale was, "It seems I am 'running on automatic' without much awareness of what I'm doing" (Brown & Ryan, 2003b). The internal reliability for this scale is represented by the Cronbach's Alpha calculated by the researcher. For MAAS = 0.83. (Appendix E).

Mind-Wandering Questionnaire

The 5-item scale, Mind Wandering Questionnaire, was used to examine each participant's level of mind-wandering (Mrazek, Phillips, Franklin, Broadway & Schooler, 2013b). The questionnaire was a 6-point Likert-type (*Almost never- Almost always)* with the anchors (*Almost never to Almost always*). Higher scores indicated higher levels of mind-wandering. A sample question on the questionnaire was, "I have difficulty maintaining focus on simple or repetitive work" (Mrazek et al., 2013b). The internal reliability for this scale is represented by the Cronbach's Alpha calculated by the researcher. For MW = 0.76 (Appendix F).

Effortless Perfectionism Scale

The 10-item measure, Effortless Perfectionism Scale, was used to evaluate each participant's ideas about perfectionism (Travers, Randall, Bryant, Conley, & Bohnert, 2015). The questionnaire was a 5-point Likert-type (*Not at all-Extremely like me*) with the anchors (*Not at all to Extremely like me*). Higher scores indicated higher feelings of effortless perfectionism. A sample question of this scale was, "I prefer that people think I complete my work/get good grades/ accomplish things with little effort" (Travers et al., 2015). The internal reliability for this scale is represented by the Cronbach's Alpha calculated by the researcher. For EP = 0.83 (Appendix G).

Procedure

The study was divided into three sections, 1) the demographics collection/achievement goal questionnaire/short mindfulness capability scale, 2) the randomly assigned audio clip (approximately 5 minutes in length), and 3) various measures to assess the participant's levels of stress, mind-wandering, attention, and perfectionistic tendencies. The survey in total, took approximately 30 minutes to complete. To participate in the research, volunteers had to be over the age of 18 and enrolled as a student at the university. Participants accessed an online survey link which directed them to an online consent form. On the consent form, there was a sample question so they would have an idea of the content of the survey. The instructions also noted that the participant would be presented with a debriefing form at the end of the study.

After endorsing the consent form through Qualtrics, the participant was directed to the body of the questionnaire starting with demographic questions (race, gender, age, class year, GPA, extra-curriculars the participant was currently involved in, and extra-curricular activities completed in the last academic year).

Next, the participants completed scales measuring achievement styles, Achievement Goal Questionnaire, and their capability for mindfulness, Short Inventory of Mindfulness Capability. After these assessments were completed, the participant was randomly assigned to either the first condition, mindfulness audio, or the second condition, audio depicting a badminton match. Each participant was required to listen to the entire audio clip, which lasted for approximately five-minutes. The first audio clip detailed a comprehensive mindfulness breathing meditation session (MyLife, 2017). The second audio was an excerpt from a podcast discussing a famous Olympics badminton match (Nasser, 2016). The participant was not able to continue through the survey until the audio was complete.

Following the randomized audio, the participants were presented with a scale with which to evaluate state mindfulness of the mind and body. To examine levels of mind-wandering after the state mindfulness assessment, the Mind Wandering Questionnaire was used. An assessment to collect perceived stress from the participants, Stress Rating Questionnaire, followed the Mind Wandering Questionnaire. A scale monitoring mindful attention in participants, Mindful Attention Awareness Scale, was provided after the Stress Rating Questionnaire. Finally, an assessment was used to measure perfectionism in the participants, Effortless Perfectionism Scale. After the completion of this measure, the participant was sent to the debriefing page for the experiment. It detailed what was being measured in the study and allowed them to print a copy for their personal records. After the debriefing page, the participant was taken to a separate survey which was to be completed in order to receive extra credit and be entered into the drawing for the Amazon gift card. The page indicated that these responses could not be linked to their main survey data in any way.

Results

There were initially 105 participants that completed the survey. However, for data quality purposes, outliers (two standard deviations above the mean) were removed, resulting in seven participants being removed from the dataset. Ninety-eight participants' were used for the current study.

Correlations Between Achievement Goals and Mindfulness

Pearson *r* correlation coefficients were calculated for the relationships between performance approach goals, performance avoidance goals, mastery approach goals and levels of state mindfulness, and mindfulness capability. There were no significant correlations found between the variables used in the hypotheses (hypotheses A-C). An unexpected finding was the moderate correlation between performance approach and performance avoidance goals, r (96) = 0.55, p <0.001, indicating a significant relationship between the variables. All correlations regarding performance approach goals, performance avoidance goals, mastery approach goals and state mindfulness, and mindfulness capability can be found in Table 1.

Table 1

Pearson r Correlation Coefficients between Performance Approach, Performance Avoidance, Mastery Approach, State Mindfulness, and Mindfulness Capability (N = 98)

	Measure	*M*	*SD*	1	2	3	4	5
1	Performance Approach	16.99	2.68	--	0.55**	0.21*	0.03	-0.02
2	Performance Avoidance	17.22	3.04	0.55**	--	-0.07	0.01	0.04
3	Mastery Approach	16.28	2.26	0.21*	-0.07	--	0.16	-0.11
4	State Mindfulness	49.70	13.65	0.03	0.01	0.16	--	0.10
5	Mindfulness Capability	63.53	6.43	-0.02	0.04	-0.11	0.10	--

Note. All single starred values are less than 0.05, but are no longer significant due to the use of a Bonferroni correction with the data (not less than 0.02)

* $p < .05$, ** $p < .01$

After calculating the Pearson *r* correlation coefficients with the entire dataset, the mindfulness and badminton conditions were separated to analyze the correlations between performance approach goals, performance avoidance goals, mastery approach goals and levels of state mindfulness, and mindfulness capability. When analyzing the mindfulness condition's data, a moderate to low, positive correlation was found between mastery approach goals and state mindfulness, $r\ (43) = 0.45$, $p = 0.002$. This indicates a significant relationship between the variables. Additionally, there was a moderate, positive correlation between performance approach goals, and performance avoidance goals, $r\ (43) = 0.51$, $p < 0.001$, displaying a significant relationship. The remaining values for these variables in the mindfulness condition can be seen in Table 2.

Table 2

Pearson r Correlation Coefficients between Performance Approach, Performance Avoidance, Mastery Approach, State mindfulness and Mindfulness Capability -- Mindfulness Condition Only (N = 45)

	Measure	*M*	*SD*	1	2	3	4	5
1	Performance Approach	16.47	2.90	--	0.51**	0.31*	0.32*	-0.10
2	Performance Avoidance	16.67	2.98	0.51**	--	-0.12	0.12	0.06
3	Mastery Approach	16.29	2.33	0.31*	-0.12	--	0.45**	-0.23
4	State Mindfulness	57.67	9.03	0.32*	0.12	0.45**	--	-0.17
5	Mindfulness Capability	64.16	4.93	-0.10	0.06	-0.23	-0.17	--

Note. All single starred values are less than 0.05, but are no longer significant due to the use of a Bonferroni correction with the data (not less than 0.02)

* $p < .05$, ** $p < .01$

Pearson *r* correlation coefficients w also calculated for the badminton condition for performance approach goals, performance avoidance goals, mastery approach goals and levels of state mindfulness, and mindfulness capability. There were no significant correlations found

between the variables stated in hypotheses a), b), and c), however, there was a moderate, positive relationship between performance approach goals and performance avoidance goals, r (96) = 0.559, $p < 0.001$, indicating a significant relationship between these achievement styles. The remaining correlational values for the badminton condition can be found in Table 3.

Table 3

Pearson r Correlation Coefficients between Performance Approach, Performance Avoidance, Mastery Approach, State mindfulness, and Mindfulness Capability -- Badminton Condition Only (N=53)

	Measure	*M*	*SD*	1	2	3	4	5
1	Performance Approach	17.43	2.43	--	0.56**	0.12	0.05	0.06
2	Performance Avoidance	17.70	3.04	0.56**	--	-0.02	0.12	0.06
3	Mastery Approach	16.26	2.21	0.12	-0.02	--	0.04	-0.05
4	State Mindfulness	42.94	13.30	0.05	0.12	0.04	--	0.15
5	Mindfulness Capability	63.00	7.49	0.06	0.05	-0.05	0.15	--

* $p < .05$, ** $p < .01$

Effects of Mindfulness Training

To examine if there was a difference in state mindfulness between the mindfulness audio and badminton audio conditions, an independent *t* test was conducted. The first *t* test was run to compare the mean scores on the state mindfulness scale between the two groups. It found a significant difference in scores between the two conditions, t (96) = 6.29, $p < 0.001$, d = 1.29, 95% CI [10.08, 19.37]. The mean state mindfulness score for the mindfulness audio (M = 57.67, SD = 9.04) was significantly higher than was the mean score for the badminton audio condition (M = 42.94, SD = 13.30). The graphical representation of this difference can be found in Figure 1.

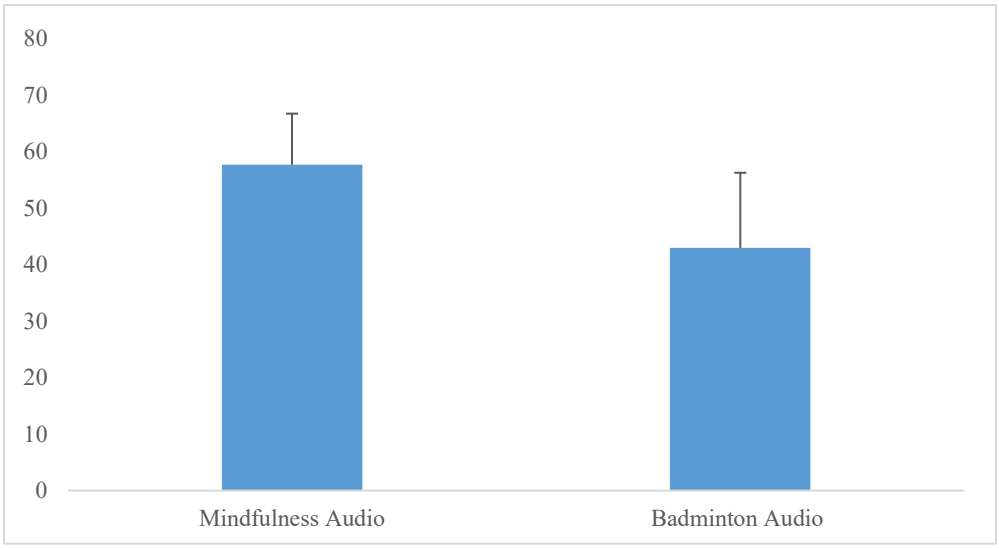

Figure 1: Means for state mindfulness scores for mindfulness and badminton conditions. Vertical lines indicate the standard error of each mean.

There was no significant difference between the mean stress rating scores of the two groups, t (96) = -0.66, p = 0.51, d = 0.14, 95% CI [-3.70, 1.84]. The stress rating score for the mindfulness audio condition (M = 17.49, SD = 6.64) was not significantly lower than the stress rating score for the badminton audio condition (M = 18.41, SD = 7.11). The graphical representation can be found in Figure 2.

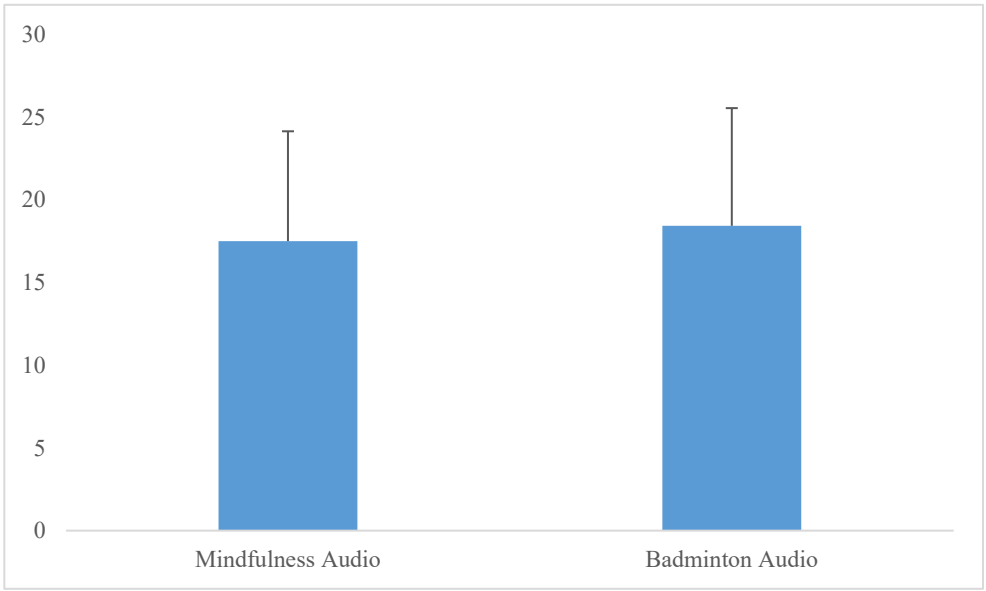

Figure 2: Means for stress rating scores for mindfulness and badminton conditions. Vertical lines indicate the standard error of each mean.

There was no significant difference between the mind wandering scores of the two conditions, t (96) = -0.57, p = 0.57, d = 0.11, 95% CI [-2.25, 1.25]. The mean mind wandering score for the mindfulness audio condition (M = 29.07, SD = 4.60) was not significantly lower than the mind wandering score for the badminton audio condition (M = 29.57, SD = 4.10). The graphical representation can be found in Figure 3.

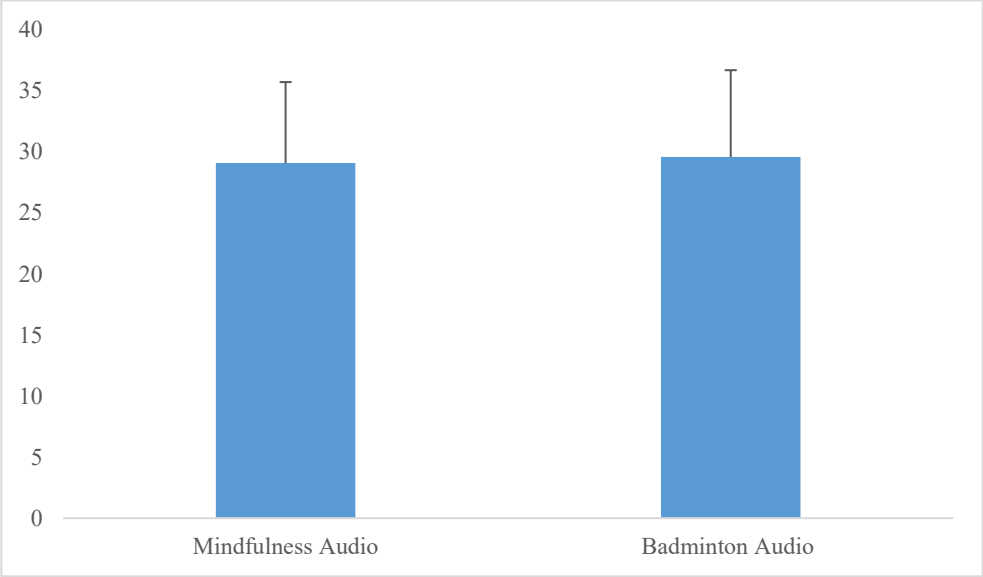

Figure 3: Means for mind wandering scores for mindfulness and badminton conditions. Vertical lines indicate the standard error of each mean.

The t test did not find a significant difference between the mindful attention awareness scores of the two conditions, t (96) = 1.80, p = 0.075, d = 0.37, 95% CI [-0.47, 9.88]. The mean attention awareness score for the mindfulness audio condition (M = 76.64, SD = 10.38) was not significantly lower than the badminton audio condition (M = 71.94, SD = 14.64). The graphical representation can be found in Figure 4.

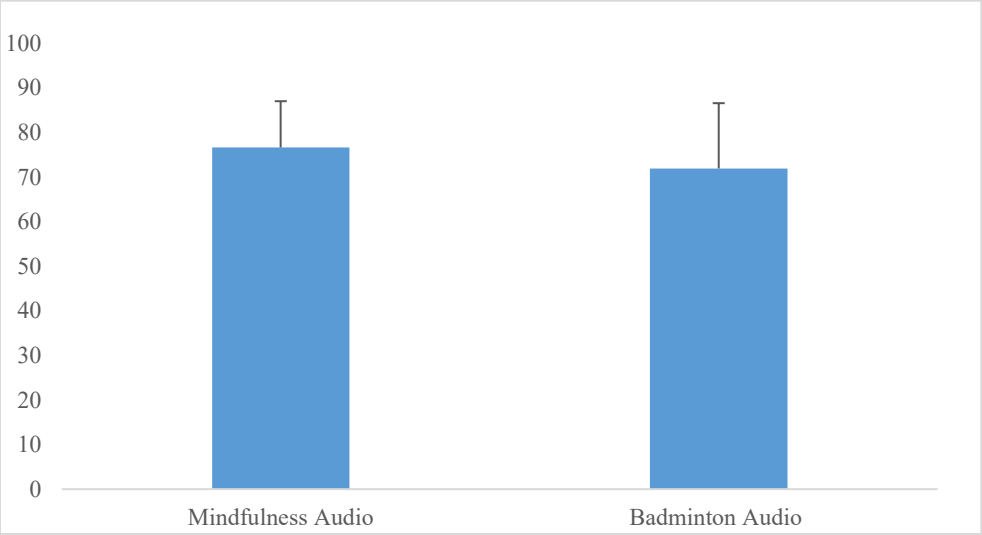

Figure 4: Means for mindful attention awareness scores for mindfulness and badminton conditions. Vertical lines indicate the standard error of each mean.

There was no significant difference between the perfectionism scores of the two groups, *t* (96) = 0.67, p = 0.51, d = 0.14, 95% CI [-1.89, 3.82]. The mean perfectionism score for the mindfulness audio condition (*M* = 7.43, *SD* = 1.11) was not significantly lower than the perfectionism score for the badminton audio condition (*M* = 24.92, *SD* = 6.81). The graphical representation can be found in Figure 5.

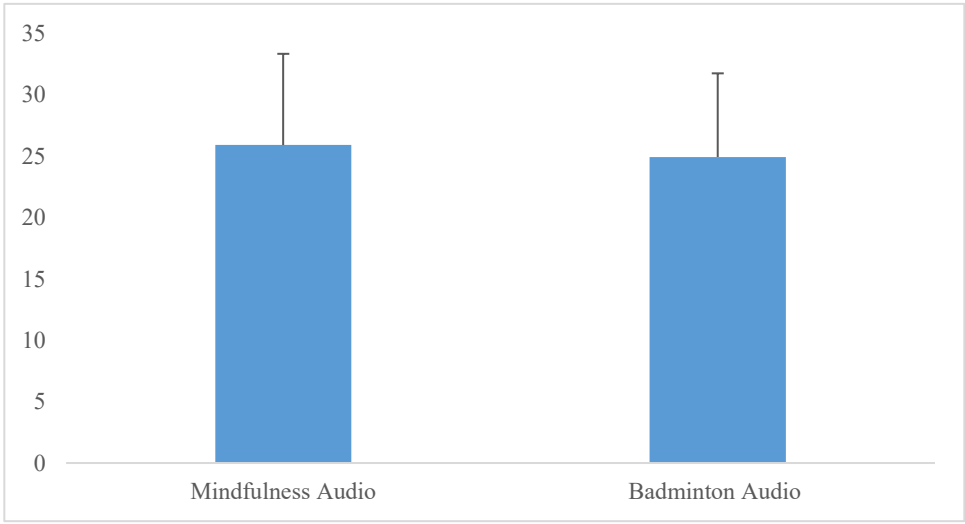

Figure 5: Means for perfectionism scores for mindfulness and badminton conditions. Vertical lines indicate the standard error of each mean

Correlations Between Perfectionism, Extra-curriculars and Achievement Goals

A Pearson *r* correlation coefficient was calculated for the relationships between performance avoidance achievement styles, perfectionism scores, the participant's current and past extra-curriculars, and current GPA. As expected, there was a weak, positive correlation between performance avoidance goals and perfectionism, $r\ (96) = 0.26$, $p = 0.009$, indicating a significant relationship between the variables. Additionally, there was an unexpected, strong positive correlation between past extra-curricular activities and current extra-curricular activities, $r\ (96) = 0.85$, $p < 0.001$, which indicates a significant relationship between the variables. All correlational values between performance avoidance style, perfectionism scores, current and past extra-curriculars, and GPA are listed in Table 4.

Table 4

Pearson r Correlation Coefficients between Performance Avoidance, Effortless Perfectionism, Current Extra-curriculars, Past Extra-curriculars, Current GPA (N = 98)

	Measure	*M*	*SD*	1	2	3	4	5
1	Performance Avoidance	17.22	3.04	--	0.26**	0.07	-0.03	0.02
2	Effortless Perfectionism	25.37	7.08	0.26**	--	0.18	.20*	-0.05
3	Current Extra-Curriculars	2.84	1.38	0.07	0.18	--	0.85**	0.04
4	Past Extra-Curriculars	3.27	1.57	-0.03	0.20*	0.85**	--	0.01
5	Current GPA	3.44	0.54	0.02	-0.05	0.04	0.01	--

Note. All single starred values are less than 0.05, but are no longer significant due to the use of a Bonferroni correction with the data (not less than 0.02)

* $p < .05$, ** $p < .01$

After calculating the Pearson *r* correlation coefficients with the entire dataset, the mindfulness and badminton conditions were separated to analyze the correlations between performance avoidance, effortless perfectionism, current extra-curriculars, past extra-curriculars

and current GPA. There was a moderate to low, positive correlation between perfectionism and performance avoidance goals, r (96) = 0.40, p = 0.007, which indicates a significant relationship between the variables. Additionally, there is a strong, positive correlation between a participant's current extra-curriculars and extra-curriculars within the past year, r (96) = 0.837, p < 0.001. This shows that there is a significant relationship between what a student is currently involved with and past affiliations. All values from these correlations can be found in Table 5.

Table 5

Pearson r Correlation Coefficients between Performance Avoidance, Effortless Perfectionism, Current Extra-curriculars, Past Extra-curriculars, and Current GPA --Mindfulness Condition Only (N=45)

	Measure	*M*	*SD*	1	2	3	4	5
1	Performance Avoidance	16.67	2.98	--	0.40**	0.13	0.02	0.02
2	Effortless Perfectionism	25.89	7.43	0.40**	--	0.23	0.14	0.07
3	Current Extra-Curriculars	2.89	1.37	0.13	0.23	--	0.84**	0.11
4	Past Extra-Curriculars	3.33	1.58	0.02	0.14	0.84**	--	0.12
5	Current GPA	3.41	0.48	0.02	0.07	0.11	0.12	--

* $p < .05$, ** $p < .01$

A Pearson r correlation coefficient was also calculated for the badminton condition for the variables: performance avoidance achievement styles, perfectionism scores, the participant's current and past extra-curriculars, and current GPA. There were no significant correlations pertaining to the hypotheses i) and j), however, there was a strong, positive correlation between current extra-curricular activities and past extra-curricular activities, r (96) = 0.863, p < 0.001. This indicates a significant relationship between the variables. All of the correlational values from the badminton condition can be seen in Table 6.

Table 6

Pearson r Correlation Coefficients between Performance Avoidance, Effortless Perfectionism, Current Extra-curriculars, Past Extra-curriculars, and Current GPA -- Badminton Condition Only (N = 53)

	Measure	*M*	*SD*	1	2	3	4	5
1	Performance Avoidance	17.70	3.04	--	0.17	0.04	-0.06	-0.01
2	Effortless Perfectionism	24.92	6.81	0.17	--	0.14	0.25	-0.14
3	Current Extra-curriculars	2.79	1.41	0.04	0.14	--	0.86**	-0.02
4	Past Extra-curriculars	3.21	1.57	-0.06	0.25	0.86**	--	-0.07
5	Current GPA	3.47	0.59	-0.01	-0.14	-0.02	-0.07	--

* $p < .05$, ** $p < .01$

Discussion

Summary

The first hypothesis (a) that there would be a positive correlation between performance approach goals with higher levels of state mindfulness and mindfulness capability was not supported when the entire dataset was used. After examining the dataset split into the conditions, the hypothesis was still not supported as having a significant relationship. This may be attributed to the idea that each participant may have more than one type of achievement style and one five-minute audio session would not impact that or have a strong attribute characteristic. Perhaps, also, that the performance approach category is not as accepting or non-judgmental as initially expected, because they are pushing themselves to be the best.

The second hypothesis (b) that there would be a negative correlation between performance avoidance goals with state mindfulness and mindfulness capability scores was not supported. Once more, the lack of a relationship could imply that participants have more than one achievement style (and thus cancelling out strength in just one), or the idea that there should

have been more questions per achievement style to more accurately gauge each participant's mentality on achievement goals. It is interesting to see that there is no relationship between these two variables as it was expected that someone who would avoid performing in the chance of looking poorly would have lower levels of self-acceptance.

Hypothesis (c), which stated that there would be a positive correlation between mastery motivation style and mindfulness scores was not supported in the entire dataset, but was supported when the dataset was split into the two conditions. When the data were split into the two conditions, there was a moderate to low, positive significant correlation between state mindfulness and mastery approach goals. This could potentially be credited to the participants in the mindfulness category having a higher level of mastery motivation style through a non-judgmental awareness (mindfulness) in learning. This relationship supports previous research stating that mastery goals are often related to better sense of emotional-regulation, critical thinking strategies, and focusing on learning rather than performance (Harackiewicz et al., 2002). The hypothesis was not supported in the badminton group as there was no significant correlation between the variables, mastery approach and state mindfulness or mindfulness capability.

The fourth hypothesis (d) that there would be higher state mindfulness scores in the mindfulness audio condition was supported. There was a significant difference between the mean state mindfulness scores in the mindfulness and badminton audio groups. This was an encouraging finding as it showed that even an approximately five-minute mindfulness intervention could increase mindfulness, both in the body and mind. This significant difference between state mindfulness levels after a five-minute session additionally supports previous research in the field, in which, state mindfulness can be cultivated through a single meditative session (Hafenbrack & Vohs, 2018).

Hypothesis (e), which stated that there would be lower stress levels in the mindfulness audio condition was not supported. There was not a significant difference in stress ratings between the conditions. A reason for this lack of difference may be that the scale used was not sensitive enough to evaluate state stress reactions after the audio sessions. For future research, more in-depth scales evaluating state stress reactions may be more helpful. Additionally, the mindfulness intervention may not have been long enough to elicit a decreased stress-response. Seeing as the surveys were not taken in a controlled setting like a laboratory, there could have been increased stressors in the environment while listening.

The sixth hypothesis (f) that there would be lower mind-wandering scores in the mindfulness audio condition was not supported. The ability to limit mind-wandering is often cultivated through practice, and it may have been too presumptuous to expect that a five-minute mindfulness meditative session could improve mind-wandering between the groups. Previous studies conducted a 2-week mindfulness intervention to decrease mind-wandering, which may have attributed to their success in decreasing mind-wandering, increasing performance and working memory over time (Mrazek et al., 2013a).

Hypothesis (g), which stated that there would be lower scores on the mindful attention awareness scale (indicating higher mindful attention) in the mindfulness audio group compared to the badminton condition was not supported. Once more, the five-minute meditative intervention may not have been enough to induce significantly differing levels of attentiveness.

The eighth hypothesis (h) stating that there would be lower levels of perfectionism in the mindfulness audio condition compared to the badminton condition was not supported. It was posited that higher levels of mindfulness capability and state mindfulness would mean that a participant would put less pressure on themselves and be aware of the current moment. In

previous studies, researchers used a six-week mindfulness intervention to assess perfectionism levels, so perhaps the decrease in perfectionistic tendencies took more time than was allotted in the current experiment (Wimberley et al., 2016).

Hypothesis (i), which stated that there will be a positive correlation between performance avoidance goal style and levels of perfectionism was supported. In the entire dataset, there was a weak positive correlation between perfectionism and performance avoidance style, indicating a significant relationship. When the conditions were separated, there was a moderate to low, positive correlation between perfectionism and performance avoidance goals in the mindfulness condition. This relates to the aforementioned literature which showed that individuals who put pressure on themselves to be perfect and had higher perfectionistic tendencies displayed a greater relationship with performance anxiety, and performance avoidance goals (Mor, Day, Flett, & Hewitt, 1995). There was no significant correlation between perfectionism and performance avoidance goals when the badminton condition was analyzed alone.

The final hypothesis (j) which stated that there would be a positive correlation between the number of extra-curricular activities for participants and perfectionism scores was not supported with the dataset in its entirety. There was a weak positive correlation between past extra-curricular activities and perfectionism, but due to the Bonferroni correction, it was not a significant relationship. However, there were a few unexpected correlations in the data. In all three analyses (entire dataset, mindfulness only, and badminton only) there was a strong, positive correlation between the participant's current extra-curricular activities and past extra-curricular activities. Meaning, if a participant was involved in extra-curricular activities within the past year, it was likely that they were currently involved with extra-curriculars.

Strengths of the Current Study

One strength of the study was that there was an approximately even split of participants assigned to each condition. It was also diverse in its approach as it had various topics for participants to answer. By changing topics so quickly, it kept the participant engaged and less likely to answer questions in a way they thought the researcher wanted. Additionally, a strength of the study is that it used a previously understudied population of individuals. Some of the previous experiments were conducted at universities, but none at a single-sex, private, liberal arts institution. The only population that came close in the literature was using a Mindfulness-Based-Stress-Reduction (MBSR) in women's correctional facilities. This new population, through this study and future ones, may allow new insights to be made in the field of mindfulness-based research.

Limitations of the Current Study

There were many strengths of this study but there were also several limitations. A limitation of this study was as this research was student-run, there was a considerable time restriction of one semester for data collection. There were also severe technical difficulties with the Qualtrics survey in the middle of collecting data, so approximately 89 participants were not able to move past the audio section of the survey. This was a strong potential hindrance to collecting more data and having better statistical analyses. An additional limitation of this study was the limited time for outreach for the student body. Due to the COVD-19 virus, students were moved off of campus and the researcher closed the survey early as thoughts and feelings surrounding this topic might have skewed the data farther. If the online questionnaire was opened for a longer period of time, or without these unforeseen circumstances, there could have potentially been more student participation.

Directions for Future Research

Evaluating some of the variables included in this experiment (performance avoidance, performance approach, perfectionism, and mindfulness) with an in-laboratory testing period may prove to be beneficial in studying these areas. The inclusion of repeated audio intervention sessions may also increase the validity of the study, rather than having a five-minute, one-time session. An area for potential research is sending a screening survey with which to separate participants into preexisting groups to see if a mindfulness intervention can assist groups such as performance avoidance participants.

Another area for future research would be testing these variables at differing age levels such as: high school, college, recent post-grads and established working adults to see if there is a difference in achievement styles, stress, attention and mindfulness.

Implications

Mindfulness has recently been considered the “cure all” technique for most of life’s physical and mental ailments. The data from this study shows that there is still much work to be done in the field when making these claims. If mindfulness could be used as a route for work or school productivity, for example, it could mean a large shift in how businesses and schools operate. With the known health benefits of meditation and taking a few minutes a day to meditate, something that could even just increase state mindfulness, such as this intervention could be a stepping stone to larger avenues for mental and physical change. Research that continues to investigate the relationships and effects of the phenomena of mindfulness with factors like stress, attention, perfectionism and achievement styles has widespread potential effects.

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Appendix A -- Items -- Achievement Goal Questionnaire–Revised

Mastery-approach goal items

1. My aim is to completely master the material presented in this class. (original Item 9: I desire to completely master the material presented in this class.)

7. I am striving to understand the content of this course as thoroughly as possible. (original Item 8: It is important for me to understand the content of this course as thoroughly as possible.)

3. My goal is to learn as much as possible. (original Item 7: I want to learn as much as possible from this class.)

Mastery-avoidance goal items

5. My aim is to avoid learning less than I possibly could. (original Item 4: I worry that I may not learn all that I possibly could in this class.)

11. I am striving to avoid an incomplete understanding of the course material. (original Item 5: Sometimes I'm afraid that I may not understand the content of this class as thoroughly as I'd like.)

9. My goal is to avoid learning less than it is possible to learn. (original Item 6: I am often concerned that I may not learn all that there is to learn in this class.)

Performance-approach goal items

4. My aim is to perform well relative to other students. (original Item 3: My goal in this class is to get a better grade than most of the other students.)

2. I am striving to do well compared to other students. (original Item 2: It is important for me to do well compared to others in this class.)

8. My goal is to perform better than the other students. (original Item 1: It is important for me to do better than other students.)

Performance-avoidance goal items

12. My aim is to avoid doing worse than other students. (original Item 10: I just want to avoid doing poorly in this class.)

10. I am striving to avoid performing worse than others. (original Item 12: My fear of performing poorly in this class is often what motivates me.)

6. My goal is to avoid performing poorly compared to others. (original Item 11: My goal in this class is to avoid performing poorly.)

Appendix B -- Short Inventory of Mindfulness Capability SIM-C

Act-Aware

1. FFMQ13: I am easily distracted
2. FFMQ5: When I do things, my mind wanders off and I'm easily distracted
3. FFMQ8: I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted
4. FFMQ18: I find it difficult to stay focused on what's happening in the present

Describing

5. FFMQ7: I can easily put my beliefs, opinions, and expectations into words
6. FFMQ2: I'm good at finding words to describe my feelings
7. FFMQ32: My natural tendency is to put my experiences into words
8. FFMQ27: Even when I'm feeling terribly upset, I can find a way to put it into words

Non-judging

9. FFMQ30: I think some of my emotions are bad or inappropriate and I shouldn't feel them
10. FFMQ25: I tell myself that I shouldn't be thinking the way I'm thinking
11. FFMQ35: When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about
12. FFMQ17: I make judgments about whether my thoughts are good or bad

Appendix C – State Mindfulness Scale – Revised (SMS)

State mind factor

M1 I was aware of different emotions that arose in me.

M6 I noticed pleasant and unpleasant emotions.

M9 I noticed pleasant and unpleasant thoughts.

M10 I noticed emotions come and go.

M13 I noticed thoughts come and go.

M15 It was interesting to see the patterns of my thinking.

State body factor

B7 I focused on the movement of my body.

B9 I felt present in my body.

B10 I listened to what my body was telling me.

B12 I was aware of how my body felt.

B13 I noticed the sensations in my body.

B14 I was in tune with how hard my muscles were working.

Appendix D – Stress Rating Questionnaire

Calm to Nervous

Fearless to Fearful

Relaxed to Anxious

Unconcerned to Worried

Comfortable to Tense

Appendix E – Mind Wandering Questionnaire

1. I have difficulty maintaining focus on simple or repetitive work.

2. While reading, I find I haven't been thinking about the text and must therefore read it again.

3. I do things without paying full attention.

4. I find myself listening with one ear, thinking about something else at the same time.

5. I mind–wander during lectures of presentations.

Appendix F – Mindful Attention Awareness Scale

1. I could be experiencing some emotion and not be conscious of it until some time later.

2. I break or spill things because of carelessness, not paying attention, or thinking of something else.

3. I find it difficult to stay focused on what's happening in the present.

4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way. 5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.

6. I forget a person's name almost as soon as I've been told it for the first time.

7. It seems I am "running on automatic" without much awareness of what I'm doing.

8. I rush through activities without being really attentive to them.

9. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there. 10. I do jobs or tasks automatically, without being aware of what I'm doing.

11. I find myself listening to someone with one ear, doing something else at the same time.

12. I drive places on "automatic pilot" and then wonder why I went there.

13. I find myself preoccupied with the future or the past.

14. I find myself doing things without paying attention.

15. I snack without being aware that I'm eating.

Appendix G – Effortless Perfectionism Scale

1. I believe that those who try harder are less intelligent than those who succeed with ease.
2. I try to make my achievements look effortless.
3. I think my friends/classmates try to hide how much time/effort they spend on school work.
4. I prefer that people think I complete my work/get good grades/accomplish things with little effort.
5. When talking with other people, I downplay how hard I work.
6. People who work more quickly are smarter than those who take more time to complete the same task.
7. It seems like others around me accomplish things with little effort.
8. It is best not to show how much effort one puts into his/her work.
9. Being perfect without even trying is ideal.
10. Perfectionists are smarter than non-perfectionists.