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Relationships Between Levels of Mindfulness and Subjective Well-Being in Undergraduate Students

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Abstract

College is often a period of unique demands and increased autonomy. The heightened stress associated with this period can contribute to mental health difficulties and maladaptive behaviors in a subset of students. The goal of the current study was to examine the role of mindfulness (i.e., awareness of, and appreciation for, the present moment and experiences) in experiencing negative emotions and lifestyle behaviors in 23 male and 19 female undergraduate students. Participants were randomly assigned to a mindfulness meditation condition or a cognitive activity control condition. Results suggest that higher levels of mindfulness are associated with better lifestyle habits, lower levels of stress, and reduced negative affect. Results also suggest mindfulness meditation is effective for individuals reporting lower initial levels of mindfulness. The Five Facet Mindfulness Questionnaire-Short Form (FFMQ-SF; Baer et al., 2006) was used to examine specific facets of mindfulness. Notably, scores from the facet of *Observing* were predictive of environmental concern, social concern, and safety concern while scores from the *Describing* facet were predictive of a greater sense of purpose. The results of this study provide preliminary evidence of the effectiveness of mindfulness practices on students' subjective well-being.

Keywords: mindfulness, affect, stress, lifestyle habits

This paper will highlight evidence from the literature that increasing levels of *mindfulness*, which involves the ability to experience the current moment without judgement, are associated with greater well-being. In particular, we were interested in whether or not a brief online mindfulness intervention would reduce negative emotions and improve healthy lifestyle behaviors in undergraduate students over the course of a semester.

College for most students is a transitional period of development between late adolescence and the increasing autonomy associated with full-fledged adulthood. College becomes an experience of independence and self-management removed from the direct framework of their family system (Chow & Flynn, 2016). This experience can be challenged by unique stressors. For example, accumulating debt, academic demands and pressures, forming and maintaining meaningful relationships while balancing responsibilities, and uncertainty about the job market post-graduation. Stress is studied in college students by researchers because the high potential for significant disruption during this important maturational period. The individual's inability to manage stress can manifest into unhealthy coping strategies and maladaptive lifestyle habits (substance abuse, appetite/sleep disturbances, lack of exercise etc.) (Chow & Flynn, 2016).

The practice of mindfulness has been used to increase attention, awareness, and emotion regulation, which in turn, can lead to better management of reactions to potential stressful situations (Snippe, Nyklfcek, Schroevers, & Bos, 2015). In practice, mindfulness does increase emotional modulation, one's openness to present situations, and one's ability to return to more positive mental states (Snippe et al., 2015). Mindfulness-based training programs are associated with reductions in perceived level of stress, psychological distress, and illness (Carmody & Baer, 2008; Reibel, Greeson, Brainard, & Rosenzweig, 2001). Mindfulness practices are also

associated with increases in positive affect and decreases in levels of negative affect (Snippe et al., 2015). There also appears to be a positive relationship between the amount of time engaged in mindfulness activities and improved affect. For example, Collard, Avny, and Boniwell (2008) investigated mindfulness-based cognitive therapy for negative affect in psychology graduate students over an eight-week period and found that longer weekly practice times were associated with higher levels of mindfulness, which in turn was associated with reduced negative affect. Stated another way, this study supported the use of mindfulness meditation to reduce an individual's level of stress by changing the individual's response to stressful situations. This may be especially relevant for college students who could use these practices to effectively manage their stress and better meet their academic and life goals (Carmody & Baer, 2008; Shearer, Hunt, Chowdhury, & Nicol, 2016).

Mindfulness is a state of consciously experiencing the current moment without judgement, biases, or preconceived convictions. Higher levels of mindfulness are associated with the following: emotional intelligence, self-esteem, optimism, positive emotions, life satisfaction, self-compassion, vitality, self-actualization, autonomy, competence and sense of fulfillment (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003). Low levels of mindfulness are associated with depression, anxiety, difficulty modulating one's emotions, social anxiety, negative affect, and absent-mindedness (Baer et al., 2006; Brown & Ryan, 2003; Hollis-Walker & Colosimo, 2011).

The construct of mindfulness includes five facets. The five facets of mindfulness are observing, describing, acting with awareness, non-reactivity to inner experience and non-judging of inner experience. Observing involves an awareness of sensations, cognitions, emotions, sights, sounds and smells (Baer et al., 2006). Describing involves elucidating internal experiences with

words. Acting with awareness involves intentionally focusing one's attention in the present moment to engaged activities. Non-reactivity to inner experiences refers to allowing thoughts to surpass without a response (Baer et al., 2006). And non-judging of inner experiences requires the participant to take a non-bias approach towards their thoughts and feelings. These five facets are independent of each other and can be assessed separately. An individual can be more mindful in respect to some facets but not necessarily all five (Baer et al., 2006).

Kerr, Sacchet, Lazar, Moore and Jones (2013) suggest that mindfulness helps the individual adjust and control their experiences of sensations. Kerr et al. (2013) found that mindfulness meditation effects cortical alpha rhythms which are associated with filtering sensory input and attention regulation. Through mindfulness meditation, the individual becomes capable of organizing sensory input and thus, controlling the brain's processing of experiences (Kerr et al., 2013). Mindfulness mediation enables the individual to adjust their conscious experience of sensations and selective of sensory input. Rather than aimlessly absorbing sensory input and over stimulation of the brain, cognition and metacognition become harnessed and through practice, such thinking becomes reinforced. External demands become manageable, reducing stress and eliciting positive emotions (Kerr et al., 2013).

The concept of stress is based on the cognitive appraisal of one's environment (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). Perceived external threatening stimuli causes bodily resources to mobilize and demands the individual's energy to respond to such stimuli (Garrett, 2015; Lazarus & Folkman, 1984). Research suggests that the experience of stress is subjective, with greater amounts being largely detrimental to an individual's subjective well-being (Seery, 2011; Souza-Talarico et al., 2016). Moderate stress appears to be quite normative in our society and may be associated with some positive phenomena. For example, the

discomfort (emotional, physiological) associated with stressful experiences may motivate us to overcome negative circumstances, enhance our emotional maturation, and increase our level of productivity (Arslan, Dilmac, & Hamarta, 2009). On the other hand, high amplitude or chronic stress may deplete a person's internal resources and lead to functional impairments (Lazarus & Folkman, 1984). The short-term effects of stress, which may be adaptive, can involve physiological (increased blood pressure; release of stress hormones), emotional (anxiety, panic), and cognitive features (absentmindedness, trouble focusing) (Hobfoll, 1989; Arslan et al., 2009). If a stress response is prolonged, this may increase one's vulnerability to physical illness (headaches, hypertension) and serious behavioral and emotional consequences such as anxiety disorders, depression, cognitive and memory disorders, and sleep disorders (Hobfoll, 1989; Arslan et al., 2009).

Advances in technology and the emergence of the internet over the past two decades have facilitated the accessibility and application of mindfulness principles. Recent research supports the notion that web-based mindfulness training can be effective and improve distress. Glück and Maercker (2011) conducted a two-week study investigating the feasibility of mindfulness web based training on distress, perceived levels of stress, emotional modulation, and mindfulness. Researchers found reduced levels of perceived stress and negative affect. The intervention showed to be more effective in participants who initially reported higher levels of distress and participated in at least six or more training sessions. The effects of the online intervention on perceived level of stress showed similar decreases in reported levels of stress found in face-to-face mindfulness interventions (Glück & Maercher, 2011). Considering the time and travel barriers that students often face, flexible web-based interventions may have distinct advantages

when compared to the typical provider-based care models that occur at a specific location during a specific time.

The current study seeks to explore the relationships between emotion (i.e., levels of stress and positive/negative affect), lifestyle behaviors, and mindfulness in college students. The current study is a novelty because its longitudinal design expands across the course of the semester, rather than over a period of a couple weeks. Based on previous literature, we anticipated that higher levels of mindfulness at baseline would be associated with greater positive affect, lower levels of negative emotions (negative affect and stress), and healthier lifestyle behaviors at the initial and final time points. Second, we anticipated that participants with low levels of mindfulness at the initial assessment session (i.e. those who fell below the 50th percentile) would benefit the most from the mindfulness exercise. More specifically, we anticipated that levels of mindfulness at baseline would moderate the effects of the intervention in changes in stress overtime. Finally, we sought to examine whether-or-not specific facets of mindfulness predicted health behaviors (i.e., exercise, nutrition, substance use) at final assessment. This was a purely exploratory aim since this has not been attempted to our knowledge in the previous literature.

Method

Participants and Procedure

Prior to implementation, the methods and procedures of this study were reviewed and approved by the university's IRB. Students were recruited through an *Essentials of Psychology* course where research participation, or the completion of an alternative assignment, were required. Participants volunteered for this study and completed an IRB-approved informed consent form before engaging in the study. Data was collected from forty-two students (23

males, 19 females). All participants completed all sessions to which they were assigned. All questionnaires were given at pre and post-intervention time points. A subset of questionnaires was completed each time participants engaged in either the experimental or control activities throughout the semester (i.e. stress and affect measures).

Prior to data collection, prospective participants were given information regarding the nature of the study and risks/benefits. If participants provided informed consent they were then asked to complete surveys and questionnaires regarding personal characteristics, lifestyle habits, mental health functioning, current/past levels of stress and mindfulness (i.e., baseline session). Participants were then randomly assigned to a control condition or an experimental condition. The control condition involved engagement with a 12-minute cognitive activity involving an online video game (Candy Crush Saga, 2014). Participants in the experimental condition involved engagement with a 12-minute guided online meditation session. After each engagement with the video game activity or guided meditation session, participants were asked to complete an online posttest measuring current stress and affect levels. Participants were then provided information that would allow them to access these various online activities from home. As a part of their research participation, participants were required to complete at least 4 additional online sessions, including the completion of online questionnaires specifying their emotional state, over the course of the semester. At the end of the semester, all participants completed a final “follow-up” session. This involved the online completion of the same questionnaires they completed in the baseline session earlier in the semester measuring personal characteristic, lifestyle habits, mental health functioning, current/past levels of stress and mindfulness.

Materials

Mindfulness. The Five Facet Mindfulness Questionnaire-Short Form (FFMQ-SF; Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L., 2006) is a 24-item questionnaire that measures five independent mindfulness facets including *non-reactivity* (NR) to outer experiences, *non-judging* (NJ) of inner experiences, *describing* (DS), *acting with awareness* (AA), and *observing* (OB). Items are rated on a Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). FFMQ-SF reports adequate-to-good reliability. Four of the facet subscales demonstrate good internal reliability with Cronbach alpha coefficients ranging between .72 to .92. Nonreactivity demonstrates adequate reliability with a Cronbach alpha coefficient of .67.

Affect. The Positive and Negative Affect Schedule (PANAS; Watson, D., Clark, L. A., & Tellegen, A., 1988) is a 20-item questionnaire developed to measure positive affect (PA) and negative affect (NA). There are 10 positive adjectives (e.g., “excited”, “proud”) and 10 negative adjectives (e.g., “nervous”, “ashamed”) that participants are asked to rate on a 5-point scale from very slightly or not at all (1) to extremely (5). PANAS reports moderately good reliability and validity. The positive and negative subscales demonstrate good internal reliability with Cronbach alpha coefficients ranging between .84 to .90. Test-retest correlations for both scales were generally high, but showed a greater range as would be expected for a measure of affect (i.e., .47 to .68 for the positive affect; .39 to .71 for negative affect).

Perceived Stress. The Cohen Perceived Stress Scale (PSS; Cohen & Williamson, 1988) is a 10-item scale used to measure current levels of stress. Participants indicate their level of agreement with statements (e.g. “In the last month, how often have you been upset because of something that happened unexpectedly”) on a scale from 0 (never) to 4 (frequently). Higher

scores indicate higher levels of stress. This scale has a reported Cronbach's alpha between .84-.86 and test-re-test reliability is .85.

Lifestyle Habits. The Lifestyle and Habits Questionnaire-Brief (LHQ-B; Dinzeo, Thayasivam, Sledjeski, 2012) is a 42-item measure assessing 8 lifestyle domains including health and exercise, psychological health, substance use, nutrition, environmental concern, social concern, accident prevention, and sense of purpose. Responses are rated on a scale of 1 (strongly disagree) to 5 (strongly agree) and higher summed scores indicate healthier patterns of behavior whereas lower scores indicate engagement in health compromising behaviors. This measure is normed with college students and has adequate internal reliability. These eight lifestyle domains demonstrate fair to excellent reliability with an alpha .65 to .91

Stress Control. The Glazer-Stress Control Lifestyle Questionnaire (GCLQ; Glazer, H., 1978) includes 30 contrasting statements rated on a scale of 1 (strongly agree with left statement) to 7 (strongly agree with right statement). Higher scores are indicative of Type A personality type and higher stress levels.

Current Stress. The Stress Analogue Scale (SAS) measures current level of stress using a visual analogue scale. Participants are asked to indicate their current level of stress on a 100-millimeter line where a mark closer to the left side indicates lower current levels of stress levels while marks towards the right side of the line indicates higher current stress levels (Docherty, 2006). The participant's response is measured using a ruler and scored from 0 to 100 based on millimeters.

Results

Preliminary Analyses

A Pearson's bivariate correlation order to examine the association of the main study variables during the baseline session for all participants (see Table 1). The results of this analysis revealed mindfulness was positively correlated with lifestyle habits, $r = .422, p < .05$ and negatively correlated with perceived levels of stress, $r = -.713, p < .05$. Higher levels of mindfulness were positively associated with higher sense of purpose, $r = .390, p < .05$, and environmental concern, $r = .322, p < .05$. Higher levels of mindfulness were significantly correlated to better psychological health, $r = .629, p < .05$. Two bivariate correlation analyses were conducted at follow-up (see Table 2 and Table 3). The results revealed mindfulness negatively correlated with negative affect, $r = .526, p < .05$ and current stress levels, $r = -.394, p < .05$. Results also revealed that higher levels of mindfulness positively correlated with psychological health, $r = .427, p < .05$, environmental concern, $r = .351, p < .05$, social concern, $r = .309, p < .05$, satisfaction, $r = .454, p < .05$ and sense of purpose, $r = .433, p < .05$.

A Pearson's bivariate correlation was used to examine the association of all study variables at baseline for all participants prior to the mindfulness intervention (see Table 1). The results suggest that psychological health (LHQ-B) was positively associated with the FFM facets of *non-reactivity*, $r = .364, p < .05$, *acting with awareness*, $r = .457, p < .05$, *describing*, $r = .547, p < .05$, and *non-judgmental*, $r = .427, p < .05$. Environmental concern (LHQ-B) was positively associated with the FFM facets of *observing*, $r = .588, p < .05$ and *describing*, $r = .276, p < .05$. Sense of purpose (LHQ-B) was positively associated with acting with the FFM facets of *awareness*, $r = .260, p < .05$ and *describing*, $r = .476, p < .05$. Perceived levels of stress (PSS) were negatively associated with the FFM facets of *non-reactivity*, $r = -.416, p < .05$, *observing*, $r = -.260, p < .05$, *describing*, $r = -.620, p < .05$, and *non-judgmental*, $r = -.470, p < .05$. Stress control (GCLQ) was negatively associated with the FFM facets of *non-reactivity*, $r = -.376, p <$

.05 and *describing*, $r = -.330$, $p < .05$. Current levels of stress (SAS) were negatively associated with acting with the FFM facets of *awareness*, $r = -.298$, $p < .05$ and *describing*, $r = -.348$, $p < .05$.

In addition, FFM facet scores at baseline were associated with lifestyle habits and stress at the follow up period. In the control condition, *describing* was negatively associated with physical health, $r = -.503$, $p < .05$, *non-judgmental* was negatively associated with psychological health, $r = -.514$, $p < .05$ and *non-judgmental* was positively associated current levels of stress, $r = .527$, $p < .05$. In the experimental condition, *observing* was positively associated with environmental concern, $r = .460$, $p < .05$, safety concern, $r = .591$, $p < .05$, social concern, $r = .737$, $p < .05$ and substance use, $r = .629$, $p < .05$. In the experimental condition, *acting with awareness* was negatively associated with social concern, $r = -.479$, $p < .05$ and positively associated with physical health, $r = .439$, $p < .05$. No specific FFM facets were associated with affect at follow-up.

The Role of Level of Mindfulness in the Effectiveness of MBSR

To test the hypothesis that participants reporting lower levels of mindfulness at baseline would benefit from the intervention more than individuals reporting higher levels of mindfulness at baseline, a two-way between-subjects ANOVA was conducted (see Figure 1). Baseline mindfulness (high vs. low) and group assignment (control vs. experimental) were the independent variables and change in stress score was the dependent variable. The individual's level of mindfulness was separated in high and low groups using a median split. This median score was 70. In addition, we examined the effectiveness of MBSR based on the individual's reported level of mindfulness. The dependent variable was the level of current stress.

There was a significant two-way interaction between condition and baseline levels of mindfulness on change in stress levels over the semester, $F(1, 39) = 6.83, p = .013, \eta_p^2 = .149$. Simple effect analyses revealed that among participants with low baseline levels of mindfulness, participants in the experimental condition reported a decrease in stress over the semester ($M = -1.67, SD = 18.64$) whereas participants in the control condition reported an increase in stress levels over the semester ($M = 22.33, SD = 20.45$), $F(1, 20) = 4.74, p = .04$. In contrast, when baselines levels of mindfulness were high, the mindfulness intervention did not significantly affect self-reported stress levels over the course of the semester, ($M_{\text{control}} = -.9, SD = 23.17$ vs. $M_{\text{experimental}} = 12.91, SD = 16.11$), $F(1, 19) = 2.32, p = .14$. These findings suggest that the mindfulness intervention was only effective for individuals with low baseline levels of mindfulness.

The Role of the Five Facets in Predicting Subjective Wellbeing

A multiple regression analysis was used to test if the five facets of mindfulness predicted participants' ratings of perceived levels of stress, positive/negative emotions, and lifestyle habits differently at final assessment (see Table 4). The results of this analysis revealed there was some support for relationships between specific facets and lifestyle habits at final assessment. Observing was found predictive of environmental concern ($R^2 = .426, F(6,37) = .003, p < .01$), social concern ($R^2 = .345, F(6,37) = .040, p < .01$) and safety concern ($R^2 = .361, F(6,37) = .001, p < .01$) after controlling for gender. Non-judgmental was predictive of environmental concern ($R^2 = .426, F(6,37) = .015, p < .01$) and describing was predictive of sense of purpose ($R^2 = .21, F(6,37) = .007, p < .01$) after controlling for gender.

Due to potential influence of gender differences on these effects, a stepwise model was used to examine potential gender differences. The hypothesis that specific facets of mindfulness would predict health behaviors was supported even after controlling for gender.

Discussion

This study looked at the relationships between mindfulness, affect, stress and lifestyle habits. Research has shown that higher levels of mindfulness are indicative of positive emotions, lower levels of stress and healthier lifestyle habits. Our findings suggest that higher levels of mindfulness at the initial time point were associated with lower levels of stress, greater sense of purpose, better psychological health, and increased concern for the environment. Interestingly, baseline mindfulness also predicted these four elements at the follow-up time point in addition to greater positive affect, social concern, and attention to personal safety. Our findings replicated Gluck and Maercker (2011) by showing an association between levels of mindfulness and reduced negative affect and reduced levels of stress. This suggests that, even prior to our brief intervention, students with higher levels of mindfulness seemed to experience better wellbeing overtime.

This study also looked at the five facets of mindfulness and potential relationships between affect, stress and lifestyle habits. Individuals in this study who did not practice mindfulness meditation seemed to lack the ability to express their thoughts and feelings into words and were judgmental to such thoughts and feelings. These participants reported low scores on facets *describing* and *non-judgmental*. Participants reporting low scores on the facet *describing* seemed to not engage in enough adequate physical activity. Individuals reporting low scores on the facet *non-judgmental* also reported bottom range scores on psychological health. This means these individuals tended to judge their thoughts and feelings as good or bad.

Regarding stress, *non-judgmental* was found to be positively associated with current levels of stress in the control group. Individuals able to refrain from judging their own thoughts and feelings reported experiencing lower levels of stress.

In the mindfulness meditation group, the facet *observing* was positively associated with environmental concern, safety concern, social concern and substance use. This suggests individuals capable of observing their inner experiences and responses engage in minimal health compromising behaviors in these domains. These individuals are more mindful of their ecological footprint and their civic responsibilities. They also seem to be more careful and vigilant as to avoid accidents and refrain from substance use. *Acting with awareness* was found to be positively associated with physical health and negatively associated with social concerns. Individuals who reported higher levels of *acting with awareness* engaged in healthier patterns of exercise. No specific facets were associated with affect.

Our second hypothesis was partially supported, with baseline levels of mindfulness moderating the relationship between the effects of the mindfulness interventions on change in current stress. Thus, individuals with lower levels of mindfulness benefited more from the mindfulness intervention than individuals with higher initial levels of mindfulness. These results suggest that individuals reporting lower levels of mindfulness may benefit the most from mindfulness-based interventions. However, it is noteworthy that we did not find evidence for moderation of low versus high mindfulness in the reduction of negative affect after the intervention. This is surprising since both stress and negative affect were highly correlated at both time points (initial, $r=.448$; follow-up, $r=.472$). This could be due to the somewhat different nature of the two measures with stress representing a global score, whereas the negative affect total is comprised of ten different adjectives. Therefore, perhaps they represent overlapping yet

different emotional experiences. This suggests that initiatives to develop mindfulness-based intervention programs to help individuals manage stress would be more impactful and resource savvy if they first assessed levels of mindfulness and then target individuals with lower levels of mindfulness. Our findings suggest that entry-level mindfulness interventions such as the intervention offered in this study would not be as useful for individuals who are already high in mindfulness. Perhaps future research might explore whether more advanced materials can be developed to provide high-mindfulness individuals an opportunity to maintain and expand their skills.

There was some support for relationships between final levels of mindfulness across the five facets and final scores on our lifestyle measure. Increased scores on the mindfulness facet titled *non-judgmental* (i.e., the disposition to take a nonevaluative approach to one's own thoughts and feelings) were positively predictive of environmental concern. Scores on the facet *describing* (i.e., the ability to express internal experiences with words) positively predicted sense of purpose. We also found that scores on the facet of *observing* (i.e., the ability to notice and regard internal and external experiences -*sensations, cognitions, emotions, sights, sounds and smells*) predicted greater environmental, social, and safety concern. Thus, an individual's attentiveness to their internal experiences seems to predict lifestyle behaviors that are more outwardly focused (i.e., concern for others, the environment, and safety). The individual's concerns expand beyond oneself and into the environment. The individual's lifestyle behaviors are public-spirited and acknowledge a welfare beyond their own. The ability of being impartial to one's own thoughts and feelings enables the individual to find meaning in and a connection to something larger than themselves and to regard other's lives with purpose. Thus, the findings from the current study suggest that even a simple online intervention may offer a reasonable

strategy for facilitating “outwardly” focused elements espoused by many university mission statements (e.g. global concern, civic involvement, and the betterment of society). Of course, additional research would be needed to further examine this possibility.

One possible strength of the mindfulness intervention used in this study was that it was online. While face-to-face mindfulness meditation training approaches are effective, online programs have the advantage of being more accessible for students and cost effective to limited university budgets. Wellness centers within institutions could create targeted goals improving students’ subjective well-being by screening incoming students’ levels of mindfulness along with mental health factors. Longitudinal mindfulness programs across campuses have the potential to reduce burn out and dropout rates among college students through the management of stress. These strategies could be incorporated to broader preventative health efforts related to improving lifestyle behaviors while providing skills that could benefit the student across the lifespan.

Limitations

There are several limitations to consider in the current study. Primarily, the study was under power due to the limited sample size. The demographics of the sample used in this study limit the generalizability of the results. The sample only included undergraduate students enrolled in an essentials psychology course. The current study also neglected to record age and ethnicity which limited our ability to examine the influence of age and ethnicity on mindfulness mediation. Additionally, the measures in this study were self-report with minimal researcher interference online, which introduced potential limitations involving social desirability and respondent knowledge. Participants may have been more inclined to present themselves in a positive light and/or participants may be lacking awareness of their own behaviors resulting in misleading data.

Conclusion

There are both theoretical and practical implications that can be tentatively drawn from the findings of this study. For college students with low levels of mindfulness, a simple online training could be offered to reduce the student's experience of stress and negative emotions, and to improve their choices on lifestyle habits. Further research could examine the effectiveness of mindfulness practices across campuses on their students' well-being and whether their student bodies altruistic concerns heighten.

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Table 1

Correlations Between Study Variables for All Study Participants at Baseline Prior to Intervention

Facets	Physical	Psychological	Substance	Nutrition	Environment	Social	Safety	Purpose	PSS	Glazer	SAS	PANAS Pos.	PANAS Neg.
NR	0.017	0.364*	-0.122	-0.010	0.045	0.107	0.015	0.164	-0.416*	-0.376*	0.088	0.159	0.056
OB	0.172	0.145	-0.188	0.078	0.588*	0.010	0.147	0.027	-0.260*	-0.127	-0.084	-0.029	-0.179
AA	0.203	0.457*	0.166	0.167	0.158	0.158	0.219	0.260*	-0.430	0.041	-0.298*	0.090	-0.204
DS	0.239	0.547*	0.054	0.126	0.276*	0.210	0.202	0.476*	-0.620*	-0.330*	-0.348*	0.187	-0.200
NJ	0.025	0.427*	-0.063	-0.052	-0.081	-0.012	0.062	0.211	-0.470*	0.036	-0.162	0.131	-0.132

*p < .05; Physical = Physical Health; Psychological = Psychological Health; Substance = Substance Use; Environment = Environmental Concern;

Safety = Safety Concern; Purpose = Sense of Purpose; Social = Social Concern; PSS = Perceived Stress; SAS = Stress Analog Scale;

PANAS Pos. = PANAS Positive; PANAS Neg. = PANAS Negative; NR = Nonreactivity; OB = Observing; AA = Active Awareness; DS = Describing;

NJ = Nonjudgemental

Table 2

Correlations Between Baseline Mindfulness and Post-Intervention Stress and Lifestyle Variables for Participants in the Control Condition

Facets	Physical	Psychological	Substance	Nutrition	Environment	Social	Safety	Purpose	PSS	Glazer	SAS	PANAS Pos.	PANAS Neg.
NR	-0.077	-0.165	-0.291	-0.116	0.303	-0.163	-0.134	-0.277	0.263	0.155	0.197	-0.184	0.022
OB	-0.331	0.221	-0.087	-0.144	-0.094	0.225	0.281	0.027	-0.252	0.082	-0.320	0.371	-0.064
AA	-0.100	-0.040	-0.053	0.078	0.075	0.005	0.119	0.000	0.144	-0.186	0.341	0.150	0.131
DS	-0.503*	-0.314	-0.042	-0.392	-0.247	-0.136	-0.148	-0.236	0.373	-0.180	0.322	0.011	0.253
NJ	-0.205	-0.514*	0.204	-0.089	-0.267	-0.201	-0.345	-0.176	0.402	0.008	0.527*	-0.373	0.154

*p < .05; Physical = Physical Health; Psychological = Psychological Health; Substance = Substance Use; Environment = Environmental Concern;

Safety = Safety Concern; Purpose = Sense of Purpose; Social = Social Concern; PSS = Perceived Stress; SAS = Stress Analog Scale;

PANAS Pos. = PANAS Positive; PANAS Neg. = PANAS Negative; NR = Nonreactivity; OB = Observing; AA = Active Awareness; DS = Describing;

NJ = Nonjudgemental

Table 3

Correlations Between Baseline Mindfulness and Post-Intervention Stress and Lifestyle Variables for Participants in the Experimental Condition

Facets	Physical	Psychological	Substance	Nutrition	Environment	Social	Safety	Purpose	PSS	Glazer	SAS	PANAS Pos.	PANAS Neg.
NR	0.339	-0.045	0.327	0.339	-0.035	0.169	0.149	0.241	-0.183	0.039	0.013	0.476*	-0.161
OB	0.117	-0.112	0.629*	0.423	0.460*	0.737*	0.591*	0.375	0.115	0.047	0.135	0.402	-0.339
AA	0.439*	0.045	-0.273	-0.250	-0.156	-0.479*	-0.261	-0.191	-0.243	0.038	-0.128	-0.074	-0.064
DS	0.372	-0.263	0.109	-0.119	0.011	-0.183	-0.033	-0.196	0.171	-0.027	0.184	-0.139	-0.252
NJ	-0.070	-0.286	0.133	-0.324	-0.254	-0.211	0.083	-0.223	0.409	-0.028	0.162	-0.269	-0.278

*p < .05; Physical = Physical Health; Psychological = Psychological Health; Substance = Substance Use; Environment = Environmental Concern;

Safety = Safety Concern; Purpose = Sense of Purpose; Social = Social Concern; PSS = Perceived Stress; SAS = Stress Analog Scale;

PANAS Pos. = PANAS Positive; PANAS Neg. = PANAS Negative; NR = Nonreactivity; OB = Observing; AA = Active Awareness; DS = Describing;

NJ = Nonjudgemental

Table 4
Linear Regression Results Mindfulness and Lifestyle Habits

Predictor Variables	Outcome Variables																							
	Physical			Psychological			Substance			Nutrition			Environmental			Saftey			Social			Purpose		
	B	SE	b	B	SE	b	B	SE	b	B	SE	b	B	SE	b	B	SE	b	B	SE	b	B	SE	b
Non-Reactivity	0.02	0.38	.01	0.22	0.31	.13	-0.05	0.47	-.02	0.14	0.21	.13	-0.35	0.2	-.27	-0.1	0.15	-.12	0.12	0.2	.10	0.17	0.16	.20
Observing	0.21	0.36	.11	0.44	0.28	.29	0.45	0.44	.20	0.16	0.19	.17	0.59	0.19	.50**	0.49	0.14	.59**	0.4	0.19	.36*	-0.01	0.15	-.01
Acting with Awareness	0.64	0.35	.31	0.38	0.28	.22	-0.09	0.43	-.03	0.1	0.19	.10	0.29	0.18	.22	0.06	0.14	.07	-0.28	0.18	-.23	0.13	0.15	.14
Describing	0.07	0.23	.05	0.1	0.18	.09	0.46	0.28	.29	-0.02	0.12	-.02	0.12	0.12	.15	0.07	0.09	.12	0.19	0.12	.25	0.18	0.1	.32
Non-Judging	-0.7	0.43	-.27	0.08	0.34	.04	0.14	0.53	.05	-0.21	0.23	-.15	-0.58	0.23	-.35*	0.12	0.17	.11	-0.17	0.23	-.11	0.12	0.18	.11

*p < .05, **p < .01; Physical = Physical Health; Psychological = Psychological Health; Substance = Substance Use; Environmental = Environmental Concern; Saftey = Safety Concern; Social = Social Concern; Purpose = Sense of Purpose

