

Introduction

- 15–40% of college students experience test-anxiety (Hill 1984), a distressing emotional state & Wigfield, cognitive, behavioural, and characterized by physiological responses elicited by a testing situation (Zeidner, 1998).
- Previous work suggests that high test-anxiety can impair test performance and academic achievement (e.g., Cizek & Burg, 2006).
- State-level test-anxiety can not only impair the cognitive processes required to perform well on tests (e.g., attention; Spielberger, et al., 1 978), but can produce mind-wandering (Zeidan, et al., 2010) which can result in learning and memory impairments (Mrazek et al., 2013), poor test performance, and hampered academic achievement (Ng, Koh and Chia, 2003).
- Mindfulness-based interventions have gained popularity as suitable stress management options in campus settings. MM programs have typically ranged between eight to ten weeks (MBSR; Kabat-Zinn, 1982), though recent research has examined briefer formats.
- Mindfulness meditation (MM) refers to the cultivation of nonjudgmental, moment-to-moment awareness.
- Previous work suggests that brief MM can reduce testanxiety (e.g., Cho, Ryu, Noh, & Lee, 2016), improve cognitive functioning (e.g., Zeidan et al., 2010), and enhance academic performance by enhancing working memory, inhibiting task irrelevant thoughts, and promoting attentional stability and self-regulation (e.g., Calma-Birling & Gurung, 2017; Moore & Malinowski, 2009).

Hypotheses

- State-anxiety levels will be lower in the brief mindfulness meditation group than the control group.
- Those who engage in brief MM will score higher on an academic performance test than those in the control group.

Participants

Participants were 48 western Canadian undergraduate college students (34 females and 14 males $(M_{age} = 23.52, SD_{age} = 7.56)$ Range= 18-46) who volunteered in exchange for bonus research participation credit (3%). Participants were excluded if they were a) currently experiencing and/or had a history of extreme forms of anxiety, b) younger than 18 years old, and/or, c) enrolled in third or fourth year studies.

Design

This study employed a 2 x 2 mixed model experimental design to test the effectiveness of brief mindfulness meditation (MM) intervention on state-anxiety and academic performance.

Materials

State-anxiety induction. A 10-item multiple choice and short-answer test was used to induce a state-level test-anxiety reaction.

State-anxiety. The 20-item State-Trait Anxiety Inventory Form Y1 (STAI Y1) was used to measure state test-anxiety levels.

Academic performance. A 20-item academic performance test was used to compare academic performance across groups.

Brief MM. Participants in the brief MM group listened to a brief MM audio recording. Participants were then instructed to notice their bodily sensations, attend to their physical and mental sensations, and nonjudgmentally experience them as they are.

Procedure

Participants arrived at the lab at one of two scheduled times. Once Informed consent was obtained, participants then completed a test designed to induce anxiety. Following the induction, participants completed a demographics questionnaire and an initial state-anxiety measure. Participants were then randomly assigned to one of two groups: a brief MM, or control group and were moved to separate rooms to engage in their designated activities. After 20- minutes, all participants regrouped and completed the state-anxiety measure a second time and an academic performance test. Participants were then debriefed and compensated with bonus credit.

Stress in College Life: Toward an Understanding of Test-Anxiety, Academic Performance, and Brief Mindfulness Meditation

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Methodology

Intervention

• A series of two-way ANOVA's revealed that gender and prior meditation experience had no effect on anxiety reduction in the MM group.

Results **Limitations and Recommendations** • As expected, an independent-samples t-test using difference scores The present study did not measure state-anxiety at indicated that the MM group (M=-14.41, SD= 12.95) had greater anxiety baseline. Future research should ensure that state-anxiety reduction than the control group (*M*=-2.45, *SD*=12.49), *t* (46) = -3.35, p = -3.35is measured prior to and immediately following the induction .002, d=0.94), such that state-anxiety levels were significantly lower in the to ensure that the manipulation worked. MM group. • It is recommended that future research utilize a validated examination rather than designing one for the purpose of the study.



· Differences in academic performance scores for the brief MM and control group were not significant, t(45) = -.617, p = .540, d=0.22, with means (SD) of 11.13 (3.10) and 11.70 (3.30), respectively.



Discussion

• Our findings support our hypothesis as we found a significant reduction in state-anxiety scores following the brief MM session but did not support our hypothesis that brief MM will lead to higher academic performance test scores when compared to the control group.

• The integration of cognitive, affective, and sensory stimuli, heightened present-moment awareness, lack of negative reaction to thoughts, emotions, and sensations may explain the reduction in state-anxiety scores observed in the present study.

• It is possible that the dosage of MM used in the current study was ineffective at enhancing attentional stability, cognitive functioning, and therefore test performance in participants.

• Additionally, the dosage of MM used in the current study may have failed to facilitate recall of general information on the academic performance test which may explain the lack of difference in test scores between groups.

• While academic performance was not enhanced, our results suggest that brief MM may have immediate state-level test- anxiety relief on undergraduate college students.

• Immediate state-anxiety relief via brief MM may be particularly attractive as well as beneficial for college students during high-stress situations, such as examination periods.



• The purpose of the study may have been easily identifiable to participants. Demand characteristics may have played a role in the results of the study.

• The written protocol may have yielded boredom, noncompliance, and distraction in participants during the duration of the study. Distractor tasks in between measures may be a solution to this constraint in future research.

• The present study lacked the use of an in-person mindfulness facilitator, and instead used an audio-recording. Gaining a better understanding of the physical-virtual distinction of brief MM would be a beneficial venture for further research in this area.

 Follow-ups following post-treatment could also be beneficial in determining the effects of briefer formats of MM training on mood.

• It is recommended that future research examine the immediate effects of both single-session MM inductions and briefer MM training programs to determine the dosage of MM needed to achieve enhanced academic performance.

References

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