



Managing Student Stress: The Importance of Mindfulness and Other Stress Reduction Methods for Improving Student Learning and the College Experience

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Abstract

Undergraduate college students enrolled in introductory psychology participated in either a mindfulness intervention or cognitive strategies control over one semester. The mindfulness intervention was aimed at reducing stress and improving learning outcomes. Students completed several assessments of stress, worry, health, and academic outcomes throughout the first semester of the current academic year. We found that a majority of students reported moderate to high levels of stress, anxiety, and worry across the semester. Additionally, we found that stress, anxiety, and worry are negatively associated with outcomes that may affect students' ability to succeed academically. We are continuing to explore these relationships and possible solutions as part of a long-term research project.

Introduction

Stress as a subjective psychological experience, as well as an automatic physiological reaction, is a necessary and adaptive feature of normal human functioning (Oman, Shapiro, Thoresen, Plante, & Flinders, 2008). However, typically the term reminds us of the unpleasant levels of stress that may accompany difficult experiences or maladaptive coping skills. The chronic stress, anxiety, and worry that accompany these kinds of experiences has well-documented deleterious effects on our health, well-being, and overall functioning (Thoits, 2010). Therefore interventions that help to reduce, cope with, or even prevent high levels of stress are extremely worthwhile to develop, study, and implement. This is especially true in populations known to be vulnerable to unusual and persistent high levels of stress. One such population is college students.

The college transition represents abrupt changes in living arrangements, social settings, and academic demands, which necessitates a vulnerable period of adaptation and personal growth. As a result of this difficult transition, stress levels are known to rise significantly following matriculation and high stress levels typify the normal college experience (Kerrigan, Chau, King, Holman, Joffe, & Sibinga, 2017; Ramler, Tennison, Lynch, and Murphy, 2016). In addition, high levels of stress are typically comorbid with high levels of anxiety and worry.

We are interested in exploring further how these high levels of stress, anxiety, and worry affect the ability of college students to be healthy and successful, and in doing so underscore the importance of implementing interventions such as mindfulness in order to combat these unwanted outcomes. The current study explored the preliminary data collected in the first of a three-semester intervention study utilizing mindfulness practices to improve student health and learning outcomes.

Hypotheses

In the current study we expect to find high levels of stress, anxiety, and worry in college students. We predicted positive relationships between student stress, anxiety, and worry and health outcomes such as ratings of becoming sick and days missing class. We predicted a negative relationship between stress, anxiety, worry and hours of physical activity and sleep. We predicted that mindfulness, but not cognitive strategies, would be associated with reduced stress, anxiety, and worry. We also explored student learning outcomes by intervention group. We predicted that mindfulness practice would facilitate student learning outcomes.

Materials & Methods

The current study is the first semester data collection in an ongoing study of the efficacy of a mindfulness intervention to reduce stress and worry in college students. The full design compares students receiving a mindfulness intervention (MFI) to students receiving a cognitive strategies (CSI) control and a no intervention control. The current data represent our first MFI and CSI groups. This project was approved by the University IRB and students completed the informed consent process in the first week of class prior to data collection.

Two sections of an introductory psychology course were randomly assigned to either a mindfulness intervention (N=18) or cognitive strategies control group (N=20). The mindfulness class experienced a 5-minute meditation/mindfulness activity (e.g., guided breathing, body scan and self compassion) at the end of the class 3 times a week during the semester. The comparison class experienced a 5-minute cognitive strategies activity (e.g., dual coding, retrieval practice, and elaboration) at least 3 times a week during the semester. Participants from both groups completed questionnaires of stress (Perceived Stress Scale), anxiety (Beck Anxiety Inventory) and worry (Penn State Worry Questionnaire). Higher scores on these scales indicates poorer functioning. Students also completed questionnaires to self-report health, class attendance, and hours of physical activity. Questionnaire data was collected at 3 time points throughout the semester. A small subgroup of students (n=15) wore Fitbit Charge 3 trackers for one week to pilot collection of sleep data. All students completed a 40-item multiple choice pre/post test to assess learning on topics typically covered in an introductory psychology course. Scores represent number of items answered correctly. Students gave permission for us to receive their semester GPA.

Results

Repeated measures ANOVA showed no significant differences by group or across time for measures of perceived stress ($F [3, 63] = 1.59, p=0.22$), anxiety ($F [3, 57] = 2.78, p=0.07$), or worry ($F [3, 66] = 0.93, p=0.43$). For all subsequent analyses we used the final stress, anxiety, and worry scores.

Consistent across the semester the majority (86.8%) of participants reported moderate to high levels of stress ($M=20, sd=6$). Similarly, 84.2% of students reported moderate to high levels of worry ($M=55, sd=14$). Approximately 60% of students endorsed moderate to high anxiety ($M=17, sd 11$).

Pearson's r correlations were performed to assess the relationship of stress, anxiety, and worry with outcomes of interest. Days missing class was positively related to stress ($r [36]=0.41, p=0.01$), and anxiety ($r [36]=0.38, p=0.02$). Anxiety was also positively correlated with getting sick more easily ($r [36]=0.34, p=0.04$). These results were consistent with our predictions. In contrast to our prediction, greater average number of minutes asleep in a week correlated with higher stress levels ($r [15]=0.52, p=0.04$). There were no relationships with physical activity.

We examined the impact of the intervention on student learning. Students in the MFI and CSI groups differed on the pretest ($F [1,36]=138.5, p=0.000$), and there was a significant interaction by group over time ($F [1,36]=5.45, p=0.03$). On the pretest CSI students had lower test scores ($M=12, sd=5$) than MFI students ($M=15, sd=5$). The CSI students had greater improvement in their test scores than MFI students. Post-test scores for CSI ($M=21, sd=2$) and MFI ($M=21, sd=5$) were similar. Refer to Figure 1 for a visual representation of these results. GPA did not differ by group.

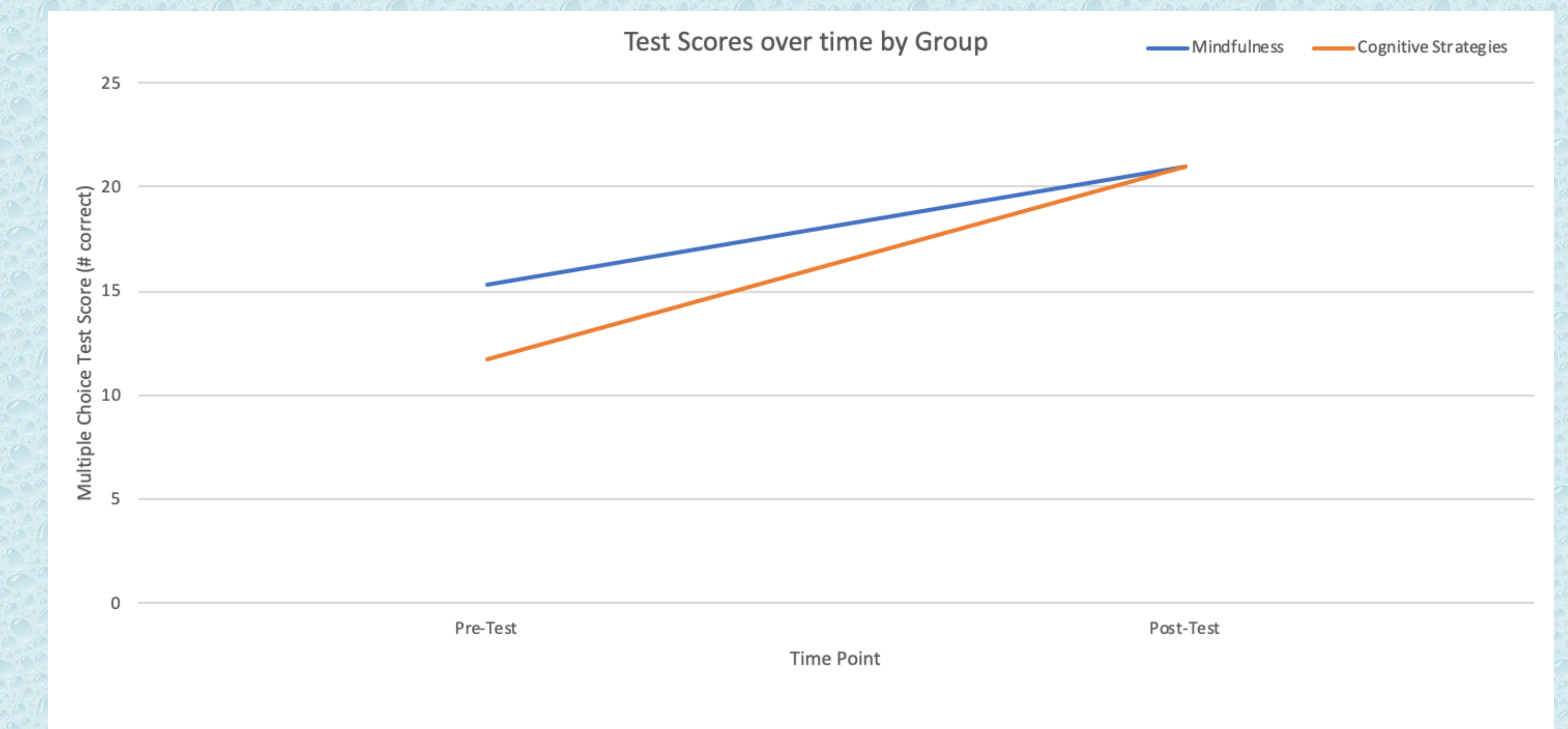


Figure 1. Scores on the multiple-choice introductory psychology knowledge test by group over time.

Discussion

Consistent with previous research we found that stress, anxiety, and worry levels among college students are reliably high throughout the semester. The majority of students reported moderate to high levels of stress, anxiety, and worry. Consistent with our predictions these high levels were related to behaviors and outcomes that could impede the student's ability to be successful in their academics, such as increased vulnerability to illness, and more missed days of class. In contrast to our hypothesis, students with greater stress had higher recorded minutes of sleep. Sleep data was only collected on a small subgroup and additional data being collected now will aid in understanding these relationships.

The preliminary analyses show no group differences in levels of stress, anxiety, or worry for our intervention. There was a trend for anxiety. Continued investigation may deepen our understanding of the mindfulness intervention for our students. We will continue to explore the impact of mindfulness and cognitive strategies over the next 3 semesters. It will be essential to examine the no intervention control as a part of this study.

We did observe a larger improvement in test scores among students in the cognitive strategies group as compared to those in the mindfulness group. This was in contrast to our expectations. It will be useful to continue to examine the outcomes further to understand the role of the cognitive strategies intervention in student learning.

As noted, these are the preliminary data of a longer-term project that will continue to examine the efficacy of mindful practice to beneficially impact students' stress, anxiety, and worry. Taken in this context the high rates of stress, anxiety, and worry in our results demonstrate the importance of developing and assessing interventions for undergraduate college students to reduce the potential negative effects that accompany these constructs.

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