



Introduction

- Neuroscientists find longer meditation training increases attention and emotional state recognition, leading to improved memory recall (Kim et al., 2023).
- Kean University study reveals online meditation, even for 10 minutes, improves stress levels and mindfulness among students (Dorais et al., 2021).
- Preksha Dhyana meditation over 8 weeks improves cognition, attention, and short-term memory in college students (Pragya et al., 2021).
- Minimal dosage of meditation over 8 weeks reduces mood disturbance and anxiety while enhancing attention and working memory (Basso et al., 2019).
- In sum, research has linked meditation to positive outcomes, such as memory.

The Current Study

We hypothesized the following outcomes:

H1) Participants in the meditation condition will recall more words and make up less words than participants in the non-meditation condition.

H2) Participants in the non-meditation condition will recall less words and make up more words than participants in the meditation condition.

- Based on previous research, we expect that mindful meditation will have a positive impact on short-term memory.

Methods

Participants:

- Sample size $n = 24$. Participants' ages ranged from 19 to 23 and were recruited by either Kwantlen Polytechnic University's Psychology research pool (SONA) or direct recruitment. These participants were then randomly assigned to either of the two conditions.
- An experimental design was conducted on the dependent variables of correct words and made-up words.

Non-Meditation Group	Meditation Group
Average Age: 20.91, SD: 1.16	Average Age: 20.58, SD: 1.44
Female: 83.33%	Female: 75.00%
Male: 16.67%	Male: 25.00%
$n = 12$	$n = 12$

Materials:

- *Eight-minute Concentration Meditation* video on YouTube. This video asked participants to focus on their breathing with limited visual stimulus.
- *Rush E* video on YouTube. This video showed an intense piano playing game with lots of different colors and sounds on the screen.
- *ADD/ADHD Stimulator* video on YouTube. This video provided many different visual and verbal stimulus, including random facts, images, and overlapping background noise.
- A list of 30 words developed by the research team for this study. Some examples: ornaments, snow, beach, sand, hair, comb, etc. Many of the words on this list were related to each other to test whether participants made up words consistent with the themes we provided.

Procedures

- Participants were randomly assigned to one of the in-person experimental conditions: **1) non-mindful meditation session (control group)** and **2) mindful meditation (manipulated group)**
- 1) Non-meditation session: Participants watched the Rush E and ADD/ADHD Stimulator videos on YouTube.
- 2) Meditation session: Participants watched the Eight Minute Concentration video on YouTube.
- After the videos, participants were instructed to view a list of 30 words for 1 minute, aiming to memorize as many as possible, followed by a 1-minute interval of non-instructional time.
- After this, all participants were given a pen and paper and were asked to write down as many words as they can remember without any time constraints.
- Participants were then debriefed as to the purpose of the study upon completing their memorization task.

Results

- Two-tailed independent T-Test was conducted to compare the amount of correct recalled words and made-up words across conditions: **(1) non-mindful meditation (control group)** and **(2) mindful meditation (manipulated group)**.
- The assumption of homogeneity of variances was assessed via Levene's test with equal variances violated.
- Our hypotheses were not supported, as we found no statistically significant difference between the two groups on the compared variables of correct recalled words and made-up words (Table 1).
- The medium effect suggests that there may be a potential difference in the variable of made-up words.

Table 1
Descriptive Statistics and T-Test Results for Experimental Conditions on Variables of Memorization

Variable	Non-Meditation		Meditation		df	t	p	r^2
	M	SD	M	SD				
Correct Words	10.92	2.39	12.08	3.80	18.53	-0.90	.380	.04
Made up Words	0.83	1.03	0.25	0.45	15.09	1.80	.092	.10

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Discussion

- Our hypotheses were not supported by our data. No statistically significant difference was detected between the non-meditation or meditation groups.
- Neuroscientists previously found meditation training increases attention and emotional state recognition resulting in improved memory recall (Kim et al., 2023). The current study's results show that the control group remembered relatively the same amount of words as the manipulated group. Therefore, in the current study the meditative intervention did not yield statistically significant results to provide support for improving memory.
- The medium effect size for the variable of made-up words could suggest that there may potentially be an effect and that our analysis did not have enough power to statistically detect this effect. Therefore, repeating this study with a larger sample size may be worthwhile.
- Contrary to Dorais et al. (2021), our meditation video was eight minutes in length, they claimed a minimum of 10 minutes of meditation was needed to be effective in improving mindfulness. Not meeting the minimum time of effective meditation may be an explanation for why there was not a large statistically significant difference between our groups in either of the two variables.

Strengths:

- Random assignment.
- Simplicity of design for easy replication.

Limitations:

- Potential threats to internal validity due to selection effects, as we selected most of our participants through direct recruitment, we ended up with an imbalanced ratio of female to male participants, resulting in female being the dominant gender.
- Our results may yield better conclusions if this experiment took place over a longer period of time, as previous studies found 8 weeks of meditation intervention was needed to enhance working memory and cognitive function (Basso et al., 2019; Pragya et al., 2021).

Suggestions for Future Research:

- Replicating the study with a larger sample size., while controlling for gender variance.
- Longer meditation video.

References

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