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### Effects of Mindfulness Based Interventions on Mind Wandering in Students

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## Introduction

- Research suggests the mindfulness-based interventions (MBIs) improve individuals' attention abilities, including working memory capacity (Kane & McVay, 2012).
- Mind wandering is when our thoughts flow freely without any direction or control. One study found that even eight minutes of a mindfulness activity decreases mind wandering. (Mrazek, Smallwood, & Schooler, 2012).
- Mindfulness-based interventions (MBIs) are when individuals focus on one aspect of the present moment. MBIs ask that participants acknowledge mind wandering and then redirect their attention back to the present moment.
- Short mindfulness activities can have a worthwhile effect on students' attentional processes, which has potential implications for students such as increasing working memory capacity and reading comprehension (Kane & McVay, 2012; Smallwood, McSpadden, & Schooler, 2008).

**Goal of Study: To determine if mindfulness-based interventions will have a greater effect at decreasing participant's mind wandering than a relaxation task and a control task.**

**Hypothesis: College students who participated in the mindfulness-based intervention will show a greater decrease in mind wandering than those who completed the relaxation and control tasks.**

## Method

### Participants

- Individuals ( $n=22$ ) were recruited from Introduction to Psychology classes
- The participants were limited to individuals between 18-25 years old ( $M=19.71$ ) to control for cognitive abilities. Those with a previous head injury, such as a concussion, were also omitted from this study.

### Treatments

- Participants were randomly assigned to one of three treatment groups:
  - Mindfulness based intervention
  - Relaxation task
  - Control task: reading an article while listening to white noise.

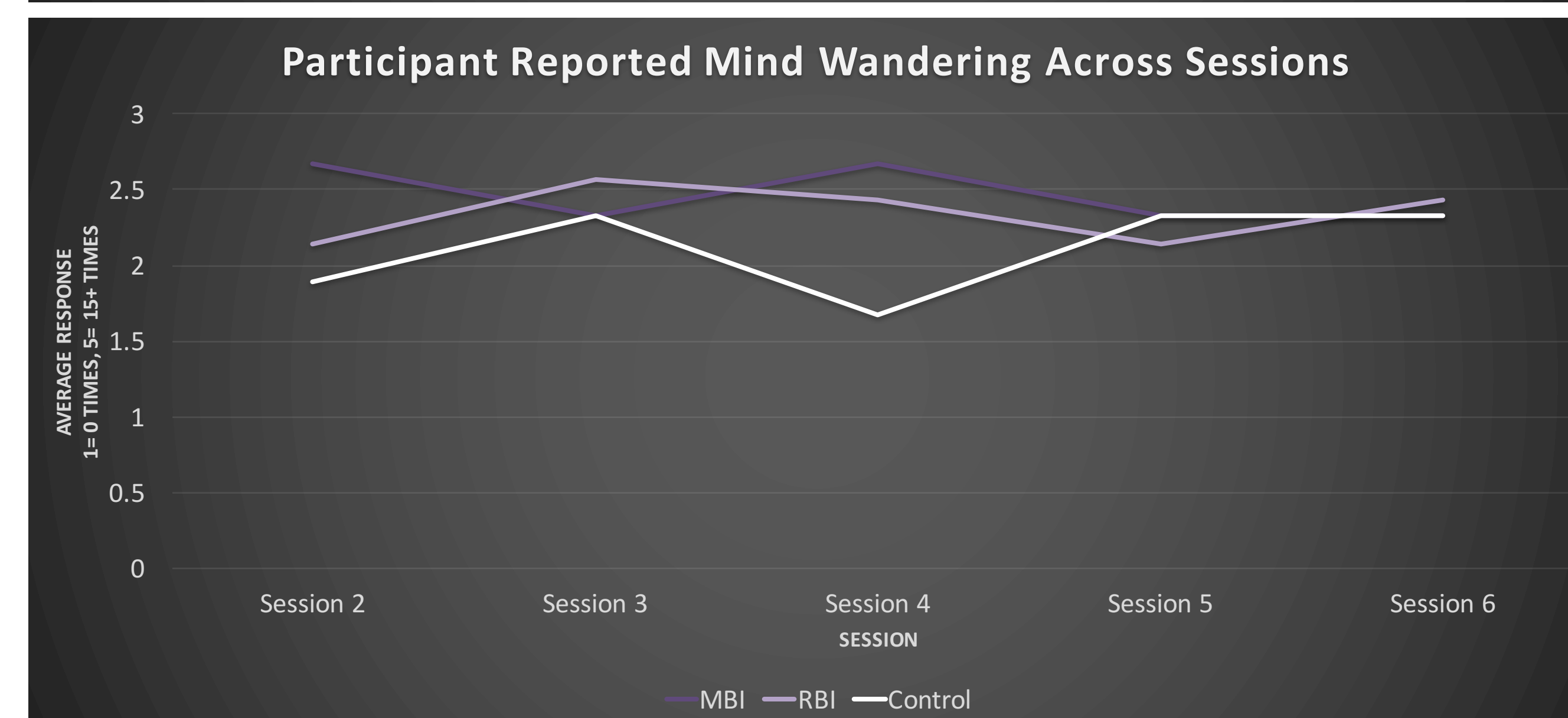
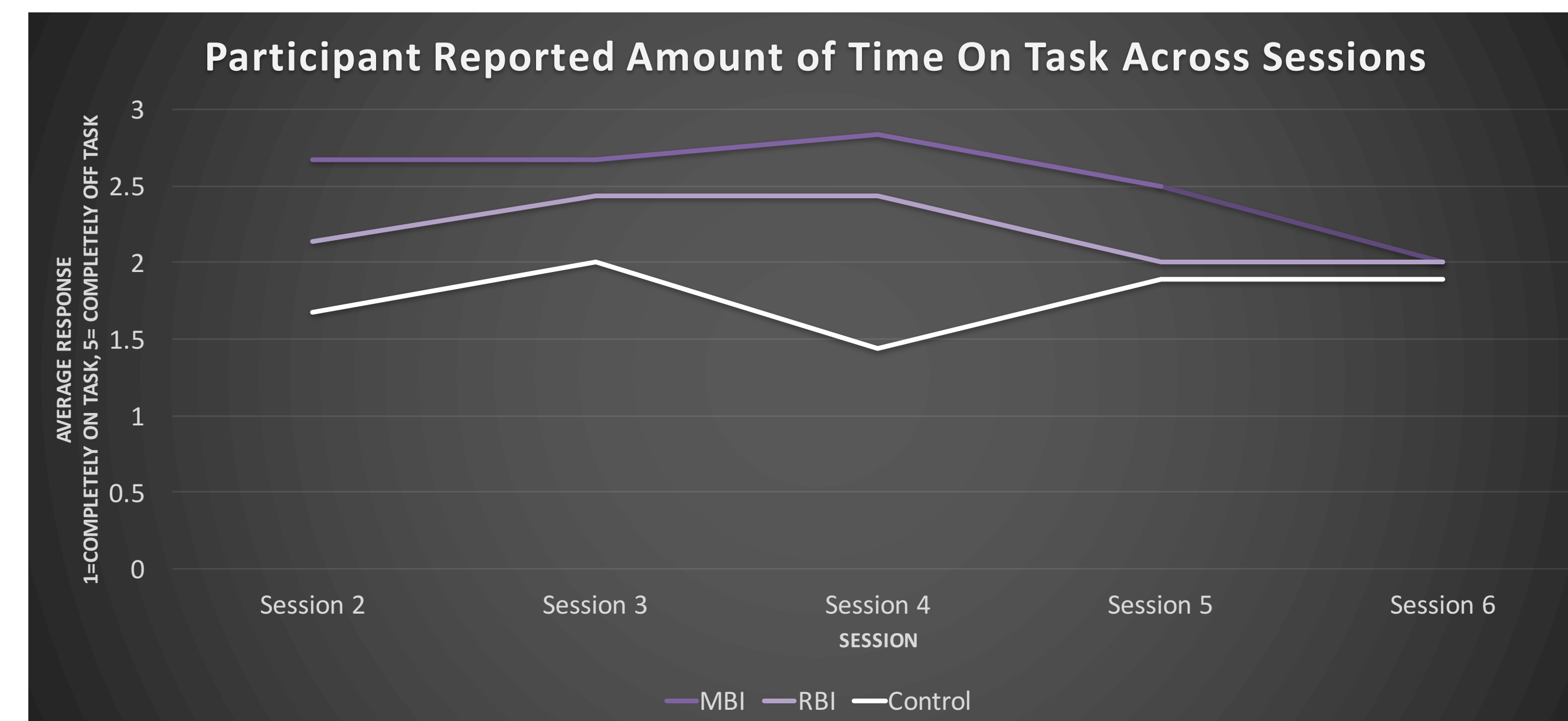
### Procedure

- Participants attended six sessions, each at least a week apart from each other, over the course of a six to eight week time period. The first session found a baseline for cognitive and mood measures.
- Mind wandering was measured using a two item questionnaire. The questions and answers included:
  - In the moments during the task and prior to this probe, your attention was focused: Completely on the task, mostly on the task, on both the task and unrelated concerns, mostly unrelated concerns, completely on unrelated concerns.
  - How frequently do you think that your mind wandered during this task and in the moments before this probe appeared: 0 times, 1-4 times, 5-9 times, 10-14 times, 15+ times.
- During the last five sessions participants were probed about their mind wandering immediately following their randomly assigned intervention.
- Participants were asked about how on task they thought they were and how frequently they thought their mind wandered. A total mind wandering score was found by combining the answers to these two questions.

## Results

### Mind Wandering Total Across Treatment

Treatment	N	Session 2 M(S.D.)	Session 3 M(S.D.)	Session 4 M(S.D.)	Session 5 M(S.D.)	Session 6 M(S.D.)
MBI	6	6.00 (.89)	5.66 (.52)	5.83 (.41)	5.83 (.41)	6.33 (1.03)
RBI	7	6.00 (.82)	6.14 (.90)	5.86 (.38)	6.14 (.69)	6.43 (.53)
Control	9	6.11 (.78)	6.33 (.50)	6.11 (.60)	6.44 (.53)	6.44 (.73)



## Results

- There was no significant difference between the age,  $F(.032)$ ,  $p=.969$ ; gender,  $F(.611)$ ,  $p=.553$ ; and the amount of prior exposure and practice of mind wandering techniques between treatment groups,  $F(.611)$ ,  $p=.553$ .
- Repeated measures ANOVA showed that there were no significant differences between treatment groups when it came to their total amount of mind wandering,  $F(1.414)$ ,  $p=.268$ . Groups showed a lower amount of mind wandering in session four on average than other sessions.
- Repeated measures ANOVA showed that there was no significant differences between groups on how much the participants reported being on-task during the intervention,  $F(3.358)$ ,  $p=.056$ . However, the Bonferonni Post Hoc test showed non-significant differences of participants reporting being on task. This data was approaching significance for the mindfulness based intervention group and the control group across time.
- Researchers found that there was no reported significant differences between groups on the frequency of mind wandering across time using a repeated measures ANOVA,  $F(.819)$ ,  $p=.456$ .

## Discussion and Implications

### Discussion

- Results showed that overall MBI did not decrease or increase the amount of mind wandering. However, there are many reasons that researchers found these results.
- The small sample size could have directly impacted the amount of power the analysis had and thus resulted in no significant differences being found from the repeated measures. The experiment is still in the data collection phase, and will have over 120 participants when finished.
- The results approached significance on the first mind wandering item. This question looked at how on-task the participants thought they were and we predict the results would have been significant if more data from participants were obtained.
- There are concerns related to whether the control group design was truly effective. It is hypothesized that the readings and white noise held the participants attention quite well, which reduced reported mind wandering. Future research may want to consider different activities for the control group that would mimic a more real life situation.
- Results could have also been altered by the fact that the treatment group receiving the intervention had the smallest amount of participants in it and the control group had the largest.
- This research directly relates to all children who need to focus and learn in an academic setting. If an intervention can decrease the amount of mind wandering and increase concentration it is likely the student will learn with both more quantity and quality.

### Implications

- With the analysis showing no significant differences between the treatment group's amount of mind wandering, further research to obtain a larger number of participants is warranted.
- In addition, it is important to note that if a larger power was obtained and results remained the same that this would not support our hypothesis and MBI, RBI, and our Control group's mind wandering was not altered by their treatment.

### Limitation

- The limited number of participants in this research study is the main limitation of the study. If more data had been collected it is predicted that the data may have shown different or just heightened results.

## Acknowledgments

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