

Effectiveness of a Low-Dose Mindfulness Intervention for College Students: Does Major Play a Role?

Monique Boodram

Faculty Introduction

Dr. Gulden Esat

The research conducted by Ms. Boodram was undertaken as part of her involvement in the Mindfulness, Spirituality, and Well-being Lab. I must express my appreciation for Ms. Boodram's exceptional work in data cleaning and interpreting the statistical tests. It is worth noting that Ms. Boodram exhibited a genuine interest in the topic of mindfulness training. The outcome of this study holds significance as it sheds light on the potential differences among students from various disciplines. In the short term, low-dose mental health interventions seldom exhibit substantial effect sizes. To comprehensively understand the effects of universal interventions, longitudinal studies become imperative. These studies need to effectively control for other factors that influence mental health, such as stressful events, available resources, and support systems. By undertaking this project, Ms. Boodram gained valuable insights into the limitations of intervention studies.

Abstract

This study addressed the elevated rates of distress among college students and emphasized the potential benefits of preventive programs through examining the effectiveness of a low-dose mindfulness intervention implemented throughout a college semester. The Mindful Ambassador Program (MAP) was introduced as a universal intervention integrated into classroom instruction to large classes in the College of Education with a sample of 105 participants from diverse majors. Measures of well-being, depression, anxiety, and stress were administered at the beginning and end of the semester. Participants were categorized into three groups based on their majors. The effectiveness of the intervention was analyzed using a two-tailed *t*-test. The findings indicated only a significant change in scores before and after the intervention for anxiety. The levels of depression and anxiety scores were consistently lower for the Psychology students compared to those in other majors. The study acknowledged limitations, including the need to consider confounding variables and the absence of specific stressor data.

The mental health of college students has emerged as a crucial concern in recent years. Research demonstrates that college students exhibit higher rates of distress, encompassing stress, symptoms of anxiety, and depression, in comparison to the general population (Liu et al., 2019). In addition to the high rates of distress among college students, the COVID-19 pandemic has contributed a negative impact on this group's mental health (Parmar et al., 2021). A national survey conducted by the American College Health Association revealed a substantial prevalence of anxiety (82%), social isolation/loneliness (63%), depression (63%), and maladaptive stress coping mechanisms (60%) among college students (Martinez & Nguyen, 2020). To address these distressing statistics and foster the mental well-being of college students, it is imperative to explore preventive programs capable of extending benefits to all students.

While programs such as counseling services have yielded favorable outcomes towards the improvement of college student mental health (Huenergarde, 2018), there is a growing inclination towards interventions that are easily accessible and provide more autonomy to tailor practices according to the diverse needs and backgrounds of the student population.

Research has shown college students differ in their use of mental health services (Lipson et al., 2016). The study on mental health treatment across various academic disciplines by Lipson and colleagues (2016) conducted on a large, randomly selected sample of undergraduate and graduate students ($N = 64,519$) revealed students in humanities and art and design disciplines are significantly more prone to experiencing mental health problems. Interestingly, among students who reported mental health issues, those in business and engineering majors were found to be the least likely to seek support (Lipson et al., 2016). One way to address the variations in help-seeking is through the implementation of universal interventions that target all students. A systematic review conducted by Hayes et al. (2023) demonstrated exposure to such interventions significantly increases the likelihood of help-seeking at the individual level. Therefore, it is important to investigate the comparative effectiveness of these interventions across different academic majors, as this can provide valuable insights into adaptations that can potentially enhance the efficacy of the programs.

By exploring and comparing the effectiveness of universal interventions in diverse majors, we can shed light on specific adjustments needed to maximize the benefits of these programs. Understanding how these interventions impact students in various academic disciplines can inform the development of tailored approaches that cater to the unique needs and challenges of different majors. Ultimately, this research aims to bridge the gap in help-seeking behaviors and ensure all students receive adequate support for their mental well-being.

When different mental health intervention strategies are compared based on their effectiveness and mindfulness, cognitive-behavioral therapy (CBT)- based programs consistently emerged as most effective (Conley et al., 2013; Worsley et al., 2022). Worsley et al. (2022) conducted a comprehensive review of systematic review studies to evaluate various interventions aimed at improving student mental health and well-being. The review summarized and assessed the methodological quality of the included reviews, allowing for a comparison of interventions such as CBT, psychoeducation interventions, recreation programs, and relaxation interventions in terms of their impact on student mental health. Their findings support the effectiveness of mindfulness interventions for all students, including students who report mental health problems.

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As summarized above, scientific literature underscores the need to adapt interventions and questionnaires to suit the diverse academic disciplines represented within the student population. Moreover, it emphasizes the potential benefits of implementing mindfulness training in academic classes to enhance the overall student experience (Conley et al., 2013). Building upon previous research, this study aims to investigate the effectiveness of a specific mindfulness intervention across students of different academic disciplines. The intervention under examination is the Mindful Ambassador Program (MAP), a preventive program based on mindfulness principles delivered within the classroom environment (Esat et al., 2021). This study seeks to evaluate the MAP's ability to promote well-being and alleviate symptoms of depression, anxiety, and stress among college students.

To guide this investigation, this study poses the following research question: "Does the MAP lead to significant improvements in well-

being, depression, anxiety, and stress levels among college students pursuing diverse academic disciplines?” By analyzing changes in well-being, depression, anxiety, and stress levels between the pre- and post-intervention stages, I aim to provide insights into the potential benefits associated with integrating mindfulness-based programs into college settings. Additionally, this study will explore discipline-specific results, which can inform efforts to enhance the intervention’s effectiveness within specific academic fields.

Methods

The MAP was implemented as a weekly intervention conducted during regular class time, for a duration of approximately 15-20 minutes per session. This intervention spanned the entirety of the fall semester in 2019. To ensure the assessment of its effectiveness, data were collected at both the beginning and the end of the semester, allowing for a comprehensive analysis of any changes in participants’ well-being, levels of depression, anxiety, and stress.

Participants

The MAP was delivered in the courses offered by the College of Education faculty who agreed to host MAP in their classrooms. About 80% of the students who received the training chose to provide data for the study. A total of 105 volunteer participants were recruited, encompassing a broad spectrum of academic disciplines. The age range of the participants varied from 18 to 35 years, with a mean age of 22.63 years, thus offering a representative snapshot of young adults engaging in the study. Gender distribution revealed that 14% of the participants identified as male, while the majority, comprising 73%, identified as female. The remaining 13% identified as another gender or chose not to report their gender identity. In regard to race and ethnicity, the results indicated that 17% of the participants identified as European American, 16% as African American, 42% as Hispanic/Latino, 18% as Asian American, and 7% identified as belonging to another racial/ethnic group or chose not to provide this information.

Measures

To comprehensively assess the impact of MAP on participants’ well-being, depression, anxiety, and stress levels, the Pemberton Happiness

Index (PHI; Hervás & Vázquez, 2013) and the Depression, Anxiety, and Stress Scale (DASS) were used. These scales were chosen based on their established validity and reliability in measuring psychological constructs relevant to this study.

The PHI is a self-report measure that captures various dimensions of subjective well-being (Hervás & Vázquez, 2013). It consists of 11 items, each rated on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The PHI assesses individuals' overall happiness, life satisfaction, and positive emotions, providing a comprehensive evaluation of their well-being status.

In addition to the PHI, the DASS was employed to assess participants' levels of depression, anxiety, and stress (Antony et al., 1998). The DASS is a widely used instrument (Yeung et al., 2020) consisting of 21 items, with 7 items dedicated to each construct. Participants rate the extent to which they have experienced specific symptoms over the past week on a 4-point Likert scale, ranging from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time). The DASS enables a comprehensive examination of the negative emotional states that individuals may experience.

By using the PHI and the DASS, this study measured various dimensions of well-being, depression, anxiety, and stress among the participants. These established measurement tools strengthen the validity and reliability of the findings, enhancing the overall rigor and credibility of the study.

Data Analysis

To analyze the data, repeated measures analyses of variance (ANOVA) were conducted, considering the well-being, depression, anxiety, and stress scores as dependent variables. This statistical approach allowed for an examination of within-subject changes over time by comparing participants' scores at the beginning and end of the fall semester. The participants' majors were categorized under three groups: Human Development and Family Studies (HDFS), Psychology, and Other, the latter of which combined the majors represented in low frequencies (i.e., Spanish, Health, Education, Liberal Arts, Biochemistry/Biology, Computer Science, Petroleum Engineering). The repeated measures ANOVA design, combined with the use of reliable and validated scales,

facilitated a thorough investigation of the effectiveness of the MAP on the psychological well-being of the participants.

Results

The results revealed that only the scores for anxiety showed significant reduction from pre- to post-intervention. The participants did not exhibit any significant changes in their well-being, depression, or stress scores from the pre-test to the post-test (see figures 1 and 2). Concerning anxiety, HDFS students' mean scores significantly decreased ($t = 2.96, p = .0037$) from 7.58 ($SD = 4.83$) to 5.11 ($SD = 3.26$) and Other students' mean scores significantly decreased ($t = 2.53, p = .0171$) from 11.18 ($SD = 7.34$) to 5.53 ($SD = 3.66$). The scores of Psychology students also decreased but the change was not significant, possibly due to the small group size.

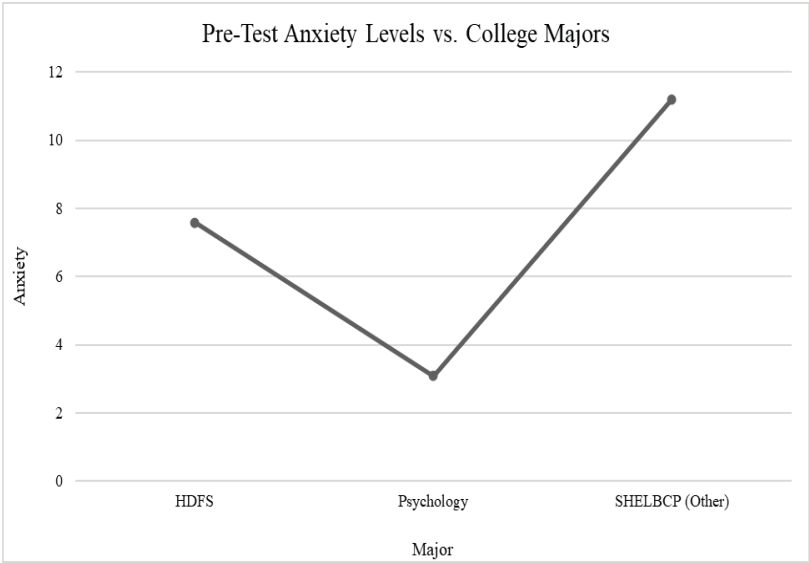


Figure 1. Pre-test anxiety levels among HDFS, Psychology, and Other majors

Upon further examination of the baseline scores, it was found that anxiety levels varied significantly across the various majors (Welch = 4.5, $p = .021$; see tables 1 and 2). Specifically, participants majoring in Psychology reported lower levels of anxiety compared to participants from other majors. A similar pattern was observed in the post-data scores. A Welch's t -test was conducted to compare the post-scores across different majors. The results revealed a significant difference

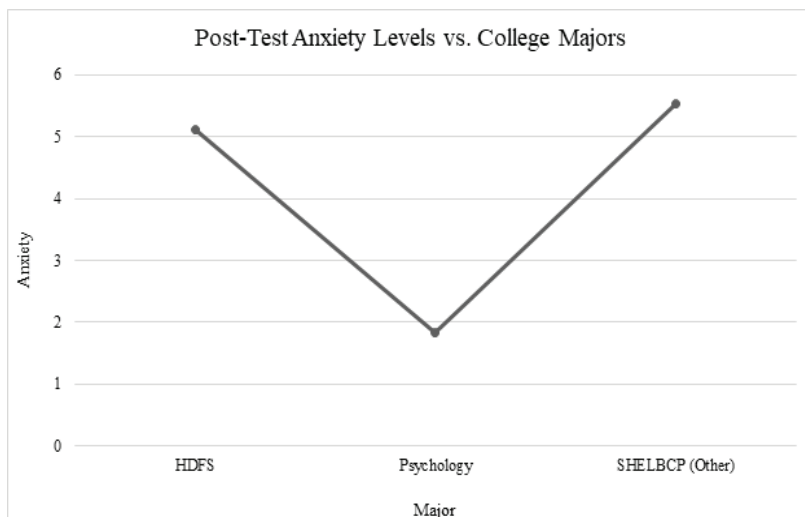


Figure 2. Post-test anxiety scores among HDFS, Psychology, and Other majors

Table 1. Descriptive statistics for anxiety levels per major in pre-test

	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
HDFS	65	7.58	4.83	1.73	4.12	5.34	.00	114.00
Psychology	11	3.09	2.58	0.77	1.35	4.82	.00	8.00
SHELBCP (Other)	17	11.2	7.34	6.08	1.77	6.37	.00	107.00
Total	93	7.25	4.91	2.86	4.43	5.51	.00	114.00

in anxiety levels (Welch = 9.8, $p = .001$) between Psychology majors and participants from other majors. The post-scores indicated that Psychology majors continued to exhibit lower levels of anxiety compared to participants from other majors.

Furthermore, descriptive statistics were computed to provide a comprehensive understanding of anxiety levels within each college major. As shown in Table 1, the HDFS majors ($n = 65$) had a mean anxiety score of 7.58 ($SD = 4.83$), while the Psychology majors ($n = 11$) had a lower mean anxiety score of 3.09 ($SD = 2.58$). The Other majors ($n = 17$) had the highest mean anxiety score of 11.12 ($SD = 7.34$). Similar trends were observed in the post-test statistics.

Table 2. Descriptive statistics for anxiety levels per major in post-test

	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
HDFS	44	5.11	3.26	0.49	4.12	6.10	.00	11.00
Psychology	6	1.83	1.47	0.60	0.28	3.37	.00	4.00
SHELBCP (Other)	13	5.53	3.66	1.01	3.32	7.75	.00	13.00
Total	63	4.89	3.34	0.42	4.04	5.73	.00	13.00

Discussion

The aim of the present study was to investigate the effects of MAP on college students' well-being and its potential in reducing depression, anxiety, and stress levels. The results did not yield significant differences in the pre- and post-scores of the participants, except for anxiety. The HDFS students and Other majors, combined due to low frequency, reported significant reduction in anxiety symptoms; on the other hand, the reduction for Psychology students was not significant. Further analysis revealed that Psychology students had lower baseline anxiety scores compared to other majors, and a similar pattern was observed for depression scores. Therefore, the lack of significant results among Psychology students may be attributed to what is called a floor effect, an effect observed when the data points heavily cluster at the lower end of the measurement scale, or near the minimum possible value. In such situations, the scores do not have room to improve because they are already at a level that represents good well-being. The results indicate that different majors such as HDFS and Other majors responded to the program with a similar trend, in that anxiety scores decreased, showing improvement, while well-being, depression, and stress did not show significant improvement.

However, it is important to acknowledge certain limitations in this study. Firstly, the number of Psychology students in the sample was considerably smaller than that of students from the HDFS program, resulting in a skewed representation. Additionally, during the post-data collection phase, some students were involved in end-of-semester

projects or taking their second midterm exams, while others were preparing for final exams. Unfortunately, data regarding these additional stressors were not collected or controlled for, introducing the possibility of confounding variables that may have compromised the internal validity of the results. Thus, the effectiveness of the mindfulness intervention in relation to well-being, depression, and stress may not have been accurately detected due to the presence of these uncontrolled stressors.

A strength of the study is the inclusion of a diverse sample encompassing different majors and demographic backgrounds. Furthermore, the gender composition of the sample closely matched the College of Education ratio, with a predominance of female participants (81.3%). The diversity of the sample enhances the generalizability of the study's findings regarding the reduction of anxiety in similar populations. However, overrepresentation of female students can still be construed as a limitation when generalizing the findings to all college students.

In conclusion, this study provides evidence supporting the feasibility of delivering mindfulness interventions to support the mental health of college students. The only evidence of intervention effectiveness was found in relation to anxiety scores, potentially due to uncontrolled stress levels among participants. Further, students of different majors had similar results pertaining to well-being, depression, stress, and anxiety. Nevertheless, future research endeavors should address the need to control potential confounding variables to more accurately evaluate the impact of mindfulness interventions on the mental health of college students. ■

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Student Biography

Monique Boodram is a sophomore majoring in Biomedical Sciences at Sam Houston State University. When Monique began her journey at SHSU, she was introduced to Dr. Esat's research on mindfulness interventions in higher education. Coming from a spirited homeschooling background, Monique was eager to begin her research career in this area to learn about ways to make a positive impact on the well-being of college students like herself. She now hopes that her gained understanding of mindfulness and mental health can help her address burnout within the line of medicine. Monique is a member of the Alpha Lambda Delta honor society, proud first-generation TRIO student, and president and co-founder of the American Medical Women's Association Premedical Branch developing on campus. She expects to graduate in spring 2026, and looks forward to treating vascular conditions as a surgeon in the Texas Medical Center.