

IMPACT OF A MINDFULNESS INTERVENTION ON PERCEIVED STRESS,  
DEPRESSION, AND ANXIETY IN COLLEGE STUDENTS

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## ABSTRACT

### IMPACT OF A MINDFULNESS INTERVENTION ON PERCEIVED STRESS, DEPRESSION, AND ANXIETY IN COLLEGE STUDENTS

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Rates of anxiety and depression are increasing in young adults and college students (D'Amico, Mechling, Kempainen, Ahem, & Lee, 2016). College is a time that can be filled with academic, financial, personal, and identity stressors. One potential way that college students can cope with perceived stress is through mindfulness. This current study examined the relationship between mindfulness, perceived stress, anxiety, and depression in college students. More specifically this study examined differences in these measures over the course of a semester in a mindfulness and yoga based stress management and wellness class, a stress management class that did not receive a mindfulness intervention, and a general health class, that was a component to the university's general education program. We predicted that a mindfulness intervention in the context of a stress management class would significantly reduce levels of stress, depression as operationalized by demoralization and anhedonia, and anxiety over the course of a semester when compared to a general stress management and wellness class and a general health class. We also predicted that both stress management and wellness classes would be significantly different from the general health class on these measures. It was hypothesized that the mindfulness and yoga based stress management and wellness class would be significantly higher on measures of mindfulness than the other groups. The Perceived Stress Scale, the Minnesota Behavioral Health Screener, and the Five-Facet Mindfulness Questionnaire were used in a

multivariate analysis of variance (MANOVA). However, there were no statistically significant differences between the groups on perceived stress, demoralization, anhedonia, and anxiety.

## Impact of a Mindfulness Intervention on Perceived Stress,

### Depression, and Anxiety in College Students

Over the past four decades, the prevalence of anxiety and depression among college students has increased, with one in four students in college having a mental disorder that meets diagnostic criteria (D'Amico, Mechling, Kemppainen, Ahem, & Lee, 2016). Depression is one of the most prevalent disorders for this population. Additionally, significant levels of anxiety and depression are indicated by 50 percent of college students (Greeson, Juberg, Maytan, James, & Rogers, 2014). Beginning in college or university can be viewed as a potentially stressful period, since the college environment is associated with an increase in independence, a potential decrease in social support from family, as well as academic, financial, and interpersonal stressors. However, many college-aged students with mental health problems do not seek out services from university counseling centers, with one national study finding that of students who dropped out of college for mental health reasons 45% did not use services from their university counseling centers (D'Amico et al., 2016). To combat this problem, some colleges have implemented health and stress management programming in general education health courses. The current study compared levels of perceived stress, anxiety, and depression among students in a yoga based stress management class with an emphasis on mindfulness to a general stress management class and a general health class.

Since stress is associated with anxiety, depression, and a variety of general health conditions, stress management techniques can be beneficial to reduce perceived stress (Rizer, Fagan, Kilmon, & Rath, 2016). Per the American Psychological Association (APA) 2013 Stress in America Survey, most American teenagers and adults felt more stress than they perceived to

be healthy, suggesting that American teenagers and adults believe that perceived health and perceived stress are inversely related (APA, 2013). Additionally, the first year of college is a time that can be filled with significant stress; the college environment provides an increase in academic, social and financial demands and typically a decrease in social support from family (Falsafi, 2016). College students can employ a wide variety of coping mechanisms to deal with this stress; some students use positive coping mechanisms like time management, seeking social support from others, or relaxation techniques (Palmer & Roger, 2009). Other students use ineffective coping mechanisms like substance use (Bodenlos, Noonan, & Wells, 2013).

Mindfulness is one relaxation technique and coping strategy that is associated with reductions in stress, anxiety, and depression that has substantiated support in the literature. More specifically, the relationship between stress reduction and the practice of mindfulness in the college population has been examined by a variety of research studies and has strong evidenced-based support (Caldwell, Harrison, Adams, Quin, & Greeson, 2010; Carmody & Baer, 2008; Palmer & Roger, 2009). In addition to perceived stress, physiological measures such as blood pressure are significantly related to stress (Terrill, Gjerde, & Garofalo, 2015).

As noted above, mindfulness is a core construct of this study that has significant research support in the literature. Per Kabat-Zinn (2002), mindfulness can be defined as “simply paying attention on purpose and staying in the present moment, while remaining nonjudgmentally aware of unfolding physical, mental, and/or sensory experiences” (p. 732). Although mindfulness originated from Buddhism, it is no longer considered to be a specifically religious practice and need not interfere with participants’ religious practice or beliefs (Williams & Kabat-Zinn, 2011). In the literature, general mindfulness practice is correlated with positive emotion, as well as

stress reduction, psychological health, and general health in both general and clinical populations, such as individuals with anxiety, depression, and cancer (Bodenlos et al., 2013).

Several studies have examined the relationship between mindfulness and stress in a college population without using a mindfulness intervention; these studies measured college students' levels of mindfulness in relation to a variety of factors that are associated with stress, depression, anxiety, and general psychological health (Bodenlos et al., 2013; Hou, Ng, & Wan, 2015; Palmer & Roger, 2009). In one study, stress acted as a mediating variable between mindfulness and alcohol problems in college students (Bodenlos et al., 2013). Another study examined coping strategies that first-year college students engage in when they experience stress and found that mindfulness was significantly positively related to rational coping in stressful situations and was significantly negatively related to emotional coping (Palmer & Rodger, 2009).

While mindfulness is related to coping strategies such as rational coping, mindfulness practice is not specifically a coping strategy for stress. In a Chinese college student sample, one study found that mindfulness was significantly related to reductions in levels of both psychological and physiological measures of anxiety over the course of a semester, despite increases in cortisol levels and perceived stress that are typical at the end of the semester (Hou, Ng, & Wan, 2015). This study measured mindfulness, perceived stress, and cortisol levels before, during, and after the exam period. However, this study excluded college students with psychological disorders or who had a family history of psychological disorders. Since most other studies either included individuals with specific psychological disorders such as anxiety or depression, or did not rule-out individuals with or with a family history of psychological disorders, these results should be interpreted with caution. Another study that measured mindfulness without having a mindfulness intervention examined the factors that influenced if

college students were interested in participating in mindfulness meditation. The authors found that college students would be more likely to participate in mindfulness meditation if they believed that the effort they put in was worth the benefits that they would receive (Rizer et al., 2016). This theory is called the Health Belief Model. This study is significant in that it highlights how explaining the benefits of mindfulness before engaging in mindfulness practice can encourage college students that the benefits of mindfulness are worth the time required to practice.

Traditionally, one of the most common types of mindfulness interventions is Mindfulness-Based Stress Reduction (MBSR), which includes the practices of walking meditation, sitting meditation, body-scan meditation, and hatha yoga stretches (Caldwell et al., 2010). As part of this practice, participants attended two and a half hour sessions for eight weeks, with one all-day session during the sixth week (Carmody & Baer, 2008). MBSR is an extremely structured practice that includes homework for participants to complete each day, where participants spend time engaging in mindfulness exercise that they learned in the sessions. In the literature, MBSR is associated with increased psychological functioning, increased physical health such as sleep quality, and decreased perceived stress (Caldwell et al., 2010; Carmody & Baer, 2008). In one clinical adult sample, increased mindfulness levels in a pre-post study were significantly related to decreased levels of perceived stress, depression, anxiety, and increased psychological wellbeing, all with moderate to large effect sizes (Carmody & Baer, 2008). Additionally, this study examined the mechanisms of change that are associated with mindfulness practice to examine which elements of mindfulness were most closely related to the decreased levels of perceived stress, depression, and anxiety by examining which mindfulness activities participants engaged in outside of class the most. This study found that there was a

significant relationship between these variables and time spent outside of class practicing mindful sitting, hatha yoga, and body scan techniques. However, informal mindfulness practice, like using mindfulness with routine activities such as walking, eating, washing dishes, or showering were not significantly related to the changes in other variables. Although using mindfulness practice in everyday life through mindful walking and eating are specific concepts that are taught as part of a MBSR approach, they are not significantly related to the changes in perceived stress, depression, and anxiety. Based on these findings, mindful eating and mindful walking were used as an introductory mindfulness exercise but were not a primary focus of the current study.

One qualitative study for college students experiencing anxiety that were referred from the counseling center examined how clients participating in a MBSR felt about this intervention (Hjeltnes, Binder, Moltu & Dudas, 2015). Many group members in this study experienced fear and anxiety about not practicing mindfulness the correct way. Although this is not surprising with a population that is experiencing problematic anxiety, it is an element that can be beneficial to address with this population. Because of this, it is important for the group leader to highlight the nonjudgmental aspects of mindfulness for this population and to acknowledge that practicing mindfulness requires an adjustment period that other group members are also going through. By having group members share their experiences of practicing mindfulness with a partner or a small group, group members can experience less anxiety about the MBSR process. Overall, the process of mindfulness-based stress reduction (MBSR) has significant research support in the literature.

Like mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT) is another mindfulness intervention that has significant support in the literature. It

focuses on mindfulness exercises like body-scan meditation, mindful eating, mindfulness during a routine activity, breathing meditation, and sitting meditation, as well as cognitive elements like engaging in a mood discussion and providing resources for homework (Schwarze & Gerler, 2015). Historically, it is a combination of MBSR and cognitive therapy.

In the literature, there are a variety of mindfulness interventions that are not highly structured interventions like MBSR or MBCT that have support. More specifically, mindfulness is positively correlated with a variety of factors including optimism, life satisfaction, openness to experience, positive affect, and self-compassion (Shearer et al., 2016). One study used a randomized control trial to compare mindfulness practice versus yoga in a college student population with either depression or anxiety diagnoses found that both groups experienced a significant decrease in anxiety, depression, and stress at the end of a semester compared to a control group (Falsafi, 2016). Additionally, there was a significant increase in self-compassion in the mindfulness group but not in the yoga group, which suggests that self-compassion is uniquely significant to mindfulness but not yoga. While hatha yoga is traditionally included as an element of mindfulness practice, this study is valuable in that it demonstrates how mindfulness with both self-compassion and yoga might be beneficial for college students who may avoid formal psychological treatment and counseling for issues like depression and anxiety.

An electroencephalography (EEG) study examined the effectiveness of a mindfulness intervention using yoga stretches, breathing exercises, quick meditation, and stress response education compared to an active control of letting college students interact with a therapy dog for a set amount of time on stress response as measured by heart-rate variability (Shearer et al., 2016). One to two weeks after the intervention, participants completed the first four subtests of the Wechsler Adult Intelligence Scale (WAIS) while connected to an EEG to induce stress

(Wechsler, 2008). Although the mindfulness intervention was not specifically related to increases on a mindfulness questionnaire that measured the facets of mindfulness, it was significantly associated with an improved ability to regulate heart-rate variability. Since heart-rate variability can be viewed as physiological way to measure stress, this study suggests that the mindfulness intervention can be significantly associated with decreased measures of physiological stress even if participants are not aware of the variety of mindfulness facets.

Another study examined the relationship between mindfulness, sleep, mood, and perceived stress in movement-based courses other than yoga, such as Pilates, Taiga Quan, and Gyrokinesis in a college student population (Caldwell et al., 2010). Since each of these movement-based forms are associated with meditation in some way, researchers predicted that these forms would be associated with changes in mindfulness over the course of the semester. Participants in this study were already enrolled in movement-based courses as part of physical activity class that met for an hour and 15 minutes twice per week. Each group had increases in at least two of the five facets of mindfulness, but the specific facets that increased varied slightly by group. However, the results from the study are limited, since no control group was used. This format of recruiting students in pre-existing health classes was a technique used in the present study.

Thus far in this paper, the terms depression and anxiety have been referred to as general psychological terms. However, instead of using these general terms, this study specifically examined the constructs of demoralization, anhedonia, and anxiety based on the three-factor model of internalizing dysfunction (Sellbom, Ben-Porath, & Bagby, 2008). Per this model, the general term depression does not measure one specific construct that is distinctive to depression but rather two unique elements: demoralization and anhedonia. More specifically, demoralization

can be viewed as a sense of hopelessness that is common in depressive disorders, but is also associated with a variety of areas of psychology dysfunction. Rather, anhedonia, which, can be referred to as low levels of positive emotion, is more unique to depression. Since anxiety and depression are highly correlated, and there is no genetic difference between Major Depressive Disorder and Generalized Anxiety Disorder, this study also examined anxiety (Sellbom et al., 2008).

Overall, previous studies have found that mindfulness is related to stress reduction, and psychological and physical health benefits in both general and clinical populations, including adults with anxiety, depression, and cancer (Bodenlos et al., 2013). The current study was beneficial in that it compared levels of mindfulness, perceived stress, depression, and anxiety and contained two control groups. The present study included participants from three health and wellness classes: (1) a yoga class that incorporates mindfulness, (2) a general stress management health class, and (3) a general health class. The participants were administered measures to determine perceived stress, anxiety, mindfulness, and depression as measured by demoralization and anhedonia on the Minnesota Behavioral Health Screen (MBHS). The present study is unique in that it compared the relationship and benefits of mindfulness and yoga with other forms of stress management and physical activity in a college classroom environment.

It was hypothesized that the scores of the stress management group with an emphasis on mindfulness would be statistically significantly different from the scores of the general stress management class and the general health class on perceived stress, anhedonia, demoralization, and anxiety. It was also hypothesized that the scores of the general stress management class would be statistically significantly different from the general health class on perceived stress, anhedonia, demoralization, and anxiety. To summarize, the independent variable was the health

class status, and the dependent variables were levels of perceived stress, demoralization, anhedonia, and anxiety.

Because of the set structure of the mindfulness intervention being used as part of a health class, the highly structured MBSR intervention was not used in this study, but rather this study incorporated mindfulness exercises into a college Stress Management and Wellness health class. Similarly, Mindfulness-Based Cognitive Therapy is a technique that is used in group or individual therapy. Since this study examined mindfulness, perceived stress, depression, and anxiety in a stress-management and wellness class or a general health class, MBCT technique was not used. This study used a general mindfulness intervention as part of a stress-reduction and wellness college class to determine if participants who received the mindfulness intervention had lower levels of demoralization, anhedonia, anxiety, perceived stress than the control groups.

## **Method**

### **Participants**

Participants in this study consisted of 66 students from Western Carolina University, which is a midsize, southeastern university in the United States, enrolled in three specific sections of stress management and wellness classes and general health classes. Participants enrolled in the study voluntarily and did not receive extra credit or course credit for the involvement. While 84 students participated across all three data collection periods, only 66 provided complete data during the third data collection period. The sample consisted of 43 females and 23 males who completed the third data collection questionnaire. Participants consisted of 18-24-year-old students, with a mean age of 19.84 (SD 1.56). The ethnicity breakdown was: Caucasian (84%), Hispanic or Latino (1%), African American (10%), Native American or American Indian (1%), Asian/Pacific Islander (1%), and Other (3%).

## Measures

The Five-Facet Mindfulness Questionnaire (FFMQ) is a widely researched measure that examines five facets of mindfulness: observing, non-judging, describing and identifying, acting with awareness, and non-reactivity to inner experience (Baer, Smith, Hopkins, Krietenmeyer, & Toney, 2006). It is based on the combination of four widely used mindfulness questionnaires has acceptable levels of correlations with related constructs, such as negative correlations with thought suppression and dissociation and positive correlations with emotional intelligence and self-compassion (Baer et al., 2006). This measure has been used to examine changes in levels of mindfulness over time both in mindfulness-based stress reduction and in general mindfulness programs (Caldwell et al., 2010; Carmody & Baer, 2008; Shearer et al., 2016).

The Minnesota Behavioral Health Screen (MBHS; McCord, Haugh, & Hutchinson, 2017) is an instrument currently being developed for use as a screening measure for various psychopathology constructs in primary medical care settings. It contains 27 short, dichotomous items that target key constructs of somatization, demoralization, anhedonia, anxiety, suicidal tendencies, activation, cognitive complaints, disconstraint, and substance misuse. The current study considered only the demoralization, anhedonia, and anxiety scales. In a large college student sample these three scales exhibited Cronbach's alpha values of .79, .67, and .77, respectively (Cronbach, 1951). Validity data are based on correlations between the screening scales and target scales on the Minnesota Multiphasic Personality Inventory – 2 – Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008/2011) in this same college student sample. Specifically, the correlations between the MBHS scales and the MMPI-2-RF scales for the three constructs of demoralization, anhedonia, and anxiety were .71, .57, and .66, respectively (Cronbach, 1951; McCord et al., 2017).

The Perceived Stress Scale (PSS) is a widely used measure in both research and clinical settings that measures perceived stress and the degree to which individuals perceive circumstances in their life to be outside their control and stressful (Cohen & Williamson, 1988). In previous studies examining mindfulness in college students and young adults, the 14-item version of the PSS had a reliability of .87 and acceptable levels of validity (Bodenlos et al., 2013; Cronbach, 1951; Rizer et al., 2016).

### **Procedure**

Students were recruited from Western Carolina University. These students were enrolled in three specific sections of stress management and wellness and general health courses during the Fall 2017 semester. Since this study was tracking changes in levels of mindfulness, depression, anxiety, and perceived stress over the course of the semester, students completed the survey three times: the 2<sup>nd</sup>, 7<sup>th</sup>, and 16<sup>th</sup> weeks of the semester. Participants were at least 18 years of age during the first data collection time period. Participation was voluntary, and students did not receive any course credit or extra credit for completing the study. Once students indicated that they were interested in participating, they gave consent and were encouraged to ask any questions pertaining to the study. Once the consent forms were signed, the investigator provided a link to the survey online and allowed participants to complete the three self-report measures on Qualtrics. The Five-Facet Mindfulness Questionnaire (FFMQ) was completed first, followed by the Perceived Stress Scale (PSS), and the Minnesota Behavioral Health Screening (MBHS). The procedure was replicated during the midpoint of the semester and during the last week of classes, before final exams had begun. The data from this study was analyzed using SPSS.

### **Analyses**

All hypotheses were tested using multivariate analysis of variance (MANOVA). Additionally, secondary analyses used the Five-Facet Mindfulness Questionnaire as a manipulation check to determine if there was a difference in mindfulness scores between conditions. It was hypothesized that the stress management and wellness class that is yoga and mindfulness based would be significantly higher on facets of mindfulness than either of the other two conditions. However, we also predicted that the general stress management and wellness condition would be significantly higher on facets of mindfulness than the general health class, but would be significantly lower and not include as many facets of mindfulness as the mindfulness based condition. In this way, the scores on the FFMQ were used as a manipulation check and not a dependent variable in the analyses.

## **Results**

A one-way between groups multivariate analysis of variance was performed to investigate the difference in health classes status on psychological dysfunction. Four dependent variables were used: perceived stress, demoralization, anhedonia, and anxiety. The independent variable was health class status, where students were either in a stress management and wellness class that received a mindfulness intervention, a general health class, or a stress management and wellness class that received instruction as usual.

### **Tests of Assumptions**

Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with several violations noted. While univariate normality was achieved for perceived stress, demoralization, and anhedonia, Levene's Test of Homogeneity of Variance was violated for anxiety ( $p < .05$ ) (Levene, 1960). Additionally, there were univariate outliers for

each dependent variable, as assessed by a boxplot, with two outliers for perceived stress, six outliers for anxiety, four outliers for anhedonia, and eleven outliers for demoralization. There were multivariate outliers in the data set, as assessed by Mahalanobis distance ( $p < .001$ ) (Mahalanobis, 1936). There was not a linear relationship between health class status any of the dependent variables, as assessed by scatterplot. Since the highest correlation shows only 33.3% of the shared variability between the dependent variables, there was no assumption of multicollinearity. There was not homogeneity of variance-covariances matrices, as assessed by Box's test of equality of covariance matrices ( $p < .001$ ) (Box, 1953). Since there were unequal sample sizes and a statistically significant Box's M result, Pillai's Trace was used as a multivariate test instead of Wilks' Lambda (Tabachnick & Fidell, 2007).

### **Tests of Hypotheses**

There was not a statistically significant difference between the health classes on the dependent variables,  $F(4, 8) = .782, p > .05$ . There was not a statistically significant difference between health classes on perceived stress  $F(2,61) = 1.290, p > .05$ . There was not a statistically significant difference between health classes on anhedonia  $F(2,61) = 0.490, p > .05$ . There was not a statistically significant difference between health classes on demoralization  $F(2,61) = 0.191, p > .05$ . There was not a statistically significant difference between health classes on anxiety  $F(2,61) = 0.880, p > .05$ .

A MANOVA was used as a manipulation check to determine if the levels of mindfulness differed significantly between the groups as predicted. There was not a statistically significant difference between health classes on levels of mindfulness, as operationalized by scores on the 5 facets of mindfulness on the Five-Facet Mindfulness Scale. There was not a statistically significant difference between health classes on the observing mindfulness scale  $F(2,64) = .405,$

$p > .05$ . There was not a statistically significant difference between health classes on the describing mindfulness scale  $F(2,64) = .074$ ,  $p > .05$ . There was not a statistically significant difference between health classes on the acting with awareness mindfulness scale  $F(2,64) = 1.215$ ,  $p > .05$ . There was not a statistically significant difference between health classes on the non-judging of current experience scale  $F(2,64) = .348$ ,  $p > .05$ . There was not a statistically significant difference between health classes on non-reacting to current experience scale  $F(2,64) = .841$ ,  $p > .05$ .

### **Discussion**

The purpose of this study was to examine the differences in levels of demoralization, anhedonia, anxiety, and perceived stress between students in a stress management and wellness class that received a mindfulness intervention, students in a general health class, and students in a stress management and wellness class that did not receive a mindfulness intervention. Results indicate that there were no significant differences between scores on perceived stress, demoralization, anhedonia, and anxiety between students in the stress management and wellness course that received the mindfulness intervention, students in the general health course, and students in the stress management and wellness course that did not receive the mindfulness intervention. While the hypotheses were not supported, there were a variety of factors that could have influenced these results.

One potential limitation was low sample size. Although 85 students participated in the study over the course of the semester, only 66 students provided complete end of the semester data. Because the study was examining group differences between participants in three classes that allowed a maximum of 40 students each, the maximum study sample size could be no larger than 120 students total. Additionally, participation in a research study was not a requirement for

health classes, so students did not have any additional external motivation to participate. In addition, since this study took place in health classes that are often taken by first semester college students, it is likely that this study excluded a group of participants who turned 18 after the beginning of the study. Future research could consider completing a mindfulness intervention during the spring semester, where more first-year students are likely to be of legal age. Future research should comprise more participants by including multiple classes of students for each condition, or collecting data in introductory psychology classes where research participation is required.

A second limitation was the brevity of the mindfulness intervention. Although all students in the class who received the mindfulness intervention were able to participate in the 10-minute mindfulness activity each week, it is possible that the intervention was not strong enough or long enough to create a lasting difference in the mindfulness scores between classes, as demonstrated by the manipulation check. Since previous research with Mindfulness Based Stress Reduction (MBSR) has demonstrated that having participants complete mindfulness activities outside of the intervention is beneficial for increasing mindfulness practice, this technique should be included in future studies (Carmody & Baer, 2008).

Another potential limitation of the study was the rural, college student sample. The sample is made up of college students, in a rural southeastern region of the United States that is primarily Caucasian. Moreover, the sample was a majority of first year college students who seem to have lower levels of depression, anxiety, and perceived stress than what is considered clinically elevated. Because of this, it is possible that genuine, severe psychopathology was considered to be outliers in the data set. Additionally, due to logistical concerns on behalf of the data collector, the health class that received the mindfulness intervention was a three-hour

evening class that met once a week, while the other two classes that were used for the study were twice weekly classes that met for an hour and a half. It is possible that the individuals who took evening health classes could have differed from individuals who took daytime health classes.

In addition, responses for the demoralization, anhedonia, and anxiety questions on the MBHS were dichotomous, with participants answering either true or false to three questions per scale. The total scores on each MBHS scale ranged from 3-6, with a score of 3 indicating all false and a score of 6 indicating all true. It is possible that using a scale with continuous rather than dichotomous responses would have allowed for more complexity and detail in the data set and would have increased content validity (Cureton, 1951). Additionally, using a continuous scale may have provided enough detail to provided linearity and led to a decrease in the amount of multivariate normality assumptions that were violated. While originally this measure consisted of a Likert scale where participants could rate their scores from zero to three, the scoring responses for this measure changed to a dichotomous true-false format after this study was proposed, but before data was collected. It is possible that returning to the Likert scale response format could increase content validity.

Since previous research has demonstrated that psychopathology, such as depression and anxiety, is increasing in college students and that 66% of young adults do not seek treatment for mental health problems, interventions that improve mental health outside of traditional counseling and therapy should be continued (D'Amico et al., 2016). Future research should examine the effectiveness of a mindfulness intervention in relationship to psychopathology, such as depression and anxiety, in college student health classes. Future research should include

longer sessions of mindfulness practice each week, and should make use of structured mindfulness practice outside of class time periods.

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Appendices

A. Table 1

Table 1. Mean scores by health class for Perceived Stress, Demoralization, Anhedonia, and Anxiety

	Perceived Stress	Demoralization	Anhedonia	Anxiety
Stress Management and Wellness	25.50	3.45	3.41	3.05
General Health	26.92	3.32	3.56	3.24
Mindfulness	29.00	3.47	3.71	3.17

## B. Five Facet Mindfulness Questionnaire

### Description:

This instrument is based on a factor analytic study of five independently developed mindfulness questionnaires. The analysis yielded five factors that appear to represent elements of mindfulness as it is currently conceptualized. The five facets are observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience.

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you: 1 is never or very rarely true, 2 is rarely true, 3 is sometimes true, 4 is often true, 5 is very often or always true.

1. When I'm walking, I deliberately notice the sensations of my body moving. \_\_\_\_\_
2. I'm good at finding words to describe my feelings. \_\_\_\_\_
3. I criticize myself for having irrational or inappropriate emotions. \_\_\_\_\_
4. I perceive my feelings and emotions without having to react to them. \_\_\_\_\_
5. When I do things, my mind wanders off and I'm easily distracted. \_\_\_\_\_
6. When I take a shower or bath, I stay alert to the sensations of water on my body. \_\_\_\_\_
7. I can easily put my beliefs, opinions, and expectations into words. \_\_\_\_\_
8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted. \_\_\_\_\_
9. I watch my feelings without getting lost in them. \_\_\_\_\_
10. I tell myself I shouldn't be feeling the way I'm feeling. \_\_\_\_\_
11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions. \_\_\_\_\_
12. It's hard for me to find the words to describe what I'm thinking. \_\_\_\_\_
13. I am easily distracted. \_\_\_\_\_
14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way. \_\_\_\_\_
15. I pay attention to sensations, such as the wind in my hair or sun on my face. \_\_\_\_\_
16. I have trouble thinking of the right words to express how I feel about things \_\_\_\_\_
17. I make judgments about whether my thoughts are good or bad. \_\_\_\_\_
18. I find it difficult to stay focused on what's happening in the present. \_\_\_\_\_
19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it. \_\_\_\_\_
20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing. \_\_\_\_\_

21. In difficult situations, I can pause without immediately reacting. \_\_\_\_\_
22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words. \_\_\_\_\_
23. It seems I am "running on automatic" without much awareness of what I'm doing. \_\_\_\_\_
24. When I have distressing thoughts or images, I feel calm soon after. \_\_\_\_\_
25. I tell myself that I shouldn't be thinking the way I'm thinking. \_\_\_\_\_
26. I notice the smells and aromas of things. \_\_\_\_\_
27. Even when I'm feeling terribly upset, I can find a way to put it into words. \_\_\_\_\_
28. I rush through activities without being really attentive to them. \_\_\_\_\_
29. When I have distressing thoughts or images I am able just to notice them without reacting. \_\_\_\_\_
30. I think some of my emotions are bad or inappropriate and I shouldn't feel them. \_\_\_\_\_
31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow. \_\_\_\_\_
32. My natural tendency is to put my experiences into words. \_\_\_\_\_
33. When I have distressing thoughts or images, I just notice them and let them go. \_\_\_\_\_
34. I do jobs or tasks automatically without being aware of what I'm doing. \_\_\_\_\_
35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about. \_\_\_\_\_
36. I pay attention to how my emotions affect my thoughts and behavior. \_\_\_\_\_
37. I can usually describe how I feel at the moment in considerable detail. \_\_\_\_\_
38. I find myself doing things without paying attention. \_\_\_\_\_
39. I disapprove of myself when I have irrational ideas.

## C: Perceived Stress Scale

### INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, you will be asked to indicate your response by placing an “X” over the circle representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don’t try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

0 = Never, 1 = Almost Never, 2 = Sometimes, 3 = Fairly Often, 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and “stressed”?
4. In the last month, how often have you dealt successfully with day to day problems and annoyances?
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6. In the last month, how often have you felt confident about your ability to handle your personal problems?
7. In the last month, how often have you felt that things were going your way?
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9. In the last month, how often have you been able to control irritations in your life?
10. In the last month, how often have you felt that you were on top of things?
11. In the last month, how often have you been angered because of things that happened that were outside of your control?
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
13. In the last month, how often have you been able to control the way you spend your time?
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

D: Minnesota Behavioral Health Screen

Minnesota Behavioral Health Screen

Minnesota Behavioral Health Screen 4.0

Name: \_\_\_\_\_ ID: \_\_\_\_\_ M F Age: \_\_\_\_\_ Date: \_\_\_\_\_

Indicate your response to each item by circling <b>True</b> or <b>False</b> . Don't take too much time on each item, but answer as accurately and honestly as you can.	<b>False</b> (or mostly false)	<b>True</b> (or mostly true)
1. I have pains.	False	True
2. I feel weak.	False	True
3. I get nauseous.	False	True
4. I feel useless.	False	True
5. I am dissatisfied with my life.	False	True
6. I feel generally discouraged.	False	True
7. There is little joy in my life.	False	True
8. I have little motivation.	False	True
9. I tend to avoid social activities.	False	True
10. I worry a lot.	False	True
11. Nervousness interferes with my daily functioning.	False	True
12. I obsess about things I can't control.	False	True
13. I have thought about killing myself.	False	True
14. I have tried to kill myself before.	False	True
15. I want to die.	False	True
16. I have trouble concentrating.	False	True
17. I get distracted easily.	False	True
18. I can't remember things.	False	True
19. I get bored easily.	False	True
20. My thoughts race through my head very fast.	False	True
21. I do dangerous things for thrills.	False	True
22. I make impulsive decisions.	False	True
23. If it feels good, I do it..	False	True
24. I don't always think before I act.	False	True

25. I sometimes drink too much alcohol.	False	True
26. I currently use drugs/alcohol.	False	True
27. I have used drugs/alcohol in the past.	False	True

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