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Examining Treatment Acceptability of an Eight-Week Mindfulness-Based Stress Reduction Protocol

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EXAMINING TREATMENT ACCEPTABILITY OF AN EIGHT-WEEK MINDFULNESS-BASED STRESS REDUCTION PROTOCOL

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Blake W. Palmer

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EXAMINING TREATMENT ACCEPTABILITY OF AN EIGHT-WEEK
MINDFULNESS-BASED STRESS REDUCTION PROTOCOL

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I dedicate this dissertation to my mother, Debbie Meurer, my fiancée Jennifer Willis, and my father David Palmer. Without their support this dissertation likely would not have come to fruition. I also dedicate this dissertation to Dr. Sally Kuhlenschmidt who always challenged my thinking and fostered my ability to think critically.

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TABLE OF CONTENTS

LIST OF TABLES

EXAMINING TREATMENT ACCEPTABILITY OF AN EIGHT-WEEK MINDFULNESS-BASED STRESS REDUCTION PROTOCOL

Blake W. Palmer   August 2021   89 pages

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The goal of this study is to examine whether levels of perceived stress, experiential avoidance, personality traits including openness to experience and agreeableness, and demographic variables will predict the treatment acceptability (indicated by responses on the Treatment Acceptability and Adherence Scale) of an eight-week Mindfulness-Based Stress Reduction (MBSR) program. This study collected data in the Spring of 2019. The final number of participants in the study was 116 (40 females, 76 males, $M_{age} = 36$, age range: 22-69 years). Participants completed measures including the Perceived Stress Scale (PSS), Acceptance and Action Questionnaire-II (AAQ-II), the agreeableness and openness to Experience domains from the International Personality Item Pool-Neuroticism Extraversion Openness scale (IPIP-NEO-60), and the Treatment Acceptability and Adherence Scale (TAAS). Participants also responded to an open-response question regarding what influenced their rating of the mindfulness protocol. This study examined three hypotheses. The first looked at how level of education and age were related to participants' ratings of treatment acceptability (measured by the TAAS) of an eight-week MBSR protocol. The second looked at how gender and ethnicity related to participants' ratings of the mindfulness protocol. The third looked at how performance on the PSS, AAQ-II, and IPIP-NEO-60 affected participants' ratings of the mindfulness

protocol. Results from this study indicated that, based on the sample, factors related to personality, perceived stress, and levels of acceptance significantly predict how acceptable an individual will rate an eight-week MBSR protocol. Additional findings from reviewing the open-response question indicated that the length of the protocol influenced individual's ratings on both the high and low end of the TAAS. The biggest barrier that clinicians will likely face with clients in an MB intervention will be the amount of time involved in completing such a program. Highlighting the benefits of this type of treatment along with explaining to clients the rationale behind the length of time required for such a program will be useful.

Introduction

Stress is the most significant risk factor for expenditures in healthcare (Azagba &

Sharaf, 2011). Mindfulness-based (MB) interventions, specifically Mindfulness-Based

Stress Reduction (MBSR) are effective approaches to efficiently dealing with stress

(Shapiro et al., 2005). Jon Kabat-Zinn developed MBSR at the University of

Massachusetts Medical School in 1979, to help patients with chronic pain and illness

cope more effectively with their distressing symptoms (Dobkin et al., 2011). Since 1979,

over 24,000 individuals have completed this formal training program. The program

focuses on incorporating intensive mindfulness training into daily life and has

demonstrated reproducible reductions in both psychological and medical symptoms

across a wide range of conditions. In many instances, these changes remain for up to four

years after treatment (University of Massachusetts Medical School, 2017). MBSR

research, supporting the benefits of its practice, has steadily accumulated over the past 37

years (Kriakous et al., 2020; Malpass et al., 2011).

However, persistence in MB interventions is a problem. The current literature

suggests that attrition rates in mindfulness studies, in general, are 16% (Nam & Toneatto,

2016) with 84% remaining for treatment. Examining those factors that relate to

intervention acceptability may increase the likelihood of an individual engaging in MB

interventions with a fuller understanding of what the intervention entails and requires.

This may help to increase and thus improve retention in treatment programs. This study

will examine whether the level of perceived stress, experiential avoidance, personality

traits including openness to experience and agreeableness, and demographic variables

will predict the treatment acceptability of an eight-week MBSR program. Two separate hierarchical regressions were used to examine the data. The first examined contributions of certain demographic variables related to the hypotheses of this study. The second examined the contribution of measures for perceived stress, experiential avoidance and the personality traits of openness to new experience and agreeableness. In the first regression, demographic variables were entered into the model first based on previous research establishing a relationship with certain demographic variables and their relationship to treatment adherence in MB interventions (Cooper et al., 2003; Olano et al., 2015).

The work of Cameron et al. (2005) identified an inverse relationship between a patient's perception of the severity of their prognosis and their level of willingness to engage in a group social support program. This study also identified a participants' level of experiential avoidance as a predictor for participating in the support program. Harris (2009) describes *experiential avoidance* as the opposite of acceptance; it is the lack of willingness or attempts to avoid unpleasant private experiences. Barkan et al. (2016) examined personality factors from the NEO-Five Factor Inventory (NEO-FFI; McCrae & Costa, 2010) as predictors for utilization of an MBSR program. The research on treatment acceptability to clients is too limited currently to draw firm conclusions. This study will contribute to the literature by examining predictors of participant-rated treatment acceptability of an eight-week MBSR program.

The following Literature Review examines the impact of stress on mental and physical health, an overview and description of MBSR, and a description of the standard

eight-week MBSR program. The review also includes research supporting MBSR as an effective method for stress reduction. Finally, the problem of client drop-out will be discussed regarding MBSR and MB interventions followed by a review of literature that explores factors influencing attrition and treatment acceptability.

Literature Review

The Impact of Stress on Public Health

Stress is the most significant contributor to health care costs in the United States and is implicated in numerous conditions such as atherosclerosis, diabetes, certain neurodegenerative diseases, and osteoporosis (Azagba & Sharaf, 2011). The impact of stress on mental and physical health results in substantial financial costs to our nation. Azagba and Sharaf (2011) provide support for links between alcohol consumption, smoking intensity, and workplace stress, all of which take a costly toll on the U.S. healthcare system.

In 2011 the American Psychological Association (APA) conducted a survey measuring levels of stress in 1,126 U.S. citizens, titled "Stress in America: Our Health at Risk" (APA, 2012). More than a third of individuals (39%) who took the survey reported that their average levels of stress had increased within the year preceding the survey when compared to the prior year. The survey also identified *caregivers* as experiencing elevated levels of stress. The study considered caregivers as any person who was responsible for the care of an aging or chronically ill family member. On a scale ranging from 1 (little or no stress) to 10 (a great deal of stress) the mean stress level for caregivers in the study was 6.5, with 5.2 representing the mean level of stress in the sample. More

than half of those identifying as caregivers in the study conveyed that they were overwhelmed with the quantity of care they provide. The study explained that Americans 65 years of age and older would double by the year 2030. Given that those over 65 need the most care, more individuals in the U.S will be under stress due to the increased number of individuals assuming the role of caregiver. The APA survey reported that caregivers engage in less healthy forms of managing stress such as watching television or smoking. Caregivers who attempted to make positive changes in their life (i.e., change in diet, exercising more, or losing weight) reported that those changes were difficult to maintain.

A more recent study by the APA ("Stress in America 2020: A National Mental Health Crisis," 2020), published in 2020, measured the levels of stress in 3,409 individuals in the U.S. The study indicated that the impact of the COVID-19 pandemic had exacerbated levels of stress in the U.S. Participants in the survey indicated factors associated with the pandemic that resulted in increased stress included parental uncertainty about the future education of children, the disruption to the educational system caused by school closings, and the financial impact of mass business closings that left many Americans unemployed.

Research indicates that stress can decrease cell functioning via the prolonged release of cortisol in response to stress (National Institutes of Mental Health, 2009). Prolonged cortisol release is linked to detrimental effects on both mental and physical health such as anxiety, depression, stroke, heart attack, hypertension, and increased susceptibility to infections due to immune system disturbances. According to Roehrig

(2016) in 2013, $30 billion was spent treating chronic obstructive pulmonary disease

(COPD), which is associated with smoking. In the same year, $87 billion in expenditures

occurred to attenuate anxiety and depression in the U.S. The cost for the treatment of

cerebrovascular disease was $ 13 billion, while $147 billion was spent on the treatment of

heart conditions. Stress exacerbates both mental and physical health problems; thus, early

intervention aimed at promoting effective methods of coping with stress are ideal to

mitigate the compounding effects of mental and physical health problems.

The Effectiveness of Mindfulness-Based Interventions

MBSR is a recognized approach to ameliorating the effects of stress on physical

and mental health. Khoury et al. (2013) conducted a comprehensive meta-analysis of 209

studies using MB interventions. The analysis found that MB interventions reduced both

depression and anxiety to mild levels when measured at mild, moderate, and severe levels

during pre-treatment.

A review conducted by Greeson (2009) found that mindfulness meditation has a

beneficial impact on the reduction of stress in individuals with chronic illnesses and

many medical conditions caused by stress such as fibromyalgia, chronic back pain,

psoriasis, and type 2 diabetes. MBSR has been shown to help students with evaluation

anxiety by promoting inner-calm, an increased ability to focus within learning situations,

replacing fear with curiosity in an academic environment, and increasing self-acceptance

(Hjeltnes et al., 2015).

Similarly, a group of mental health professionals engaging in an eight-week

MBSR intervention demonstrated significant increases in self-compassion ($p = .003$) as

measured by the Self-Compassion Scale (SCS; Raab et al., 2015). One meta-analysis of 20 studies of MBSR covering a variety of populations, discovered a consistent decline in depression and anxiety, with increases in coping ability and perceived quality of life (Grossman et al., 2004). Chiesa and Serretti (2009) conducted a meta-analysis of seven controlled trials of MBSR demonstrating that MBSR shows substantial improvements in stress compared to no treatment. Additional benefits of MBSR include:

- improvements in response to stressful events (Donald et al., 2016);

- decreases in maladaptive rumination with increases in adaptive rumination (Heeren & Philippot, 2010);

- increases in emotional intelligence (Charoensukmongkol, 2014; Walsh & Shapiro, 2006);

- increased self-efficacy (Charoensukmongkol, 2014), decreases in levels of depression, anxiety, and stress (Paulik et al., 2010; Schreiner & Malcolm, 2008);

- enhanced self-awareness (Brown & Ryan, 2003); and

- improvements in concentration (Young, 1997) and affect tolerance (Fulton, 2005).

Improvements for children, across multiple psychological variables, are seen with the implementation of mindfulness interventions in school systems (Coholic & Eys, 2015; Gouda et al., 2016). Mindfulness training also yields improvements in stress reduction and an increase in positive behaviors for young persons with autism spectrum disorder (Keenan-Mount et al., 2016). A large body of research supports improvements in

the psychological functioning of persons suffering from, or those who have recovered from various types of cancer (Birnie et al., 2009; Dobkin & Matousek, 2010; Huang et al., 2015; Stafford et al., 2015; Tsang et al., 2012). Mindfulness benefits also extend to the partners of patients with cancer (Birnie et al., 2009).

The caregivers of persons with chronic illness such as those recovering from lung transplants (Haines et al., 2015), persons caring for individuals with progressive cognitive decline (Paller et al., 2015), and older individuals experiencing depression benefit from MB interventions (Gallegos et al., 2013). The benefits of mindfulness also extend to emotional regulation in the workplace (Hülsheger et al., 2013), self-regulation in early childhood (Zelazo & Lyons, 2012), and combat veterans with Post Traumatic Stress Disorder (Wahbeh & Oken, 2014). Although MBSR is useful, it is critical to examine whether it is acceptable and worthy of continuing for clients once they are engaged.

A Description of Mindfulness-Based Stress Reduction

The most referenced description that captures the idea of mindfulness in the context of MBSR is that of Jon Kabat-Zinn, who introduced this part of eastern religious practices to the U.S. Kabat-Zinn indicates that *mindfulness* is paying attention to the present moment, intentionally and without judgment (Kabat-Zinn, 1994). The essential components of mindfulness include attention, intention, and acceptance. Experts vary in their presentation of the central tenants of mindfulness, yet this variability is mostly semantic. Bishop et al. (2004) provide a comprehensive overview of individual mindfulness components. These components include the ability of a person to self-regulate attention while maintaining an attitude of curiosity and acceptance of one's

experiences. These core tenants are accepted throughout mindfulness literature, yet some

practitioners place more emphasis on various parts of mindfulness or use slightly

different terminology. Whereas Bishop et al. (2004) use the term "experiential openness,"

Brown and Ryan (2006) more frequently use the term acceptance and acknowledge it as a

central component of mindfulness. The acceptance component should not be confused

with the central question of the acceptability of treatment in this study (*treatment*

acceptability within the context of this paper indicates the participant-rated level of

treatment acceptability for an eight-week MBSR protocol) in that *acceptance* as a

concept in mindfulness means a willingness to acknowledge and embrace various life

circumstances as they occur without trying to change them or deny that they are

occurring.

Intention in Mindfulness

Intention, within mindfulness practice, often dictates the outcome of the practice.

Those engaging with the intention of self-regulation often increase self-regulation as a

result (Shapiro et al., 2006). Grossman (2011) explains that definitions of mindfulness

from Buddhism and MB interventions include as a part of the definition the *intention* to

focus on momentary experiences deliberately.

Attention in Mindfulness

At its heart, mindfulness involves being aware in the present moment of one's

thoughts and sensations in an open way with an *attitude of non-judgment*. This is

sometimes referred to as being fully present. Being fully present requires sustained

attention, cognitive switching, and inhibiting rumination (Bishop et al., 2004). *Attentional*

control (sustained attention) requires the ability to focus on a task or point of observation and inhibit rumination. *Cognitive switching* is the ability to direct attention to appropriate stimuli from distracting stimuli. This idea is contrary to impulsive thinking or behavior and is a dispositional part of self-regulation yet with practice can develop within an individual (Diehl et al., 2006). Lindsay and Creswell (2017) found that increasing awareness and attention can improve cognitive functioning yet can also increase affective reactivity. In the context of stress, the attention component may alter the individual's cognitive experience of stress.

The Attitude of Acceptance

As an individual increasingly monitors present-moment experience during mindfulness practice, maintaining an attitude of acceptance is necessary to deal with potential emotional reactivity (Lindsay & Creswell, 2017). An investigation into the benefits of mindfulness for executive functioning suggests that acceptance accounts for one's ability to regulate emotional reactivity associated with making task-oriented errors. The increase in executive functioning accounted for by acceptance is attributable to an increased ability to monitor emotional states and continue engagement with a task without ruminating on errors associated with it (Teper & Inzlicht, 2012). Bishop et al. (2004) explain that while practicing mindfulness in a meditative context, negative thoughts about the self may arise. They explain that practicing acceptance by acknowledging these thoughts as non-useful allows the participant to avoid ruminating in the thoughts. In a stressful situation, acceptance can allow the individual to avoid exacerbating stress through ruminative thoughts.

9

Eight-Week MBSR Program

The standard eight-week MBSR program has been associated with clinically relevant increases in trait components such as psychological hardiness, and an increased sense of coherence which is typically stable once a person reaches adulthood. These changes are thought to be the direct result of the program's focus on meditation, yoga, and systematically cultivating awareness. MBSR integrates research from Western medicine and psychology with Buddhist meditative practices collectively known as Dharma. Mindfulness is frequently considered the core of Buddhist meditation and comprises training and honing of an individual's awareness and attention (University of Massachusetts Medical School, 2017). Multiple studies have established the effectiveness of MBSR (e.g., Birnie et al., 2009; Chiesa and Serretti, 2009; Coholic & Eys, 2015; Dobkin & Matousek, 2010; Donald et al., 2016).

Perceived Treatment Acceptability

The current study defines treatment acceptability on a continuum. Participants in the study will examine an MBSR protocol and rate their perceived acceptability of the treatment by using the TAAS (Milosevic et al., 2015; Appendix A).

Attrition in MB and Other Interventions

The need to examine possible sources of attrition in MB interventions is made clearer when examining the level of attrition in these therapies. A RCT conducted by Barkan et al. (2016) examined 100 individuals (62% female, *M* age = 72) in a community sample of older adults. The study used four MBSR techniques including body scanning, informal meditation, sitting meditation, and yoga. The 60-item NEO Five-Factor

10

Inventory was used to measure dimensions of personality. In this study, 50% of the sample failed to engage in the program. The personality constructs of agreeableness and openness predicted greater use of the techniques in the MBSR program during and at follow-up. The study controlled for differences in demographics such as age, sex, and education level. The study did not address barriers to participation, which can skew the interpretation of participants' perceived acceptability of the intervention based on their willingness to engage in the treatment.

A retrospective qualitative analysis conducted by Martinez et al. (2015) examined a sample of 48 individuals who were U.S. veterans (29% female, *M* age = 54). The objective of this study was to find barriers to enrollment and completion of an MBSR program. In this sample, 30% failed to engage in the MBSR program. The study found that negative perceptions of MBSR predicted non-engagement in the program.

Garland et al. (2015) examined patients with a cancer diagnosis (47.7% female, *n* = 300) using a cross-sectional survey to determine if patients would be willing to participate (WTP) in an MBSR program if offered. There were eighty patients (27%) that indicated if the program were offered they would be WTP. Search for meaning as measured by the Meaning in Life Questionnaire (MLQ; Steger et al., 2006) was the most influential predictor of WTP in the program. Contrary to most research on participation in MBSR Garland et al. found that second to search for meaning, race/ethnicity was a strong predictor for WTP in the program, followed by sub-clinical levels of anxiety.

Cameron et al. (2005) describes an example of attrition in other types of support programs in an RCT, examining 110 women *(M* age = 51) diagnosed with breast cancer.

In this study, the women were evaluated based on their willingness to attend a group support program (non-MBSR). In this sample, 51% of the women failed to engage in the support program. Among the factors that predicted decisions to engage in the support program were lower levels of avoidance, a younger age, and believing that their cancer was in remission.

The rate of attrition in prominent therapies such as Cognitive Behavioral Therapy (CBT) and Interpersonal therapy is lower than that of MBSR. A meta-analysis conducted by Fernandez et al., (2015) examining 115 studies that used CBT as a treatment. The average dropout at pretreatment was 15.9%. The average dropout rate after studies were in progress was 26.2%. Attrition in Interpersonal Therapy (IPT) is less than the rate in CBT. A meta-analysis conducted by Linardon et al., (2018) examined the dropout rate from 72 randomized controlled trials (RCT) that used IPT as a treatment. The average dropout rate was 21%.

Factors Related to Attrition in MB Interventions

Multiple factors have been explored in MB interventions, such as contraindications for therapy (inadequate pre-screening), practitioner skill level (Crane et al., 2010), and the patient's understanding of the demands required for MB therapy (Dobkin et al., 2011). However, researchers have failed to document in-depth information consistently that would construct a rich understanding of perception of treatment as it relates to attrition. More research is needed to understand whether any of the obstacles and barriers for participants who start MB interventions, yet fail to complete them, are related to these individuals' perception of these interventions (Nam & Toneatto, 2016). In

addition to adequate foreknowledge of the requirements of a particular program, patient characteristics affect participation in MB programs.

Attrition in MBSR and Mindfulness-Based Cognitive Therapy (MBCT)

Attrition in MBSR and MBCT may result from the nature of the presenting problems of participants. A study completed by Kabat-Zinn and Chapman-Waldrop (1988) found that patients with stress-related disorders are more likely to complete an MBSR program when compared to patients with chronic pain. In addition, research suggests that in MBSR programs, attrition typically occurs early in the intervention (Lynch, 2004; Salmon et al., 1998). Attrition from MBCT, in part, is due to the chronic nature of a person's depression history. Crane and Williams (2010) identified brooding and cognitive reactivity as predictors of attrition and explained that patients who had a history of suicidal attempts and three or more episodes of depression were more likely to complete an MBCT program.

Practitioner Skill Level

The need for clinicians trained in MBSR has introduced the issue of addressing training in a hurried manner. Poor training runs the risk of damaging the integrity, precision, and level of long-term commitment required for sufficient training in this domain (Crane et al., 2010). It is possible that some attrition within MB therapies is due to inadequate training of the clinician who is conducting the therapy.

Dobkin et al. (2011) conducted a study that examined the participation of healthcare professionals in an MB program. They explained that on one occasion when the group was teaching a Mindfulness-Based Medical Practice (MBMP) to the healthcare

13

professionals, one member of the group began crying. Two of the instructors

simultaneously used their skills relative to the situation, with one instructor addressing

the participants' desire to leave the group while another instructor addressed the group

and their feelings of needing to help the participant. This example highlights a glimpse of

the skill requirements necessary to deal with typical responses to MB meditative practices

in a clinical setting. Inadequate training in this type of teaching may diminish the

effectiveness for patients and their desire to continue in an MB program (Dobkin et al.,

2011).

Sociodemographic Variables

Olano et al. (2015) conducted a study using National Health Interview Survey

Alternative Medicine Supplement data to examine the likelihood of people in different

sociodemographic categories engaging in MB practices. In this study people who

achieved higher levels of education were more than four times as likely to engage in MB

practices than those who had lower levels of education. The study also found that women

were twice as likely as men to engage in any meditative practice. Overall lower levels of

engagement were found among African Americans and Hispanics when compared to the

other ethnicities participating in the study.

Participants who identify as female are anticipated to show higher levels of

treatment acceptability than participants who identify as male. Individuals identifying as

African American, and Hispanic are anticipated to show lower levels of treatment

acceptability relative to other participants. Cooper et al. (2003) also found African

Americans and Hispanics to have lower levels of compliance with guideline-concordant care.

Choice of Variables

The demographic variables and measures used in this study were informed by previous research. Olano et al. (2015) conducted a study that found women were twice as likely as men to engage in any meditative practice. The study also found that individuals with higher levels of education were more likely to engage in MB practices than those with lower levels of education. This study along with research by Cooper et al. (2003) found lower levels of engagement were found among African Americans and Hispanics when compared to the other ethnicities participating in the study. Selection of measures was based on several studies. Cameron et al. (2005) examined women diagnosed with breast cancer and their willingness to attend a group support program. Among the factors that predicted decisions to engage in the support program were lower levels of avoidance as measured by the AAQ-II (Cameron et al., 2005). The work of Cameron et al. (2005) also informed the use of the PSS to measure level of perceived stress. Cameron et al. (2005) identified an inverse relationship between a patient's perception of the severity of his or her prognosis and his or her level of willingness to engage in a group social support program. Barkan et al. (2016) examined the personality factors of agreeableness and openness (Measured by the agreeableness and openness domains of the NEO-FFI) as predictors of utilization of a MBSR program. The study found that higher scores on the A and O domains from the NEO-FFI predicted higher levels of engagement in the support

15

program. Based on these results the study examined age, gender, ethnicity, level of education, avoidance, agreeableness, and openness.

The Present Study

Stress renders a substantial impact on the economy and adversely affects the physical and emotional well-being of individuals (Azagba & Sharaf, 2011). MBSR is demonstrated to be a viable solution for attenuating the effects of stress (Birnie et al., 2009; Chiesa and Serretti, 2009; Coholic & Eys, 2015; Dobkin & Matousek, 2010). which would, in turn, reduce the financial costs associated with it. Factors associated with the utilization of MBSR, and other MB interventions include perceived stress, experiential avoidance (Cameron et al., 2005), and specific personality factors (Barkan et al., 2016). Previous research has examined variables related to attrition from MB interventions including demographic characteristics such as age, level of education, gender, and ethnicity (Cooper et al., 2003; Olano et al., 2015). While studies have found these variables to be associated with adherence and utilization of programs, no research has examined demographic characteristics along with measures of perceived stress, reported level of acceptance (the opposite of non-judging that is a critical component of mindfulness), and personality factors as they relate to treatment acceptability. Exploring these factors as they relate to treatment acceptability may allow for research on the best ways that MB interventions can be amended to better accommodate individuals who find current treatment protocols unappealing. Individual perception of treatment acceptability may also serve to better inform individuals interested in participating in an MB treatment,

16

of the requirements and necessary commitment, to lower attrition rates in MB therapies and interventions.

Hypothesis 1

Level of education and age will significantly predict treatment acceptability as indicated by the amount of variance (R^2) explained by the model.

Null Hypothesis 1

Level of education and age will predict treatment acceptability no more significantly than the mean of raw scores.

Hypothesis 2

Both gender and ethnicity will contribute to the amount of variance explained by the model, evidenced by a significant change in R^2. Specifically being Male, African American, or Hispanic will have a significant and negative effect on rated treatment acceptability, indicated by beta weights and f^2.

Null Hypothesis 2

Gender and ethnicity will not significantly contribute to the amount of variance explained by the model, evidence by the change in R^2. The coefficients for the variables Male, African American, and Hispanic will be non-significant as evidenced by beta wights and f^2.

Hypothesis 3

The addition of scores from measures for perceived stress (PSS), agreeableness and openness (A&O domains from the IPIP-NEO-60), and experiential avoidance (AAQ-

II) will significantly increase the amount of variance explained by the model, as indicated by the change in R^2 and the *Sig. F Change* value.

Null Hypothesis 3

The addition of scores from measures for perceived stress (PSS), agreeableness and openness (A&O domains from the IPIP-NEO-60), and experiential avoidance (AAQ-II) will not significantly contribute to the amount of variance explained by the model, evidence by the change in R^2 and the *Sig. F Change* value.

Method

Participants

This study collected data from 144 participants. After excluding individuals for failed attention checks and missing data, the final number of individuals used in the study was 116 (40 females, 76 males, $M_{age} = 36$, age range: 22-69 years). Participants in this study were recruited through Amazon's Mechanical Turk. Mechanical Turk is a survey platform that allows businesses and individuals to collect survey data. Individuals were paid $1.50 for participating in the survey in accordance with the minimum wage ($7.25/hour; "Characteristics of minimum wage workers, 2017: BLS Reports: U.S. Bureau of Labor Statistics," 2018) adjusted for the expected length of the survey (12 minutes). The survey for this dissertation was estimated to take 12 minutes by having a small group of graduate students take the measure, read each question carefully, and process all information contained in the questions. Respondents were restricted to residents of the United States. The relevant literature in this project used primarily U.S. participants. Research has suggested a lower level of deceptive survey-taking practices by U.S.-based Mechanical Turk workers (Smith et al., 2016). Smith et al. (2016) found that non-USA Mechanical Turk workers had more duplicate IP addresses (indicating the same individuals were attempting to benefit multiple times from the same survey) and had lower consistency on questions used to estimate test-retest reliability than a U.S.-based Mechanical Turk Sample.

Sample Size and Power

Power analysis software (G*Power) was used to determine the needed sample size (Table 1) for the input parameters of desired power and effect size.

Table 1

*Power Analysis Conducted with G*Power version 3.0.10*

	Psychometric Values	
Measurement	Input Value	Output Value
Effect size f²	0.15	
α err prob[a]	0.05	
Power (1-β err prob)[b]	0.80	
Number of predictors	8.00	
Noncentrality parameter λ		16.35
Critical F		2.03
Numerator df[c]		8.00
Denominator df[d]		100.00
Total Sample Size		109.00
Actual Power		0.80

[a]Type 1 error probability. [b]Type 2 error probability. [c]Numerator degrees of freedom.

[d]Denominator degrees of freedom.

To account for potential attrition, the suggested sample size was increased by 20%. *n* = 131 was the targeted sample size.

Attention Check

After participants viewed the eight-week mindfulness protocol, an attention check was presented. This check was a question asking participants to indicate the length of the protocol they viewed. Those individuals who answered incorrectly were guided out of the

survey yet were still reimbursed at the same rate as all other participants. After individuals who answered the attention check incorrectly were eliminated from the study the number of remaining participants was 117.

Missing Data

G*Power (v3.0.10) indicated that the number of cases remaining ($n = 117$) was enough to provide adequate power. Due to low numbers in a few subcategories, anticipated groups were combined and in one instance, dropped. There were two levels within the categorical demographic variable Level of Education including Doctorate and Middle School that had only one case for each. The response level Doctorate was merged with the response level Master's Degree to create the new category of Graduate Degree. The Response level Middle School was merged with the response levels GED and High School to create the new category High School, GED, or Below. Within the category of ethnicity, the response level Native Hawaiian or Pacific Islander that had only one case was merged with the response level Asian to create the new category Asian or Native Hawaiian/Pacific Islander. The response levels American Indian or Alaskan Native and Other Ethnicity within the category of ethnicity were removed because there were no cases within them. The response level Non-binary within the category of Gender had one response and this level of the variable was removed.

Measures

Demographic items included age, gender, ethnicity, and level of education (Appendix B). The following variables were measured with the indicated instrument: (a) the perceived level of stress (PSS, Appendix C), (b) experiential avoidance (AAQ-II,

Appendix D), and (c) the personality factors of openness and agreeableness (domains of the 60-item IPIP-NEO-60) (Appendix E). The criterion of treatment acceptability for the eight-week MBSR program was measured with the Treatment Acceptability and Adherence Scale (TAAS), and an open-ended response question (Appendix F) was presented to participants after completing the TAAS. The open-ended question asked participants what influenced their rating on the TAAS. The responses to this question were categorized and common responses were noted for individuals scoring in the top and bottom third of the TAAS.

Perceived Stress Scale (PSS)

The PSS (Cohen et al., 1983) is a 10-item self-report questionnaire that assesses an individual's level of perceived stress. The PSS includes items such as "In the last month, how often have you been upset because of something that happened unexpectedly?" and "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?" The response scale for the PSS is rated on a Likert scale with a range from 0 (*never*) to 4 (*very often*) with overall scores ranging from 0 to 40. The U.S. population mean for the PSS (Cohen & Williamson, 1988) is 13.0 (*SD* = 6.35), (α = .78), and a score of > 13 (a score greater than the U.S. population mean) is clinically significant as reported by the authors of the measure.

Acceptance and Action Questionnaire-II (AAQ-II)

The AAQ-II is a seven-item self-report questionnaire designed to measure an individual's level of experiential avoidance (Bond et al., 2011). The AAQ-II includes items such as "My painful experiences and memories make it difficult for me to live a life

that I would value" and "It seems like most people are handling their lives better than I am." The question response scores for the AAQ-II range from 1 (*never true*) to 7 (*always true*) with overall scores ranging from 7 to 49. Higher scores indicate higher levels of experiential avoidance. According to Bond et al. (2011) the mean coefficient alpha on the AAQ-II is $\alpha = .84$ (.78 to .88). The AAQ-II demonstrates good concurrent validity when compared to the earlier version (AAQ) of the test ($r = .97$).

Agreeableness and Openness Domains (A/O) From the IPIP-NEO-60

The IPIP-NEO-60 is a 60-item self-report questionnaire that is a shortened version of the longer Revised NEO Personality Inventory (NEO PI–R; Costa & McCrae, 1992). Agreeableness and openness domains include items such as "(I) Have a vivid imagination" and "(I) Believe that others have good intentions." The individual question response scores for the IPIP-NEO-60 range from 0 (*Very Inaccurate*) to 4 (*Very Accurate*) with scores in each domain (12 questions in each domain) ranging from 0 to 48. Higher scores on the openness domain indicate an individual's increased curiosity about his or her feelings and willingness to engage in a variety of different experiences. Individuals with higher scores in the agreeableness domain indicate an individual has a propensity for helping others and anticipates others are equally willing to help (McCrae & Costa, 2010). The internal consistency of the openness scale is $\alpha = .78$ to .85 and the internal consistency for agreeableness is $\alpha = .71$ to .86 (Maples-Keller et al., 2017; McCrae & Costa, 2010;).

Criterion variable

  The criterion variable in this study was the Treatment Acceptability and

Adherence Scale (TAAS; Milosevic et al., 2015), a 10-item self-report scale used to

measure treatment acceptability of psychological interventions regarding the likelihood

of both treatment adherence and attrition. In the current study, participants answered

TAAS questions regarding the MBSR protocol. Item responses for the TAAS range from

1 (*Disagree strongly*) to 7 (*Agree strongly*) with scores ranging from 10-70. Higher

scores on the TAAS indicate a higher level of treatment acceptability for the treatment

protocol. Internal consistency of the TAAS is $\alpha = 0.88$ (Milosevic & Radomsky, 2013).

Stimulus

  The eight-week MBSR protocol (Appendix G) used in this study was taken from

the website www.palousemindfulness.com with the permission of Dr. David Potter

(Potter, 2017). Palouse Mindfulness follows the same protocol outlined in the original

MBSR protocol developed by Jon Kabat-Zinn (University of Massachusetts Medical

School, 2017) with the exception that Palouse Mindfulness is intended as a self-guided

practice. The program is broken into eight weeks with different techniques and goals

introduced each week. The progression from week one to week eight is as follows:

Simple Awareness, Attention and the Brain, Dealing with Thoughts, Responding Versus

Reacting to Stress, Dealing with Difficult Emotions and Sensations, Mindfulness and

Communication, Mindfulness and Compassion, and week eight focuses on developing

practice. Individuals are expected to engage in 30 minutes of daily practice each week of

the program. The unit on Simple Awareness involves learning the body scan meditation

with the sitting meditation introduced during week two. Yoga is introduced in the Dealing with Thoughts unit during week three. The Soften, Soothe, and Allow technique is introduced during the Dealing with Difficult Emotions and Sensations unit during week five. Lake and mountain meditations are presented during week six which covers mindfulness and communication while the Mindfulness and Compassion unit in week seven introduces the Loving Kindness Meditation.

Procedure

Data for this study was collected in February of 2019. This study was approved by the Institutional Review Board (Appendix H) following faculty approval. This study posed a minimal ethical risk to participants. All surveys were completed via Qualtrics software (https://www.qualtrics.com) and stored in a password-protected file on the researcher's computer. Participants' ID numbers, rather than their names, were associated with individual questionnaire responses, to safeguard the confidentiality of participants and prevent experimenter bias.

Participants first viewed a link to the Qualtrics survey in their Mechanical Turk account. After linking to the Qualtrics survey from Mechanical Turk, the informed consent form was presented. After consenting, participants were directed to the PSS, AAQ-II, and A/O domains of the IPIP-NEO-60. These measures were presented in random order to participants. After completing these measures participants viewed the MBSR protocol. After viewing the protocol participants were presented with an attention check to determine that they had read the protocol. The attention check asked participants to identify the length of the protocol. Those who answered the question incorrectly were

25

directed out of the survey, yet they were still compensated for their time. After completing the attention check participants were directed to the Treatment Acceptability and Adherence Scale (TAAS; See Appendix A). After participants completed the TAAS, they responded to an open response question (See Appendix F) that elicited feedback about what informed participants' responses on the TAAS. Demographic information (age, gender, ethnicity, and level of education) was obtained from participants last (See Appendix B). Participants then viewed a debriefing paragraph (See Appendix J).

The mean response time for participants was 6.7 minutes and standard deviation (*SD*) 5 minutes. The range was 35 minutes (minimum time = 15 seconds, maximum time = 36 minutes). The initial plan was to discard results from participants who completed the survey in under 5 minutes. Based on the amount of time taken by myself and two volunteer participants to complete the survey before data collection, 5 minutes was the amount of time required to participate in the survey as quickly as possible while reading all the information and responding to all questions (seven minutes faster than the amount of time taken by the same graduate students to respond to survey questions at a comfortable pace while processing all of the information). However, examination of the collected data revealed that many participants finished the survey faster than the three graduate students, leading me to question the validity of the original decision to use 5 minutes as a cutoff threshold. An examination of the appropriateness of the original cut-off led to a review of literature regarding the quality and speed of responses by workers on Mechanical Turk. The review indicated that Mechanical Turk workers on average complete surveys quicker than non-Mechanical Turk participants (Smith et al., 2016)

suggesting that using non-Mechanical Turk workers to establish a temporal cutoff was inappropriate.

Consideration was given to using the mean and standard deviation as a method for eliminating outliers and extreme responding within this research (Giannakopoulos et al., 2009; Miller, 1991; Zera, 2001). However, other research (Leys et al., 2013) indicated that the mean and standard deviation can be affected by outliers and are more sensitive to outliers in smaller samples.

Leys et al. (2013) suggested that the Median Absolute Deviation (*MAD*) be used as a method for determining a cutoff threshold for data with problematic outliers such as those in smaller samples. The *MAD* is represented as $MAD = median\ |x - \tilde{x}|$, where x is an individual data point of a variable and $\tilde{x}$ is the median of the variable. The steps for calculating the MAD can be found in Appendix K. Three *MAD*s were found to be a very conservative method for establishing a cutoff. The median time of completion among participants in this study was 331 seconds. The *MAD* was calculated to be 108. Accordingly, completion times less than three *MAD* from the median were removed. There were no participants who completed the survey in under three *MAD* from the median time taken to complete the survey.

Design

The design used in this study was correlational survey research and helped answer the research question by identifying predictor variables for the criterion (rated level of treatment acceptability for the MBSR protocol). The predictor variables were perceived

stress, avoidance, openness to experience, agreeableness, gender, ethnicity, age, and level

of education. SPSS (v24) was used to conduct the regression analyses.

Analysis

The number of cases and percentages were calculated for age, gender, ethnicity,

and level of education. Means, standard deviation, and measures of internal consistency

were calculated for scores from the PSS, AAQ-II, O/A domains (IPIP-NEO-60), and the

TAAS. Two separate hierarchical regressions were used to predict scores on the TAAS

from demographic variables, scores on the A and O domain of the IPIP-NEO-60, scores

on the AAQ-II, and the PSS.

Each regression included a base model with control variables followed by

sequentially entered nested models. The purpose of analyzing the data in a hierarchical

fashion was to see the amount of variance resulting from the addition of each set of

variable(s). The purpose of doing two regressions was to control for different variables in

each regression. The R^2 change between the base model and the nested models was

evaluated by sequential regression analysis for each regression. Variables in each base

model were entered first to control for their proportion of the variance before entering

variables in the nested models. The decision to enter demographic variables in the base

model of the second regression was based on previous research that established a

relationship with these variables and attrition/treatment adherence in MB interventions

(Cooper et al., 2003; Olano et al., 2015). Additional research established the accepted

practice of including ethnicity among other categorical variables to be entered first in a

hierarchical regression model to control for these variables proportion of variance (Cook

et al., 2009; Morrow et al., 2011; Rauff, E., 2013; Sayegh et al., 2014; Sherwood et al., 2004; Sun et al., 2009). All categorical variables were dummy coded (assigned numerical values) to ensure their compatibility with regression modeling. R^2 and Cohen's f² (Cohen, 1988) were evaluated for individual predictors (to evaluate the contributing significance of these variables) and the model as a whole. For each regression the base model and each of the nested models was regressed on the outcome variable (TAAS). Both R^2 change and Cohen's f^2 were evaluated (Cohen, 1988).

Descriptive Statistics

Table 2 lists the descriptive statistics for categorical variables.

Table 2

Descriptive Statistics for Categorical Variables

		Sample		2019 Census	
Variable		*N*	%	*N*	%
Level of Education					
	BD[a]	52	45	45,730,479	20
	AD[b]	19	16	19,381,937	9
	SC[c]	15	13	44,914,086	20
	GD[d]	12	10	28,771,172	13
	HS, GED[e]	18	16	86,100,894	38
Ethnicity					
	White	91	79	236,475,401	72
	Black or AA[f]	14	12	41,989,671	13
	Asn or Ntv[g]	11	9	19,265,667	6
	Other Ethnicity	0	0	839,270	0.3
Gender					
	Male	76	66	161,588,973	49
	Female	40	34	166,650,550	51

Note. From Explore census data. (2019). United States Census

Bureau. https://data.census.gov/cedsci/table

[a]Bachelor's Degree; [b]Associate Degree; [c]Some College; [d]Graduate Degree; [e]High School,

GED, or Below; [f]Black or African American; [g]Asian or Native Hawaiian/Pacific Islander

Table 3 lists the descriptive statistics for continuous variables in the data set.

Table 3

Descriptive Statistics for Continuous Variables

Variable	*Mean*	*Std. Deviation*	*N*
TAAS[a]	43.91	14.97	116
IPIP-NEO-60, A[b]	33.05	8.25	116
IPIP-NEO-60, O[c]	25.30	5.21	116
AAQ-II[d]	24.31	12.44	116
PSS[e]	16.68	9.42	116

[a]Treatment Acceptability and Adherence Scale; [b]Agreeableness domain of the

International Personality Item Pool – Neuroticism, Extraversion, and Openness Scale

(IPIP-NEO); [c]Openness domain of the IPIP-NEO; [d]Acceptance and Action

Questionnaire; [e]Perceived Stress Scale

Reliability of the Measures

Cronbach's alpha was calculated for each measure used in this study (See Table

4). The coefficient alpha for the current sample on the TAAS ($\alpha = .55$) was lower than

that obtained with the sample used by the test creator. It is possible, based on the

recruitment methods for the current sample (Mechanical Turk) that there was less

variation across the sample resulting in a lower alpha coefficient than that obtained by

Milosevic et al. (2015). The reliability (coefficient alpha) for the TAAS in the current

sample indicates that the measure should be used with caution for both fundamental and

applied research (Kaplan & Sacuzzo, 2012; Nunnally, 1978). Coefficient alpha for the

TAAS in the current sample is $\alpha = .55$ which is considered to be low reliability (Schmitt,

1996). With a low reliability estimate, one would expect no significant differences as

error is increased. However, some of the results were significant, which suggests robust effects that future researchers might explore.

The coefficient alpha for the current sample on the IPIP-NEO-60 Agreeableness domain ($\alpha = .72$) was above an acceptable level for interpretation in research. Original alpha levels reported by McCrae and Costa indicated $\alpha = .71$ to .86. This means that the alpha level range indicated by the test creators is dependable based on the calculated alpha for this study falling within the reported range.

However, the coefficient alpha for the current sample on the openness domain of the IPIP-NEO-60 was surprisingly low ($\alpha = .42$). Original alpha levels reported by McCrae and Costa indicated alpha levels ranging from .78 to .85 on the openness domain of the IPIP-NEO-60. This means that the alpha reported by the authors may warrant further study to determine if the alpha that was calculated when this test was published is still meaningful for samples in current research.

The alpha coefficient calculated for the AAQ-II with this sample was the highest of any of the measures ($\alpha = .95$). This level of reliability was larger than the range originally reported for this measure ($\alpha = .78$ to .88; Bond et al., 2011).

The alpha coefficient calculated for the PSS in this sample was $\alpha = .65$. Interestingly, nearly all of the current sample indicated a high level of stress based on responses to the PSS. The current sample indicated a higher level of stress than the original 1988 sample. The mean score on the PSS for this sample was 17, which is four points higher than what the test developers consider to be a clinically relevant level of stress. The score of 13 was the U.S. population average for the test in 1988. Research has

found that over the past decade levels of stress in the U.S. have risen steadily. (APA,

2012; Stress in America 2020). These findings indicate that either the sample used in this

study is abnormally stressed or, if this sample is representative of the current U.S.

population, that the sample is possibly at an average level of stress. This further suggests

that the clinical norms for the PSS may need revision to reflect a more updated mean

level of stress in the U.S.

Table 4

Reliability Statistics

Measure	*Cronbach's Alpha*	*N* of Items
AAQ-II[a]	.95	7
IPIP-NEO-60, A[b]	.72	12
PSS[c]	.65	10
TAAS[d]	.55	10
IPIP-NEO-60, O[e]	.42	12

[a]Acceptance and Action Questionnaire; [b]Agreeableness domain of the International

Personality Item Pool – Neuroticism, Extraversion, and Openness Scale (IPIP-NEO);

[c]Perceived Stress Scale; [d]Treatment Acceptability and Adherence Scale; [e]Openness

domain of the IPIP-NEO

Continuous Variable Correlations

Correlations were calculated across the measures and appear in Table 5.

Table 5

Correlations of the Continuous Measures

		TAAS	IPIP-NEO-60, A	IPIP-NEO-60, O	AAQ-II	PSS
Pearson Correlation	TAAS[a]	-				
	IPIP-NEO-60, A[b]	0.28	-			
	IPIP-NEO-60, O[c]	0.25	0.24	-		
	AAQ-II[d]	-.33	-.44	-.19	-	
	PSS[e]	-.29	-.42	-.18	0.80	-
Sig. (1-tailed)	TAAS	-				
	IPIP-NEO-60, A	0.00	-			
	IPIP-NEO-60, O	0.00	0.01	-		
	AAQ-II	0.00	0.00	0.02	-	
	PSS	0.00	0.00	0.03	0.00	.

Note: $n = 116$

[a]Treatment Acceptability and Adherence Scale; [b]Agreeableness domain of the

International Personality Item Pool – Neuroticism, Extraversion, and Openness Scale

(IPIP-NEO); [c]Openness domain of the IPIP-NEO; [d]Acceptance and Action

Questionnaire; [e]Perceived Stress Scale

Multiple Regression

Assumption Testing

The assumption of independence of errors was tested using the Durbin Watson

statistic. This assumption was upheld based on the Durbin Watson statistic of 2.03 for the

first regression and 1.95 for the second regression.

The assumption of linearity between the dependent variable and the independent

variables was tested by plotting the studentized residuals against the unstandardized

predicted values to determine if linearity exists between the independent variables and the

dependent variable. The scatterplot of residuals for both regressions revealed linearity

with a horizontal band of values. Partial regression plots for each independent variable showed linearity as well. The assumption of linearity was upheld for both models.

The assumption of homoscedasticity of data was tested by visual inspection of a plot of studentized residuals versus unstandardized predicted values. Visual inspection revealed homoscedastic data for both regressions. The assumption of homoscedasticity was upheld.

The assumption that no multicollinearity exists between independent variables was tested by examining the correlations between independent variables and the Variance Inflation Factor (*VIF*). Multicollinearity existed between the Acceptance and Action Questionnaire and the Perceived Stress Scale in both regressions, yet the correlation was below .8 and *VIF* values were under 10 which are acceptable circumstances for interpreting results (Davidson et al., 1981; Dohoo et al., 1997). The assumption of multicollinearity was upheld.

The assumption that the data contained no outliers, impactful points of influence, or high leverage points was tested by inspecting standardized residuals, studentized deleted residuals, leverage values, and Cook's distance values. There were no standardized or studentized deleted residuals that exceeded 3 *SD* in either regression. Leverage values were sorted in descending order by value and inspected. No leverage values were above .4 in either regression. Values above .5 are considered extreme for inclusion in data interpretation (Huber, 1981). There were no Cook's distance values above 1 in either regression (the highest Cook's distance value was 0.1) (Cook & Weisberg, 1982). Visual inspection of Standardized Residual plots revealed approximate

normality of the distribution of errors. After determining that multiple regression assumptions were met, this study began an interpretive analysis of the data.

Two separate hierarchical regressions were run in this study. The first regression was aimed at further examining the hypotheses related to the demographic variables. Before running the regression, the data was examined to determine if it met the assumptions of linear regression modeling. The outcome measure for both regressions was the TAAS. The second was aimed at discovering the predictive contribution (R^2 change) to the overall model made by scores on the agreeableness and openness domains from the IPIP-NEO, the AAQ-II, and the PSS, respectively.

Regression 1

A base model and two nested models were calculated to see the change in variance from each predictor being added in each model. Predictors in model 1 (base model) in the first regression included the demographic variables of age and level of education. Dummy-coded categorical variables (gender, ethnicity, and level of education) used the level of the variable with the largest number of responses as the reference group (Gender = Male, Ethnicity = White, and Level of Education = Bachelor's Degree). Model 2 in the first regression included predictors from Model 1 with the addition of the demographic variables of gender and ethnicity. Model 3 in the first regression included predictors from Models 1 and 2 with the addition of scores from the A and O domain of the IPIP-NEO, the AAQ-II, and the PSS. Regression coefficients and standard errors can be found in Table 6.

36

Table 6

Results for Hierarchical Regression 1

Model	Variable	Variable Levels	Unstandardized Coefficients		R^2	R^2 Change	Sig. F Change
			B	Standard Error			
1					.06	.06	.23
	Constant		38.89	4.99			
	Age		.047	.13			
	Education Level	SC	9.66	4.37			
		GD	8.09	4.75			
		HS, GED	4.49	4.07			
		AD	3.42	3.99			
2					.07	.006	.88
	Constant		38.63	5.52			
	Age		.05	.14			
	Ethnicity	Black or AA	2.15	4.68			
		Asn or Ntv	-2.61	4.95			
	Gender	Female	.92	3.01			
	Education Level	SC	8.75	4.57			
		GD	7.71	4.85			
		HS, GED	4.39	4.24			
		AD	2.72	4.17			
3					.22	.15	.001
	Constant		35.84	11.36			
	Age		-.10	.13			
	Ethnicity	Black or AA[a]	2.10	4.41			
		Asn or Ntv[b]	-5.38	4.68			
	Gender	Female	1.54	2.95			
	Education Level	GD[c]	6.38	4.64			
		SC[d]	6.34	4.33			
		HS, GED[e]	2.40	4.14			
		AD[f]	.812	3.97			
	IPIP-NEO-60, O[g]		.486	.28			
	IPIP-NEO-60 A [h]		.164	.19			
	PSS[i]		-.135	.24			
	AAQ-II[j]		-.257	.18			

Note: The reference group for *Education Level* is Bachelor's degree. The reference group for *Ethnicity* is White. The reference group for *Gender* is Male. The Constant was the Treatment Acceptability and Adherence Scale

[a]Black or African American; [b]Asian or Native Hawaiian/Pacific Islander; [c]Graduate Degree; [d]Some College; [e]High School, GED, or Below; [f]Associates Degree; [g]Openness domain from International Personality Item Pool – Neuroticism, Extraversion, and

37

Openness Scale (IPIP-NEO); [h]Agreeableness domain from IPIP-NEO; [i]Perceived Stress

Scale; [j]Acceptance and Action Questionnaire

R^2 for Model 1 in the first regression was .06 with an adjusted R^2 of .02, a small

effect size. R^2 for Model 2 was .07 with an adjusted R^2 of -.005, a small effect size. R^2 for

Model 3 was .22 with an adjusted R^2 of .13, a medium effect size (Cohen, 1988).

Variables for level of education and age in Model 1 did not lead to a significant increase

in R^2 of .06, $F(5,110) = 1.39$, $p = .234$. The addition of variables for gender and ethnicity

in Model 2 in the first regression did not lead to a significant increase in R^2 of .006,

$F(3,107) = .22$, $p = .884$. The addition of scores from the A and O domains of the IPIP-

NEO-60, the AAQ-II, and the PSS in Model 3 in the first regression led to a significant

increase in R^2 of .15, $F(4,103) = 4.95$, $p = .001$. The full model (Model 3) including

demographic variables, scores from the A and O domains of the IPIP-NEO-60, scores

from the AAQ-II, and scores from the PSS to predict treatment acceptability as measured

by the TAAS, was statistically significant $R^2 = .22$, $F(12, 103) = 2.36$, $p = .01$, adjusted

$R^2 = .13$.

Regression 2

A base model and three nested models were calculated to see the change in

variance from each predictor being added in each model. Predictors in model 1 (base

model) of the second regression included the demographic variables of age, gender,

ethnicity, and level of education. Dummy-coded categorical variables (gender, ethnicity,

and level of education) used the level of the variable with the largest number of responses

as the reference group (Gender Male, Ethnicity White, and Level of Education Bachelor's

Degree). Model 2 included predictors from Model 1 with the addition of scores from the

IPIP-NEO-60 Agreeableness domain and openness domain. Model 3 included predictors

from Models 1 and 2 with the addition of scores from the AAQ-II. Model 4 included

predictors from Models 1, 2, and 3 with the addition of scores from the PSS.

Table 7

Results for Hierarchical Regression 2

Model	Variable	Variable Levels	Unstandardized Coefficients		R^2	R^2 Change	Sig. F Change
			B	Standard Error			
1					.065	-.005	.494
	Constant		38.63	5.52			
	Age		.05	.14			
	Ethnicity[a]	Black or AA	2.15	4.68			
		Asn or Ntv	-2.61	4.95			
	Gender[b]	Female	.92	3.01			
	Education Level[c]	SC	8.75	4.57			
		GD	7.71	4.85			
		HS, GED	4.39	4.24			
		AD	2.73	4.17			
2					.161	.081	.003
	Constant		15.55	8.62			
	Age		-.035	.13			
	Ethnicity	Black or AA	1.18	4.50			
		Asn or Ntv	-5.02	4.79			
	Gender[d]	Female	-.48	2.92			
	Education Level	SC	6.92	4.40			
		GD	4.87	4.72			
		HS, GED, or Below	3.80	4.20			
		AD	1.05	4.02			
	IPIP-NEO-60, O		.60	.28			
	IPIP-NEO-60, A		.38	.18			
3					.214	.130	.010
	Constant		34.38	11.02			
	Age		-.09	.13			
	Ethnicity	Black or AA	2.09	4.39			
		Asn or Ntv	-5.44	4.66			
	Gender	Female	1.33	2.92			
	Education Level	GD	6.23	4.62			
		SC	6.09	4.29			
		HS, GED	2.468	4.12			
		AD	.497	3.91			
	IPIP-NEO-60, O		.498	.28			
	IPIP-NEO-60, A		.178	.19			
	AAQ-II		-.330	.13			
4							

39

Model	Variable	Variable Levels	Unstandardized Coefficients		R^2	R^2 Change	Sig. F Change
			B	Standard Error			
					.216	.125	.576
	Constant		35.84	11.36			
	Age		-.096	.13			
	Ethnicity	Black or AA[a]	2.10	4.41			
		Asn or Ntv[b]	-5.38	4.68			
	Gender	Female	1.54	2.95			
	Education Level	GD[c]	6.38	4.64			
		SC[d]	6.34	4.33			
		HS, GED[e]	2.40	4.14			
		AD[f]	.81	3.97			
	IPIP-NEO-60, O[g]		.49	.28			
	IPIP-NEO-60, A[h]		.16	.19			
	PSS[i]		-.14	.24			
	AAQ-II[j]		-.26	.18			

Note: The reference group for *Education Level* is Bachelor's degree. The reference group for *Ethnicity* is White. The Constant was the Treatment Acceptability and Adherence Scale

[a]Black or African American; [b]Asian or Native Hawaiian/Pacific Islander; [c]Graduate Degree; [d]Some College; [e]High School, GED, or Below; [f]Associates Degree; [g]Openness domain from IPIP-NEO; [h]Agreeableness domain from the International Personality Item Pool – Neuroticism, Extraversion, and Openness Scale (IPIP-NEO); [i]Perceived Stress Scale; [j]Acceptance and Action Questionnaire

R^2 for Model 1 in the second regression was .07 with an adjusted R^2 of .01, a small effect size. R^2 for Model 2 was .16 with an adjusted R^2 of .08, a medium effect size. R^2 for Model 3 was .21 with an adjusted R^2 of .13, a medium effect size. R^2 for Model 4 was .22 with an adjusted R^2 of .13, a medium effect size (Cohen, 1988). Demographic variables in Model 1 did not lead to a significant increase in R^2 of .07, $F(8,107) = .93$, $p = .494$. The addition of scores from the A and O domain of the IPIP-NEO in Model 2 led to a significant increase in R^2 of .10, $F(2,105) = 6.02$, $p = .003$. The addition of scores from

the AAQ-II in Model 3 led to a significant increase in R^2 of .05, $F(1,104) = 6.92$, $p =$ .010. The addition of scores from the PSS in Model 4 did not lead to a significant increase in R^2 of .002, $F(1,103) = .31$, $p = .58$. The full model (Model 4) including demographic variables, scores from the A and O domains of the IPIP-NEO, scores from the AAQ-II, and scores from the PSS to predict treatment acceptability as measured by the TAAS, was statistically significant $R^2 = .22$, $F(12, 103) = 2.36$, $p = .01$, adjusted $R^2 =$ .13.

Table 8

Coefficients for Hierarchical Regression 1

Model	Variable		Unstandardized Coefficients		Standardized Coefficients		
			B	*Std. Error*	*Beta*	t	*Sig.*
1		(Constant)	38.89	4.99		7.79	.00
	Age		.05	.13	.034	.36	.72
	Level of Education[a]	SC	9.66	4.36	.218	2.21	.03
		GD	8.09	4.75	.165	1.70	.09
		HS, GED	4.49	4.07	.109	1.10	.27
		AD	3.42	3.99	.085	.86	.39
2		(Constant)	38.63	5.52		7.01	.00
	Age		.053	.14	.038	.39	.70
	Level of Education	SC	8.75	4.57	.197	1.92	.06
		GD	7.71	4.85	.158	1.59	.12
		HS, GED	4.39	4.24	.107	1.04	.31
		AD	2.73	4.17	.068	.65	.52
	Gender[b]	Female	.92	3.013	.029	.30	.76
	Ethnicity[c]	Black or AA	2.15	4.68	.047	.46	.65
		Asn or Ntv	-2.61	4.95	-.051	-.53	.60
3		(Constant)	35.84	11.36		3.15	.002
	Age		-.10	.13	-.07	-.72	.47
	Level of Education	GD[a]	6.38	4.64	.13	1.38	.17
		SC[b]	6.34	4.33	.14	1.46	.15
		HS, GED[c]	2.40	4.14	.06	.58	.56
		AD[d]	.81	3.97	.02	.20	.84
	Gender	Female	1.54	2.95	.05	.52	.61
	Ethnicity	Black or AA[e]	2.10	4.41	.05	.48	.64
		Asn or Ntv[f]	-5.38	4.68	-.10	-1.15	.25
	IPIP NEO O Domain[g]		.49	.28	.17	1.76	.08
	IPIP NEO A Domain[h]		.16	.19	.09	.86	.39
	PSS[i]		-.14	.24	-.09	-.56	.58
	AAQ-II[j]		-.256	.18	-.21	-1.41	.16

Note: The reference group for *Education Level* is Bachelor's degree. The reference group for *Ethnicity* is White.

[a]Graduate Degree; [b]Some College; [c]High School, GED, or Below; [d]Associates Degree; [e]Black or African American; [f]Asian or Native Hawaiian/Pacific Islander; [g]Openness domain from International Personality Item Pool – Neuroticism, Extraversion, and Openness Scale (IPIP-NEO); [h]Agreeableness domain from IPIP-NEO; [i]Perceived Stress Scale; [j]Acceptance and Action Questionnaire

Open Question Responses

One of the last items within the survey used for this research was an open-response question that asked participants to indicate what aspects of the eight-week MBSR protocol influenced their rating on the TAAS. Formal qualitative data analysis was not conducted with these responses but the responses for participants were examined. Categories were created for different responses and participants were divided into two groups. The first group ($n = 18$) comprised individuals who scored in the bottom third on the TAAS (10-30 points). Their mean score on the TAAS was 19 ($SD = 6$). The second group ($n = 45$) comprised individuals who scored in the top third on the TAAS (50-70 points). Their mean score was 59 ($SD = 7$). Nearly 4 out of ten individuals in the sample (39%) rated the TAAS in the 50-70 range. There was a large discrepancy between individuals who rated the scale on the higher end ($n = 45$) and individuals who rated the scale on the lower end ($n = 18$).

The amount of time involved in the mindfulness program outlined in the protocol was the most cited aspect that influenced participants overall. The most frequent response given by individuals scoring in the bottom third of the scale (10-30 points) as to what influenced their rating of the TAAS was the program was too long. Other aspects that influenced the ratings by individuals scoring in the bottom third of the TAAS included that the program seemed effective, the program seemed beneficial, and a history of treatment-resistant issues, respectively.

The most prominent response given by individuals scoring in the top third of the scale (50-70 points) as to what influenced their rating of the TAAS was that the program

seemed to be an appropriate amount of time. Other aspects that influenced the ratings by individuals scoring in the top third on the TAAS included the program seemed beneficial, the program seemed thorough, the program was too long, and preferring behavior-oriented treatment over the use of medication, respectively. Table 9 and Table 10 list descriptive data regarding the responses given in each of the two groups.

Table 9

Response Types for Individuals Scoring 10-30 on the TAAS

	N
TAAS responses[a]	18
Too long	10
Dislike the idea of meditation	3
Dislike the idea of yoga	3
History of treatment resistance or perceived treatment resistance	2
Unsure	2
Do not believe mindfulness is effective	1
Too difficult	1

[a]Treatment Acceptability and Adherence Scale

Table 10

Response Types for Individuals Scoring 50-70 on the TAAS

	N
TAAS responses[a]	45
Appropriate Amount of Time	10
Thorough	9
I enjoy yoga	5
Seems interesting and captivating	4
Prefer behavior-oriented treatment over medication	4
Increases ability to deal with difficult emotions	3
Seems simple	2
Dislike the idea of meditation	2
Easy intro to meditation	2
Like meditation	2
Seems beneficial	2
Currently use similar practices	2
Length of time[b]	1
Too long	1
Provides variety	1
I have no need for treatment	1
Like the progression of the program	1
Program seems challenging	1
Like mindfulness	1
Opportunity to work with professional practitioners	1
Attention	1
Program encourages accountability	1
Fear of improving	1
Convenient	1

[a]Treatment Acceptability and Adherence Scale

[b]The response did not specify if the amount of time was too much or too little

Discussion

Purpose of the Research

The purpose of this research was to examine the relationship between levels of perceived stress, experiential avoidance, personality traits, and demographic variables and an individual's perceived level of treatment acceptability (as measured by the TAAS) of a standard protocol for an eight-week MBSR program. The benefits of MBSR have been widely studied (Brown & Ryan, 2003; Charoensukmongkol, 2014; Donald et al., 2016; Fulton, 2005; Heeren & Philippot, 2010), as well as the participant-rated level of willingness to participate in an MBSR program (Garland et al., 2015). Research has explored factors related to attrition in MB interventions (Cameron et al., 2005; Crane & Williams, 2010; Crane et al., 2010; Dobkin et al., 2011), factors related to engagement in MB interventions (Barkan et al., 2016) and barriers to enrollment in an MB program or intervention (Martinez et al., 2015). However, an individual's perception of such a program may determine whether he or she is willing to participate. Factors that are related to attrition in MB studies may parallel factors related to an individual's rating of the level of treatment acceptability of an MB intervention. It is possible that the issue of attrition could be greatly reduced by addressing those factors related to treatment acceptability. This study took the initial steps to explore demographic variables, personality traits, and other variables that are related to an individual's perception of an MBSR program. Additionally, this research collected open-response data regarding the motivation for each participant's rating on the TAAS.

Regression Results and Open Response Overview

No individual variable was significant in its ability to predict increases or decreases in scores on the TAAS. An initially apparent relationship existed with higher levels of acceptance (AAQ-II) and lower levels of perceived stress (PSS) and higher ratings on the TAAS. However, the coefficients for this variable were not significant and thus no conclusions can be made from this relationship with any certainty. Previous research (Cameron et al., 2005) found higher levels of experiential avoidance, which is the opposite of acceptance, predicted lower levels of engagement in a group social support program. There was also an initially apparent relationship with higher scores on the A and O domains of the IPIP-NEO-60 and higher scores on the TAAS. However, the coefficients for this variable were not significant and thus no conclusions can be made from this relationship with any certainty. Barkan et al. (2016) found that the personality constructs of agreeableness and openness predicted greater use of techniques in an MBSR program. Across all models in both regressions, the demographic variable level "Black or African American" was associated with higher scores on the TAAS than the reference group (White) and the other ethnicities for that demographic. The demographic variable level "Some College" was also associated with higher scores on the TAAS across nearly all models. In both regressions the overall model that included scores from the A and O domains of the IPIP-NEO-60, AAQ-II, PSS, and demographic variables of age, gender, ethnicity, and level of education, significantly predicted scores on the TAAS. When used collectively, these variables (age, gender, ethnicity, level of education, A and O domains

of the IPIP-NEO-60, AAQ-II, and PSS) are a good indicator of how acceptable an

individual will rate an MB intervention.

Tests of Hypotheses

The first hypothesis asserted that level of education and age would significantly

predict treatment acceptability as indicated by the amount of variance (R^2) explained by

the model. This hypothesis was not supported by findings in Model 1 of the first

regression including variables for the level of education and age. Model 1 in the first

regression did not significantly predict scores on the outcome variable (TAAS) R^2 change

= .06, $F(5,110) = 1.39$, $p = .234$ (Table 6 and Table 8).

Hypothesis 2 stated that both gender and ethnicity would contribute to the amount

of variance explained by the model, evidenced by a significant change in R^2. Specifically

being Male, African American, or Hispanic will have a significant and negative effect on

rated treatment acceptability, indicated by beta weights. This hypothesis was not

supported by findings in Model 2 of the first regression (Table 8). The addition of

variables for gender and ethnicity in Model 2 of the first regression did not lead to a R^2

increase that was significant R^2 change = .006, $F(3,107) = .22$, $p = .884$. No participants

in this study identified as being of Hispanic origin; therefore, this aspect of Hypothesis 2

could not be tested. However, examination of Beta values for the ethnicity category

African American and the gender category Male revealed that neither category had an

individual significant effect on rated treatment acceptability (Table 8).

The third hypothesis of this research stated that the addition of scores from

measures for perceived stress (PSS), agreeableness and openness (A&O domains from

the IPIP-NEO-60), and experiential avoidance (AAQ-II) will significantly increase the amount of variance explained by the model, as indicated by the change in R^2. This hypothesis was supported by findings in Model 3 of the first regression. The addition of scores from the A and O domains from the IPIP-NEO-60, scores from the AAQ-II, and scores from the PSS, in Model 3 led to a R^2 increase that was significant R^2 change $= .15$, $F(4,103) = 4.95$, $p = .001$.

Discussion of Hypotheses

The first hypothesis in this study stated that level of education and age would significantly predict treatment acceptability on the TAAS as indicated by the amount of variance (R^2) in the regression. This hypothesis was not supported by findings in Model 1 of the first regression. Previous research (Olano et al., 2015) examined the likelihood of people in different sociodemographic categories engaging in MB practices. In this study people who achieved higher levels of education were more likely to engage in MB practices than those who had lower levels of education. Based on these conflicting results, the impact of education and age should be thought of as a helpful indicator for how acceptable an individual may find an MB intervention when education and age are incorporated into a larger framework for evaluation.

The second hypothesis in this study stated that gender and ethnicity would significantly predict treatment acceptability on the TAAS as indicated by the amount of variance (R^2) in the regression. This hypothesis was not supported by findings in Model 2 of the first regression. The addition of Gender in Model 2 of the first regression did not result in a significant R^2 increase and the Unstandardized Beta value for the group Female

in the final model of regression 1 was not significant. Although there was a positive relationship with increases in scores on the TAAS and belonging to the gender category Female, the coefficients for this variable were not significant and thus no conclusions can be made from this relationship with any certainty. Previous research by Olano et al. (2015) found that, in addition to level of education, women were more likely than men to engage in MB practices. Based on these conflicting results, the impact of gender and ethnicity should be thought of only as helpful indicators for how acceptable an individual may find an MB intervention when they are incorporated into a larger framework for evaluation.

The third hypothesis in this study anticipated that the addition of scores from the PSS, A and O domains from the IPIP-NEO-60, and AAQ-II would significantly predict Treatment Acceptability on the TAAS as indicated by the amount of variance (R^2) in the regression. The addition of these measure in model 3 of the first regression led to a significant R^2 change $= .15$, $F(4,103) = 4.95$, $p = .001$. Based on these findings, clinicians can more reliably predict how acceptable clients will find MB interventions when they look at clients more holistically (considering age, gender, ethnicity, and level of education), and administer the relevant domains of the IPIP-NEO-60 along with the AAQ-II and the PSS. Although eliciting client feedback may seem more direct and quicker, having an idea of what barriers likely exist for clients may help if clients are hesitant to plainly say that they do not like the idea of an MB intervention.

Discussion of Open-ended Questions

The current study also briefly examined the responses of participants for what influenced their ratings of treatment acceptability. The most frequent response for those individuals scoring on the lower end of the TAAS, was that the length of time and daily commitment required by the program were major factors. Those scoring on the higher end of the TAAS reported that they thought the program's length of time and the daily time requirements were acceptable for participating in such a program. Other aspects influencing an individual's rating of the program on the higher end of the TAAS included the perceived benefits and thoroughness of the program along with preferring behavior-oriented interventions to the use of medications for mental health interventions. Although a formal qualitative analysis was not performed with this data, valuable information is present in these responses that offers insight into what motivated higher ratings of the MBSR program's treatment acceptability, over lower ratings. Those insights suggest that possibly modifying the length of such a program will increase the acceptability of such a treatment for clients and increase the likelihood of clients engaging in MB interventions. This also suggests that clients may find MB interventions more acceptable if they are brought to an understanding by clinicians as to why MB programs require daily and overall time commitments.

Strengths and Limitations

This study initiated an investigation into participants' ratings of treatment acceptability of a MB stress reduction protocol as well as examining potential predictors for these ratings. Understanding this can lead to better ways of educating individuals

51

about MB interventions and the benefits of these interventions. Procedurally, this study took precautions to collect quality data. Mechanical Turk was used to collect data with the sample restricted to U.S. respondents based on relevant literature that indicated that U.S. respondents engaged in fewer deceptive survey-taking practices (Smith et al., 2016). Mechanical Turk provides a more diverse population than using college students from an introductory psychology course. This study also used temporal safeguards to eliminate participants who likely completed the survey without reading or processing the information in it. The current study also used an attention check asking about the length of the MBSR protocol to ensure that participants were engaged in the survey.

While the sample in the current research was of adequate size ($n = 116$) to achieve the desired power, a larger sample would allow for interpretation of regression coefficients with narrower confidence intervals (Kelley & Maxwell, 2003). Male participants in this survey (66%) outnumbered female participants disproportionately to the U.S. population as indicated by the 2019 census. The U.S. population is 51% male and 49% female. This survey included 66% males. Additionally, surveys have limitations regarding the accuracy of self-reporting (Fowler, 2013) and it is possible that issues with insignificant beta values and low reliability coefficients for some measures may be due in part to this fact.

Additionally, it is possible that the low values for internal consistency with the O domain of the IPIUP-NEO-60, the PSS, and the TAAS might have been due to hurried or random responding of participants. Despite using an attention check to avoid this, Mechanical Turk workers are adept at taking surveys and it is possible that some

individuals may have responded hurriedly or randomly while still able to answer the attention check question correctly. This type of responding is possible given the normal curve associated with the data coupled with the low internal consistency with the above-mentioned measures.

Future research

Some unexpected results in this research include the low reliability with the current sample on the O domains of the IPIP-NEO-60, the PSS, and the TAAS (outcome). It would be beneficial to understand if future research incorporating these measures finds similar reliability examining a larger sample that is more diverse.

Additional future research recommendations include examining attrition in MB therapies while incorporating pre-treatment rated level of treatment acceptability. Research into the effectiveness of abbreviated versions of MB interventions would also be useful. Time was the primary reason for rating a lower level of treatment acceptability.

It would also be useful for researchers to work toward enhancing the reliability of the TAAS to increase its usefulness within the field. Although in this research it was possible to predict higher scores on the TAAS looking at a combination of personality factors from multiple measures, it might be useful to incorporate the constructs of agreeableness, openness, experiential avoidance, and perceived stress into a single test to help clinicians more efficiently gauge what barriers may exist for clients in participating in MB and other interventions. While the current investigation is primarily interested in predicting an individual's rating of treatment acceptability using demographic and personality variables, it would be beneficial to know if there is dissonance between the

53

way an individual rates their level of treatment acceptability for a MB stress reduction protocol and their rating of the experience while being involved in the program. If a dissonance exists, does it contribute to attrition that occurs in MB interventions? It might be that better education of individuals who are contemplating participation in a MB intervention would improve retention and thus treatment outcomes in these interventions. Future research that uses a clinical population may also be beneficial as the current study was focused on a general population. It might also be beneficial to know if the variables used to predict treatment acceptability in this study would be generalizable to other types of interventions such as CBT, Interpersonal Therapy, or Dialectical Behavior Therapy.

Additionally, the current research would benefit from a more formal and methodical qualitative analysis of responses by individuals regarding those aspects of the mindfulness protocol that influenced their rating on the TAAS. Examining qualitative data systematically through data analysis would possibly yield results, regarding factors that influence ratings of treatment acceptability, that could be calculated as quantitatively significant or not. It would also be beneficial to conduct such studies of qualitative data in larger samples. Formal analysis would also allow for a more methodical comparison of data regarding treatment acceptability across multiple larger samples because this type of analysis would make the qualitative data compatible with statistical modeling software.

Clinical Implications of Results

For clinicians who practice MB therapies and understand their many benefits, eliciting information from clients is likely a better method than any one test to gauge how acceptable clients will find MB treatments. Individuals from this study indicated that they

find MB treatments less acceptable due to the amount of time required for these types of treatments. Highlighting the benefits of MB treatments may help in balancing what some perceive as an unacceptable amount of time required for completing and engaging in MB treatments. Explaining to clients the rationale behind the length of the program would be beneficial.

Conclusion

When clinicians focus on the individuality of clients and their barriers to treatment, success is most likely. Acceptability is a complex mix of demographic and personality factors and beliefs regarding the components that comprise MB treatments. Explaining the treatment and assisting the client in understanding the benefits may help more clients benefit from the skills that MB treatments provide. Helping clients compare the amount of time they spend developing maladaptive behaviors, may help them to understand that investing eight weeks to resolve issues is an attractive option. Explaining this fact to clients along with attending to their feelings and concerns about an MB intervention, may also help to shed a more favorable light on an MB program and put the requirements that coincide with such a program into a more realistic perspective.

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Appendix A: Treatment Acceptability and Adherence Scale

Instructions:

Please answer the following questions as they pertain to the MBSR protocol you have just reviewed.

1.	If I began this treatment, I would be able to complete it.

1	2	3	4	5	6	7
Disagree strongly			Neither agree nor disagree			Agree strongly

2.	If I participated in this treatment, I would be able to adhere to its requirements.

1	2	3	4	5	6	7
Disagree strongly			Neither agree nor disagree			Agree strongly

3.	I would find this treatment exhausting.

1	2	3	4	5	6	7
Disagree strongly			Neither agree nor disagree			Agree strongly

4.	It would be distressing to me to participate in this treatment.

1	2	3	4	5	6	7
Disagree strongly			Neither agree nor disagree			Agree strongly

5.	Overall, I would find this treatment intrusive.

1	2	3	4	5	6	7
Disagree strongly			Neither agree nor disagree			Agree strongly

6.	This treatment would provide effective ways to help me cope with my fear/anxiety.

1	2	3	4	5	6	7
Disagree strongly			Neither agree nor disagree			Agree strongly

7.	I would prefer to try another type of psychological treatment instead of this one

1	2	3	4	5	6	7

Disagree strongly			Neither agree nor disagree			Agree strongly

8. I would prefer to receive medication for my fear/anxiety instead of this treatment

1	2	3	4	5	6	7

Disagree strongly			Neither agree nor disagree			Agree strongly

9. I would recommend this treatment to a friend with a similar problem (i.e., fear/anxiety).

1	2	3	4	5	6	7

Disagree strongly			Neither agree nor disagree			Agree strongly

10. If I began this treatment, I would likely drop out.

1	2	3	4	5	6	7

Disagree strongly			Neither agree nor disagree			Agree strongly

Appendix B: Demographics Questionnaire

1. **What is your age?** _____

2. **What is your gender?**   M   F   Other: _____

3. **What is your ethnicity?**

   White   Black/African American

   American Indian or Alaska Native   Asian

   Native Hawaiian or Pacific Islander

        Other:_____

   _____

   _____

4. **What is your highest level of education completed?**

   Middle School   High school   GED   Some College

   Associate Degree   Bachelor's Degree   Master's Degree   Doctorate

PERCEIVED STRESS SCALE

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 by circling *how often* you felt or thought a certain way.

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   0 1 2 3 4
    something that happened unexpectedly?

2. In the last month, how often have you felt that you were unable to   0 1 2 3 4
    control the important things in your life?

3. In the last month, how often have you felt nervous and "stressed"?   0 1 2 3 4

4. In the last month, how often have you felt confident about your   0 1 2 3 4
    ability to handle your personal problems?

5. In the last month, how often have you felt that things were going   0 1 2 3 4
    your way?

6. In the last month, how often have you found that you could not   0 1 2 3 4
    cope
    with all the things that you had to do?

7. In the last month, how often have you been able to control   0 1 2 3 4
    irritations in your life?

8. In the last month, how often have you felt that you were on top of   0 1 2 3 4
    things?

9. In the last month, how often have you been angered because of   0 1 2 3 4
    things that were outside of your control?

10. In the last month, how often have you felt difficulties were piling   0 1 2 3 4
    up
    so high that you could not overcome them?

From: Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24,* 386-396.

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health.* Newbury Park, CA: Sage, 1988.

Appendix D: Acceptance and Action Questionnaire-II (AAQ-II)

AAQ-II

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6	7
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true

1. My painful experiences and memories make it difficult for me to live a life that I would value.	1 2 3 4 5 6 7
2. I'm afraid of my feelings.	1 2 3 4 5 6 7
3. I worry about not being able to control my worries and feelings.	1 2 3 4 5 6 7
4. My painful memories prevent me from having a fulfilling life.	1 2 3 4 5 6 7
5. Emotions cause problems in my life.	1 2 3 4 5 6 7
6. It seems like most people are handling their lives better than I am.	1 2 3 4 5 6 7
7. Worries get in the way of my success.	1 2 3 4 5 6 7

This is a one-factor measure of psychological inflexibility, or experiential avoidance. Score the scale by summing the seven items. Higher scores equal greater levels of psychological inflexibility.

From: Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (in press). Preliminary psychometric properties of the Acceptance and Action Questionnaire – II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy.*

Appendix E: IPIP-NEO, Questionnaire, A and O Domains

Instructions: The following items contain phrases describing people's behaviors. Please use the rating scale next to each phrase to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same gender as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in confidence. Please read each statement carefully, and then click the circle that corresponds to the accuracy of the statement.

Agreeableness Domain

	Very Inaccurate	Moderately Inaccurate	Neither	Moderately Accurate	Very Accurate
1. Trust others.	O	O	O	O	O
2. Believe that others have good intentions.	O	O	O	O	O
3. Cheat to get ahead.	O	O	O	O	O
4. Take advantage of others.	O	O	O	O	O
5. Love to help others.	O	O	O	O	O
6. Am concerned about others.	O	O	O	O	O
7. Insult people.	O	O	O	O	O
8. Get back at others.	O	O	O	O	O
9. Believe that I am better than others.	O	O	O	O	O
10. Think highly of myself.	O	O	O	O	O
11. Sympathize with the homeless.	O	O	O	O	O
12. Feel sympathy for those who	O	O	O	O	O

	Very Inaccurate	Moderately Inaccurate	Neither	Moderately Accurate	Very Accurate
are worse off than myself.					

Openness to New Experience Domain

	Very Inaccurate	Moderately Inaccurate	Neither	Moderately Accurate	Very Accurate
1. Have a vivid imagination.	O	O	O	O	O
2. Love to daydream.	O	O	O	O	O
3. Believe in the importance of art.	O	O	O	O	O
4. Do not like art.	O	O	O	O	O
5. Experience my emotions intensely.	O	O	O	O	O
6. Am not easily affected by my emotions.	O	O	O	O	O
7. Prefer to stick with things that I know.	O	O	O	O	O
8. Don't like the idea of change.	O	O	O	O	O
9. Avoid philosophical discussions.	O	O	O	O	O
10. Am not interested in theoretical discussions.	O	O	O	O	O
11. Tend to vote for liberal political candidates.	O	O	O	O	O
12. Believe in one true religion.	O	O	O	O	O

Appendix F: Open-Ended Response Question About TAAS Rating

What aspects of the Eight-Week Mindfulness-Based Stress Reduction Program
influenced your rating on the Treatment Acceptability and Adherence Scale?

Appendix G: 8- Week MBSR Protocol

Week 1 – Simple Awareness

30-minute daily formal practice and Body Scan meditation

Week 2 – Attention and the Brain

30-minute daily practice with the introduction of the sitting meditation

Week 3 – Dealing With Thoughts

30-minute daily formal practice and Introduction to Yoga

Week 4 – Stress: Responding vs. Reacting

30-minute daily practice

Week 5 – Dealing With Difficult Emotions and Sensations

30-minute daily formal practice with the introduction of the Soften, Soothe,

and Allow technique.

Week 6 – Mindfulness and Communication

30-minute daily practice with the introduction of the Lake and Mountain

Meditations

Week 7 – Mindfulness and Compassion

30-minute daily formal practice and Introduction of the Loving Kindness

Meditation

Week 8 – Conclusion

30-minute daily practice and focus on developing practice

From: Potter, D. (2017). Online mbsr/mindfulness (Free). Retrieved from http://www.palousemindfulness.com

Appendix H: Stamped IRB Approval Form

Informed Consent Document

Project Title: Examining Treatment Acceptability of an Eight-Week
Mindfulness-Based Stress Reduction Protocol

Investigator: Blake W. Palmer, Department of Psychology▮▮▮▮▮▮▮▮▮▮▮

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this project.
You must be 18 years old or older to participate in this research study.

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to participate in the project, please sign this form in the presence of the person who explained the project to you. You should be given a copy of this form to keep.

1.   **Nature and Purpose of the Project:** The goal of this project is to examine the perceived treatment acceptability of an eight-week mindfulness-based stress reduction protocol.

2.   **Explanation of Procedures:** In this study which will take about 30 minutes to complete, you will be asked to provide accurate responses to three questionnaires and review a 1 page Mindfulness-Based Stress Reduction program outline. After reviewing this program outline, you will then be asked to complete a questionnaire that measures how acceptable you find the reviewed program. Here, the term acceptable can be thought of as measuring how adequate the program is and if it is one in which you might be willing to engage. Last you will complete a section for demographic information. Results of this research will be provided upon request when they are available.

3.   **Discomfort and Risks.** The study poses minimal risks for participants and all data provided will remain confidential and will not be associated with your name. You can cease participation in this study at any point.

4.   **Benefits:** Class credit will be provided to participants in the study by the university study board. Other benefits include introduction of participants to the existence of wellness-oriented MBSR programs which is pertinent to their Psychology course content.

5.   **Confidentiality:** Participants will have ID numbers rather than their names associated with individual files, to safeguard confidentiality and prevent experimenter bias. All surveys will be completed via Qualtrics software, downloaded, analyzed, and wiped from Qualtrics. Once the analysis is complete it will be stored in a password-protected file on a faculty computer at the university where the research takes place. Names will be collected separately to award study board credit but that file will not be associated with the data file and will be scrambled to avoid connecting responses to the individual.

6.   **Refusal/Withdrawal:** Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.
    You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

Your continued cooperation with the following research implies your consent.

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Robin Pyles, Human Protections Administrator
TELEPHONE: (270) 745-3360

WKU IRB# 19-404
Approved: 4/18/2019
End Date: 6/30/2019
EXPEDITED
Original: 4/18/2019

Appendix I: Informed Consent Document

Project Title: Examining Treatment Acceptability of an Eight-Week Mindfulness-Based

Stress Reduction Protocol

Investigator: Blake W. Palmer,

Department of Psychology

Email: ███████████████████

You are being asked to participate in a project conducted through Western Kentucky

University

The University requires that you give your signed agreement to participate in this project.

You must be 18 years old or older to participate in this research study.

A basic explanation of the project is written below including the purpose of the project,

the procedures to be used, and the potential benefits and possible risks of participation.

Please read this explanation and email any questions that need answering to

███████████████████

In this study, you will be asked to provide accurate responses to three

questionnaires and review a Mindfulness-Based Stress Reduction program outline. After

85

reviewing this program outline, you will then be asked to complete a questionnaire that measures how acceptable you find the reviewed program. Here, the term acceptable can be thought of as measuring how adequate the program is and if it is one in which you might be willing to engage. Last you will complete a section for demographic information. The study poses minimal risks for participants and all data provided will remain confidential and will not be associated with your name. This study will take approximately 30 minutes to complete, and the results of this research will be provided upon request when they are available. You can cease participation in this study at any point if you are compelled to do so. You may contact the researcher with any questions or concerns at ██████████████████████. By signing in the space below, you agree to participate in the study and acknowledge understanding your rights as a participant. You also understand that it is not possible to identify all potential risks in an experimental procedure, and reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

By checking the "agree" box below, you consent to participate.

☐   **I agree** to participate in this study.

☐   **I do not agree** to participate in this study.

Refusal/Withdrawal: Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty. You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

Appendix J: Debriefing Statement

Thank you for your time and participation in this research. The goal of this study

is to identify correlates of perceived treatment acceptability of an Eight-Week

Mindfulness-Based Stress Reduction program. It is hoped that increased understanding of

what makes a treatment effective will increase treatment acceptability and decrease

attrition from treatment programs. Please do not discuss your experience in this study

with anyone to avoid biasing results and to preserve the integrity of the research. If you

wish to receive results from this study, contact Blake Palmer

████████████████████████ for this information.

Appendix K: Median Absolute Deviation Calculation

MAD = median $|x - \tilde{x}|$, where *x* is an individual data point of a variable and $\tilde{x}$ is the median of the variable. The Median Absolute Deviation (MAD) is calculated by first determining the median value ($\tilde{x}$) for a set of numbers. For example, of the series 1, 4, 5, 7, and 9, the median value is 5. Next the median value is subtracted from each value in the set of numbers.

1 – 5 = -4

4 – 5 = -1

5 – 5 = 0

7 – 5 = 2

9 – 5 = 4

Next the median of the absolute differences is determined. In the case of the values -4, -1, 0, 2, and 4 the median value is 0. In the case of this small set of numbers the MAD is 0.