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THE EFFECTS OF MINDFUL MEDITATION ON STRESS, RESILIENCE, AND WORK- FAMILY-SCHOOL CONFLICT

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THE EFFECTS OF MINDFUL MEDITATION ON STRESS, RESILIENCE, AND
WORK-FAMILY-SCHOOL CONFLICT

BY

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Philosophy

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ABSTRACT

Previous research on mindful meditation (MM) has not sufficiently examined the efficacy of guided MM on perceived stress, role conflict, and other constructs using a cell phone mobile application. Stress and role conflict are experienced by a significant proportion of the public and have substantial negative consequences on mental and physical health (Lupien, McEwen, Gunnar, & Heir, 2009; Byron, 2005). Stress and role conflict can be lessened through mindful meditation (Spijkerman, Pots, & Bohlmeijer, 2016; Michel, Bosch, & Rexroth, 2014). The current research examined the effectiveness of guided mindful meditation compared to a music-listening control group on four stress-related variables: mindfulness, perceived stress, work-family-school conflict, and resilience. Contrary to expectation, both the mindful meditation group ($n = 22$) and music-listening group ($n = 32$) improved in mindfulness and perceived stress over time. Yet, the mindful meditation group did not improve significantly more than the music-listening group for any of the aforementioned dependent variables. There were no significant effects of mindful meditation or music listening on work-family-school conflict or resilience. Implications from these findings are discussed in light of their potential applications.

Keywords: mindful meditation, perceived stress, resilience

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THE EFFECTS OF MINDFUL MEDITATION ON STRESS, RESILIENCE, AND WORK-FAMILY-SCHOOL CONFLICT

High levels of work-related stress and conflicting social roles result in a variety of negative workplace behaviors (e.g., absenteeism, turnover, decrease in job performance) that cost organizations an estimated \$300 billion annually (Cynkar, 2007). In an effort to reduce adverse behaviors and decrease the financial burden associated with high levels of job stress, many organizations have incorporated a variety of proactive programs to positively impact employees' health and wellbeing. Mindful meditation is a highly cost-effective method of reducing stress and role conflict; however, it remains under-utilized in Western cultures. The benefits of mindful meditation have been recognized in Eastern cultures for centuries. However, the efficacy of mindful meditation has only recently been recognized in Western cultures as a means of reducing stress and increasing overall wellbeing. There is scant empirical research on the practice of mindful meditation in an organizational or academic setting. The current research examined the efficacy of guided mindful meditation on reducing stress, role conflict, and resilience among university students.

Mindful Meditation and Mindfulness

Mindful meditation consists of bringing one's awareness to current thoughts,

feelings, and perceptions (Kabat-Zinn, 1982; Messer, Horan, Turner, & Weber, 2015). Both in-person and online mindful meditation techniques reduce stress and increase mindfulness (Kabat-Zinn, 2003; Zainal, Booth, & Huppert, 2013; Messer et al., 2015; Spijkerman, Pots, & Bohlmeijer, 2016). Linehan (1993) was one of the first psychologists to use improvement of mindfulness activities to reduce distress.

Mindfulness is consistent elevated awareness of current thoughts, feelings, and perceptions (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Though there are differing views in the literature regarding what mindfulness is, Baer et al. (2006) conducted a factor analysis using five mindfulness scales in the literature and defined mindfulness as consisting of five facets: observance, ability to describe, acting with awareness, refraining from judgment, and non-reactivity. *Observance* includes behaviors such as having an awareness of one's feelings (Baer et al., 2006). The *ability to describe* is the ability to express one's feelings well (Baer et al., 2006). *Acting with awareness* includes the ability to focus on what is occurring in the present moment (e.g., acting in a mindful or conscious way, rather than functioning on autopilot) (Baer et al., 2006). *Refraining from judgment* is abstaining from criticizing oneself for having apparently irrational or inappropriate emotions, and *non-reactivity* includes behaviors such as "stepping back" and not being overtaken by distressing thoughts (Baer et al., 2006). The five facets of mindfulness that are associated

with mindful meditation experience have been found to mediate the relationship between mindful meditation and health outcomes such as reduced stress, as will be examined next (Baer et al., 2008; Carmody & Baer, 2008).

Stress and Mindful Meditation

Though there are differing definitions in the literature, Cohen, Kessler, and Gordon (1995) have defined stress as the subjective construct that involves the difficulty or inability to effectively adapt to one's environment or circumstances. Stress engenders physiological changes in the body, such as activation of the hypothalamus-pituitary-adrenal (HPA) axis, which is part of the body's stress response (Lupien, McEwen, Gunnar, & Heir, 2009). The causal relationship between stress and activation of the HPA axis has been demonstrated in animal research (e.g., Schmidt et al. 2006). The HPA axis has increased activation in postnatal rodents that are separated from their mother compared to control group postnatal rodents that are not separated from their mother. Additionally, stress during prenatal development in humans is associated with increased HPA axis activity in offspring during stressful events later in life (Gutteling, de Teeth, & Buitelaar, 2005).

Activation of the HPA axis results in increased heart rate, blood pressure, cortisol levels, and changes in skin conductance, all of which are associated with stress (Schneiderman et al., 2005; Lin, Lin, Lin, & Huang, 2011; Hostinar & Gunnar, 2013). However, activation of the HPA axis is attenuated by mindful

meditation, which reduces cortisol levels (Witek-Janusek et al., 2008; Shaji, Verma, & Khanna, 2011; Sanada et al., 2016) and blood pressure (Carlson, Speca, Faris, & Patel, 2007).

The effects of mindful meditation on physiological responses to stress are corroborated by reports of perceived stress following mindful meditation. Various meta-analyses have demonstrated moderate effect sizes ranging from 0.5 to 0.7 for the efficacy of mindful meditation as a stress management method (Spijkerman et al., 2016; Zainal et al., 2013). The effect of mindful meditation on stress may be partially explained by the relationship between trait-mindfulness and resilience, which is associated with lower stress.

Resilience and Mindful Meditation

Resilience is a characteristic that enables one to persevere in difficult circumstances (Connor & Davidson, 2003), and has been found to increase following mindful meditation (Montero et al., 2017). Persons who are highly resilient are less likely to report perceived stress, vulnerability to perceived stress, and disability (e.g., in work/school activities) (Connor & Davidson, 2003). Mindfulness is associated with resilience (Keye & Pidgeon, 2013; Montero-Marín et al., 2015). Additionally, Montero et al. (2017) reported a significant increase in resilience in participants following a 4-hour in-person introduction to mindful meditation and ten hours of online mindfulness practice over one month. The practice of mindful meditation has also been found to increase resilience among

nurses in an intensive care unit compared to control group participants (Klatt, Steinberg, & Duchemin, 2015). Resilience can affect how individuals respond to stressful situations, which may partially mediate the effectiveness of mindful meditation in reducing perceived stress and more specific forms of stress such as work-family-school conflict (Klatt et al., 2015).

Work-Family-School Conflict and Mindful Meditation

Role conflict occurs when an individual has competing social roles (Greenhaus & Beus, 1985). There are multiple manifestations of role conflict depending on the number of roles assumed by an individual, such as the competing roles of work, family, and academics (Hammer, Grigsby, & Woods, 1998). When individuals have several roles that compete for their time and effort, level of performance in one role is inversely related to the performance in other roles, where emphasis in one area results in decrements in the other. The difficulty associated with balancing multiple roles, such as the competing roles of work and family contribute to the experience of stress (Crain et al., 2014; Greenhaus & Beus, 1985).

Work-family conflict is a dyadic relationship and can be experienced in several forms, including time conflict, strain conflict, and behavioral conflict (Greenhaus & Beus, 1985). Time conflict occurs when the time to complete one role, such as long work hours, decreases one's ability to complete another role, such as raising children. Strain conflict results when the strain of one role hinders

one's ability to perform the other. For instance, low spousal social support may lead to reduced performance at work. Behavioral conflict occurs when the behavior required of one role, such as maintaining power at work, decreases one's ability to fulfill the demands of another role, such as being affectionate toward family members. High levels of role conflict are associated with reduced job and life satisfaction and increased levels of stress (Kossek & Ozeki, 1998; Allen, Herst, Bruck, & Sutton, 2000). Throughout the literature on role conflict, the primary focus has been on the challenges individuals face as they assume the conflicting roles between that of a worker and their familial roles as spouse or parent. When considering multiple competing roles, Olson (2014) created a measure that incorporates worker, student, and family roles. Although there is scant empirical research that addresses work-family-school conflict (Cheng & McCarthy, 2013), the benefits of mindful meditation at reducing stress in persons experiencing high levels of role conflict suggest it would be similarly efficacious at reducing stress in persons who have work/family conflict with the added role as a student (i.e., work-family-school conflict).

Trait mindfulness is associated with greater ability to balance conflicting roles, which likely extends to situations involving work-family-school conflict (Allen & Kiburz, 2012). Given the stress-reducing effects of mindful meditation (Spijkerman et al., 2016), it will likely reduce the stress of work-family-school conflict. In a study similar to the current research, Michel, Bosch, and Rexroth

(2014) found that participants in an online mindful meditation intervention had less strain-based work-family conflict compared to wait-list control group participants. Mindful meditation also affects other work-related variables.

Mindful Meditation in the Workplace

Numerous organizations including the U.S. Army, Mayo Clinic, Google, Target, and Intel have utilized mindful meditation in the workplace in order to increase workers' health and well-being (Jha et al., 2015; West et al., 2014; Schaufenbuel, 2015). The aforementioned employers place a high value on physical and mental health as these relate to reduced absenteeism and attrition, and increased self-reported worker engagement and productivity (Lerner et al., 2004; Boles, Pelletier, & Lynch, 2004). The effects of mindful meditation on which these organizations capitalized have been replicated in multiple studies. For example, Allen, Eby, Williamson and Robertson (2015) reviewed existing research on the effects of mindful meditation in the workplace. Replicated beneficial effects of mindful meditation included increased worker engagement, health behaviors, and reduced stress. Additionally, in high-stress occupations, mindful meditation can be a cost-effective means of increasing attention and working memory as well as decreasing employee stress and burnout (Roeser et al., 2013). However, these are but a few of the many benefits of mindful meditation.

Additional Benefits of Mindful Meditation

In addition to the effect of mindful meditation on pain management and mood, mindful meditation has been found to have numerous positive effects in other domains. For instance, mindful meditation has been found to engender a heightened ability to focus one's attention and enhanced cognitive functioning such as working memory and reading comprehension (Mrazek, Franklin, Phillips, Baird, & Schooler, 2013). Mindful meditation practices have also been found to increase empathy and perspective taking and decrease personal distress (Birnie, Speca, & Carlson, 2010). The increased empathy resulting from mindful meditation may be the result of a greater ability to focus one's attention rather than engage with intrusive thoughts that can distract from taking the perspective of another (Jha, Krompinger, & Baime, 2007).

The beneficial effects of mindful meditation have also been found to occur rather quickly over short periods of time. For example, Howells, Ivtzan, and Eiroa-Orosa (2016) found that participants in an experimental group had improvements in affect and decreases in depressive symptoms when exposed to the use of a brief mindfulness intervention for only ten minutes a day over the course of ten days compared to control group participants. The rapid beneficial effects of mindful meditation were further supported by the research of Creswell, Pacilio, Lindsay, and Brown (2014), who found that participants indicated a significantly greater reduction in self-reported psychological stress reactivity after

only three 25-minute sessions over a three-day period compared to control group participants. Despite these benefits, mindful meditation does appear to have occasional negative effects as well.

Negative Effects of Mindful Meditation

Although there are a significant number of research experiments that support the use of mindful meditation, some researchers have cautioned against the use of mindful meditation as a panacea for stress reduction and positive emotional health. Lustyk et al. (2009) reported that mindful meditation may pose significant risks for the onset of dissociative states such as depersonalization, symptoms of psychosis such as hallucinations, and the exacerbation of symptoms of post-traumatic stress disorder (PTSD). Yet, despite these cautions, the meditation itself may not be causing these side effects. Lustyk et al. (2009) have noted that these negative responses may instead be the result of sleep deprivation, as participants in some case studies included in the review were attending over-night meditation retreats in which participants would meditate throughout the night.

Mindful meditation can have other unintended effects. False memories may occur as a result of mindful meditation (Wilson, Mickes, Stolarz-Fantino, Evrad, & Fantino, 2015). However, false memories can be produced in other meditative processes, hypnosis, and even in fully-cognizant adults through suggestion and question framing (Loftus, 1997). Wilson et al. (2015) attributed

the observed increase in false-memories to participants' lower levels of reality tracking during mindfulness meditation compared to experiences when not engaging in mindfulness meditation. This difference in reality tracking during mindful meditation is likely a function of the intended purpose of mindfulness meditation, which is for the individual to focus on the present moment and experiences with a non-judgmental frame of mind. In addition, mindful meditation is associated with decreased emotional responses to rewarding stimuli, such as positive feedback from others (Brown, Goodman, & Inzlicht, 2012; Teper & Inzlicht, 2014).

Mindful Meditation Mobile Applications

Over 900 mobile applications (apps) have been created for the purpose of relieving stress (Coulon, Monroe, & West, 2016). There are over 700 mindfulness meditation mobile apps in particular (Mani, Kavanagh, Hides, & Stoyvanov, 2015). Though some of these apps are effective, the quality of many has been reported to generally be quite low in terms of their information quality, engagement and functionality (Mani et al., 2015). Throughout the literature, there is scant empirical evidence regarding the efficacy of online mindful meditation (Plaza, Demarzo, Herrera-Mercadal, & García-Campayo, 2013). Coulon (2010) has pointed out that this deficit of empirical evidence is unfortunate as mobile apps could make stress prevention and management more accessible to many more people.

Internet meditative treatments are also generally more cost-effective due to their easy-access and are likely to garner higher retention levels from users (Andersson & Titov, 2014). However, online programs have some noted disadvantages. There is less data available on the effectiveness of online meditative treatments relative to in-person meditative treatments. Additionally, negative outcomes that result from treatment are less likely to be detected as the participant is not directly monitored by a professional (Andersson & Titov, 2014). Still, there are some general conclusions that can be drawn from the literature.

Guided mindfulness activities with a narrator directing the listener have stronger effect sizes for reducing stress than unguided mindfulness interventions that instead only feature music or bells (Spijkerman et al., 2016). Moreover, actual mindfulness training sessions engender greater effect sizes for reducing stress than didactic sessions that teach only what might be called a philosophy of mindfulness, such as attempting to be more accepting of life's events (Coulon, 2010). Regarding the actual effects of mindfulness-based web interventions, Spijkerman et al. (2016) have found mean effect sizes for the effects of online mindfulness interventions for several mental health variables: mindfulness ($g = 0.32$), stress ($g = 0.51$), depression ($g = 0.29$), anxiety ($g = 0.22$), and well-being ($g = 0.23$). Hedge's g is similar to Cohen's d in that it expresses effect sizes on the same scale (e.g., an effect size of .5 is considered moderate) except for samples with different sizes (Field, 2013; Ellis, 2010).

The Current Research

In the current research, the main objective was to evaluate the efficacy of online, guided mindful meditation. Participants were randomly assigned to either the experimental condition or the control group. Those in the experimental group completed 20 minutes of guided mindful meditation daily for 14 consecutive days. Participants in the control condition listened to 20 minutes of ambient music each day for 14 consecutive days. The outcome measures included trait-mindfulness, perceived stress, reported resilience, and work-family-school conflict. Pre-test and post-test changes were examined. Random assignment was used to assign groups.

Hypotheses

There were numerous a priori hypotheses regarding the efficacy of mindful meditation guided by an online application (app).

Hypothesis 1. Participants in the mindful meditation experimental group were expected to score significantly higher across all five facets of mindfulness (e.g., ability to observe, describe, act with awareness, refrain from judgment, and non-reactance) compared to the control group that listened to music.

Hypothesis 2. Participants in the mindful meditation group were also expected to score significantly lower on perceived stress.

Hypothesis 3. Participants in the mindful meditation group were expected to score significantly lower on work-family-school conflict.

Hypothesis 4. The final hypothesis was that participants in the mindful meditation group would score significantly higher in reported resilience than the control group.

Method

Participants

Participants from Stephen F. Austin State University (SFASU) were recruited from psychology classes through the psychology department's Sona Systems software. Data were collected from 100 participants during baseline measures; of the 100, only 79 participants completed the post-test measures. Only 54 participants were retained for analysis. could be used. Participants included in the final analyses were between the ages of 18 and 35 ($M = 20.09$), 76% female ($n = 41$), 22% male ($n = 12$) and 2% other ($n = 1$). Participants were 54% White ($n = 29$), 20% Black ($n = 11$), 19% Hispanic/Latino ($n = 10$), 5% Multicultural ($n = 3$), and 3% Asian ($n = 1$). The required sample size was determined by a power analysis using the G*Power 3.1 software. The total target sample was 72 participants using an alpha level of 0.05 and power of 0.8. Due to attrition noticed while the current study was ongoing, 100 volunteers were solicited for participation.

There were several prerequisites for participation. Participants needed daily access to a smartphone. The experimenter uploaded the listening condition (e.g., mindful meditation or select music of the same duration) through the Insight

Timer mobile app, which also tracked listening time and compliance. Additionally, participants needed to work at least 5 hours a week as a full-time student.

Materials/Measures

Informed consent. During the initial meeting, informed consent forms were presented to participants. Participants were advised that the study was about the effects of different audio activities for relaxation. Participants were informed that it was possible for the pre-selected audio recording to exacerbate symptoms of post-traumatic stress disorder such as anger outbursts and flashbacks of traumatic memories and to immediately contact the researcher if any post-traumatic stress was experienced. Per APA ethical guidelines, participants' rights were identified, such as the freedom to leave or discontinue at any time. Participants were informed that there was a significant time commitment of 20 minutes daily for 14 days required to participate in the study, the post-test measures in-person meeting in which the participants would fill out post-test measures, and contact information for the researcher. Due to the sensitive nature of some items on the questionnaire regarding stress and trauma, the researchers' contact information was provided in addition to the university's counseling center. Participants were also informed that at the end of the study, the researcher or research assistant would need to visibly inspect participants' mobile device to access the Insight Timer app that recorded participants' compliance with the research protocol. See Appendix A.

Guided mindful meditation. The 20-minute meditation recording used in the present study contained a guided body-scan meditation, which is recommended within standard mindfulness-based stress reduction (MBSR) activities used to reduce stress (Kabat-Zinn, 2003; Shapiro, Astin, Bishop, & Cordova, 2005). A body scan includes perceiving different sensations in one or more body parts at a time (e.g., perceiving sensations in the feet, followed by the lower and then upper legs and so on).

Music control group. The music control group in the current study listened to 20 minutes of ambient music. The music recording consisted of slow, relaxing music with the sound effect of crickets in the background.

Insight timer. The mindful meditation app, Insight Timer, was recommended by a local practitioner of mindful meditation. The Insight Timer app can be accessed through the Google Play Store for Android users, and the iOS store for Apple users. The app contains recorded guided meditations and music. The Insight Timer also recorded how many listening sessions participants did, and how long each session lasted.

The Five Facets of Mindfulness Questionnaire (FFMQ). The FFMQ is a 39-item instrument that measures the five facets of mindfulness (Baer et al., 2006). Items in the FFMQ measure different facets of mindfulness, such as the ability to observe (*I notice the smells and aromas of things*); ability to describe (*I'm good at finding the words to describe my feelings*); act with awareness (*I am*

easily distracted); refrain from judgment (*I criticize myself for having irrational or inappropriate emotions*); and non-reactivity (*I watch my feelings without getting lost in them*). Participants responded to each item with a 5-point Likert-type scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). Among the five facets of mindfulness, each has eight items, with the exception of non-reactivity, which has seven items. The subcomponent score for each of the five facets of mindfulness is found by summing each associated item's score. Total non-reactivity scores range from 7 to 35. Total scores for each of the other facets range from 8 to 40. Higher scores on each of the five facets indicate greater mindfulness. Participants' changes in mindfulness scores were determined using the pre-test/post-test repeated-measures scores on the FFMQ. The five facets have alpha coefficients ranging from .75 to .91, indicating acceptable internal consistency (Baer, 2006). For the current study, the five facets had acceptable values for Cronbach's alpha for pre-test and post-test measures ranging from .71 to .91, indicating acceptable internal consistency (Nunnally, 1978; Santos, 1999). Moreover, all five facets of the FFMQ had intra correlation coefficient (ICC) values above .79 across 14 days for control group participants in the current study, indicating acceptable test-retest reliability (Koo & Li, 2016).

The five facets of mindfulness were not collapsed into a single score, because only the individual facets were psychometrically validated by the authors (Baer et al., 2006). Moreover, in prior literature utilizing the FFMQ, only the

distinct five facets of mindfulness have been used in data analysis in contrast to also computing an overall mindfulness score. To stay consistent with original validation of the FFMQ and past literature that has used the FFMQ, we therefore only tested the effect of the mindfulness activity on each of the five facets. See Appendix B.

The Perceived Stress Scale (PSS). The PSS is a 10-item scale that measures the extent that one's life situations are perceived as stressful (Cohen et al., 1983). Sample items include: *"In the last month, how often have you felt nervous and 'stressed'"* and *"In the last month, how often have you felt confident about your ability to handle your personal problems?"* For each item, participants indicated how often they have experienced that feeling using a 5-point Likert-type scale ranging from 0 (Never) to 4 (*Very often*). Total level of perceived stress was calculated by summing all items, with higher scores indicating greater perceived stress. Total scores can range from 0 to 40. Participants' changes in perceived stress scores were determined using pre-test/post-test repeated-measures scores of the PSS. The PSS has a Cronbach's alpha of .78, showing good internal consistency (Cohen et al., 1983). Moreover, for the current study, the PSS had acceptable values for Cronbach's alpha for pre-test (.82) and post-test (.87) measures, indicating acceptable internal consistency (Nunnally, 1978; Santos, 1999). For the current study, the PSS also had an ICC of .93 across 14

days for participants in the control group, indicating acceptable test-retest reliability (Koo & Li, 2016). See Appendix C.

The Brief Resilience Scale (BRS). The BRS is a 6-item scale meant to measure the extent to which one can “bounce back” in challenging situations (Smith et al., 2008). Sample items include, “*I tend to bounce back quickly after hard times,*” and “*I have a hard time making it through stressful events*”) Respondents rated each item on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Level of resilience was calculated using the mean score of the items with scores ranging from 1 to 5. Higher scores indicate higher resilience. Changes in resilience were measured using BRS repeated-measures scores between pre-tests and post-tests. The BRS has strong internal consistency with a Cronbach’s alpha coefficient of .80 (Smith et al., 2008). For the current study, the BRS had acceptable values for Cronbach’s alpha for pre-test (.91) and post-test (.94) measures, indicating acceptable internal consistency (Nunnally, 1978; Santos, 1999). Smith et al. (2008) noted the BRS has an intra-class correlation of .69 for one month, which indicates it has an acceptable test-retest reliability (Koo & Li, 2016). For the current study, the BRS had an ICC of .92 for 14 days for control group participants, indicating acceptable test-retest reliability (Koo & Li, 2016). See Appendix D.

Work-family-school conflict. The WFSC scale is a 36-item measure of participants’ work-family-school conflict using pre-test and post-test scores and

accounts for direction (work-to-school conflict or school-to-work conflict) and type of conflict (strain, time, or behavioral) through 12 factors nested within the broader measurement of work-family-school conflict. Sample items include “*Due to stress at home, I am preoccupied with family matters at school,*” and “*Tension and anxiety from my school often weakens my ability to do my family responsibilities.*” Respondents rated each item on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) (Olson, 2014). Each of the 12 factors has acceptable internal consistency, with Cronbach’s alpha coefficients ranging from .86 to .95 (Olson, 2014). For the current study, the WFSC scale had acceptable values for Cronbach’s alpha for pre-test (.97) and post-test (.96) measures, indicating acceptable internal consistency (Nunnally, 1978; Santos, 1999). The WFSC scale also had an ICC of .92 for the current study, indicating acceptable test-retest reliability (Koo & Li, 2016). Potential total scores for each factor range from 3 to 21. Higher scores indicate higher conflict. Changes in self-reported WFSC were determined using pre-test/post-test repeated-measures. See Appendix E.

Procedure and Protocol

Participants signed up for the study through Sona Systems. Prior to arriving at the lab, participants were randomly assigned to either mindful meditation or listening to ambient music. The ambient music condition functioned

as the control group and is consistent with the literature (Carissoli, Villani, & Riva, 2015).

When Participants arrived at the lab, the researcher administered the informed consent. In addition to the required daily listening task, and pre- and post-test measurements, the research protocol was explained to participants. Participants were informed verbally that an app would be installed on their phone to track compliance to the listening task and would be viewed by the researcher on day 14, so the researcher could assess the frequency and time of listening sessions. All information regarding the insight Timer app was included in the informed consent. Participants were also told they would receive email reminders to do their audio-listening at home. Contact information was included in the email reminders in case a participant had questions or concerns. Participants were instructed to set daily notifications in their phones in order to remind them to complete the at-home audio listening portion of the experiment. .

After signing the consent form, participants completed the baseline pre-test measures for trait-mindfulness, perceived stress, resilience, and work-family-school conflict. The current research utilized a mixed design including an experimental group that engaged in guided meditation and a control group that listened to select music with no lyrics. During the initial in-person meeting, participants downloaded the Insight Timer app and were instructed on its use. Participants then went into separate rooms and listened to their assigned

recording in the lab. Participants were told they could do their listening session (e.g., meditation or music) at any time in the day as long as they were not engaged in any other activities during the listening session (Carissoli, 2015). After successfully completing the first session in the lab, participant were instructed to do their next relaxation listening session on the following day and to continue the 20-minute daily sessions until their return to the lab.

Participants returned to the lab on the 14th day of the study. At that time participants completed the dependent variable measures for stress, resilience and work-family-school conflict completed on the first day, in addition to a demographics questionnaire. Additionally, participants' Insight Timer applications were examined for the number of listening sessions completed and adherence to the protocol. Last, participants were verbally debriefed about the study, asked if they had any questions, and sincerely thanked for their time and effort. Participants were given the appropriate amount of R-points within 24 hours. The study protocol was approved by the SFASU IRB.

Results

Data Cleaning

Data was examined and analyzed using the Statistical Package for the Social Sciences (SPSS) software. A total of 100 SFA students initially participated in the study. However, after accounting for attrition and participants not following the study protocol, data from only 54 participants could be used in

the final analyses. Of the original 100 participants, 21 were lost to attrition. One-way ANOVAs were performed to test for differences in scores on the measures administered on day 1 (e.g., stress) between participants who remained in the study and those lost to attrition; no statistically significant differences were found. Consequently, a post-hoc decision was made prior to data analysis to include any participant who completed at least eight audio sessions at home.

The data from another 25 participants were not used in the final analyses because those participants failed to comply with the study protocol of completing at least eight audio sessions at home. This left 54 participants for the final analyses. Of the participants who did not follow protocol, one completed seven listening sessions at home, followed by two who completed six, three who completed five, three who completed four, one who completed three, two who completed one, two who completed zero, five who completed 13, four who completed 14, and five who completed 15 listening sessions at home. Statistical tests were conducted using Pearson product-moment correlations to identify any relationships between failing to adhere to the study protocol and other variables such as stress. No statistically significant relationships were found.

Assumptions for running a two-way mixed design multivariate analysis of variance (MANOVA) and a mixed design analysis of variance (ANOVA) were tested. Histograms and Q-Q plots were inspected for normality of residuals by assessing skewness and kurtosis and the assumption of normality was met. The

MANOVA assumption of sphericity was not met using Mauchly's test of significance, thus the more robust Greenhouse-Geisser test was used to interpret univariate results (Field, 2013). The MANOVA assumption of equality of covariance matrices was met using Box's Test for all variables except non-reactance. However, according to Field (2013) a non-significant MANOVA result could be trusted even when Box's Test was significant. Thus, since the MANOVA result was non-significant, it did not matter that Box's Test was significant. Multicollinearity was tested for through bivariate correlations and the variance inflation factor. No dependent variables correlated at above the level of .8 in bivariate correlations, suggesting no multicollinearity, and all values were less than 3.0, also suggesting no multicollinearity between dependent variables (Field, 2013). Durbin-Watson scores were checked to confirm the assumption of independence of errors and errors were independent. To ensure random assignment was effective, one-way ANOVAs were conducted to test for between-group differences on each pre-test dependent variable measure. The experimental and control groups did not significantly differ on any dependent variable measure.

Main Analyses

The efficacy of the experimental manipulation was assessed with a 2x2 mixed design. The form of relaxation (mindful meditation vs. ambient music listening) practiced was the between-groups factor. The use of pre-test and post-

test measures was the within-groups factor. Outcome measures include the five facets of mindfulness, perceived stress, resilience, and work-family-school conflict. Changes in mindfulness and work-family-school conflict were assessed using mixed-measures MANOVAs. Significant main and interaction effects for sub-facets of mindfulness (e.g., observance) and work-family-school conflict (e.g., School-work conflict with time) were further examined using univariate ANOVAs. Perceived stress and resilience repeated-measures scores were assessed with mixed-measures ANOVAs.

Hypothesis 1. It was predicted that participants in the mindful meditation experimental group would score significantly higher across all five facets of mindfulness (e.g., ability to observe, describe, act with awareness, refrain from judgment, and non-reactance) compared to the control group. Results from a MANOVA using Pillai's Trace yielded no significant between-groups effect on the five facets of mindfulness $F(5, 48) = .47, p = .80, \eta^2 = .05$. There was also no interaction effect of audio and time $F(5, 48) = 1.30, p = .28, \eta^2 = .12$. Yet, there was an overall main effect of time, $F(5, 48) = 3.45, p = 0.01, \eta^2 = .26$. Univariate tests analyzing Greenhouse-Geisser results indicated the main effect of time occurred for several dimensions of mindfulness as depicted in Table 1.

Table 1

Univariate Results of the Significant Main Effect of Time on Mindfulness

Variable	df	F	η^2
Ability to Observe	(1, 53)	4.93*	.09
Ability to Describe	(1, 53)	12.57**	.2
Acting with Awareness	(1, 53)	1.71	.03
Non-judgment	(1, 53)	11.43**	.18
Non-Reactance	(1, 53)	.01	.001

* $p < .05$. ** $p < .01$.

The first facet of mindfulness, ability to observe, increased by relatively the same amount for the experimental group from pre-test to post-test than the control group. Thus, the improvement within the mindful meditation group was not sufficiently different from the ambient music condition. However, as noted, irrespective of listening condition, participants had an increase in the ability to observe resulting in a significant main effect of time. Changes in the ability to observe are shown in Table 2, along with changes in the other facets of mindfulness.

The ability to describe did increase by more within the experimental group from pre-test ($M = 26.34$, $SD = 4.68$) to post-test ($M = 28.66$, $SD = 4.27$) measures compared to the control group from pre-test ($M = 25.14$, $SD = 6.51$) to post-test ($M = 26.09$, $SD = 7.12$) measures. Yet, the difference was not large

enough between groups to result in anything other than the observed significant main effect of time.

The change in acting with awareness was surprisingly greater for the control group from pre-test ($M = 23.73$, $SD = 6.30$) to post-test ($M = 24.82$, $SD = 6.27$) measures than the experimental group from pre-test ($M = 25.31$, $SD = 5.69$) to post-test ($M = 25.81$, $SD = 6.06$) measures. This finding also supports the notion that the current study was underpowered.

There was an expected trend in the data for the dependent variable of non-judgment between groups. The experimental group increased from pre-test ($M = 24.88$, $SD = 6.36$) to post-test ($M = 27.41$, $SD = 6.44$) scores slightly more when compared to the control group, whose scores increased from pre-test ($M = 24.05$, $SD = 6.37$) to post-test ($M = 25.27$, $SD = 6.56$). Neither group improved from pre-test to post-test scores for non-reactance. This was surprising as with most mindfulness variables at least one group improved to a small degree.

Table 2

Means and Standard Deviations for Mindfulness Facets

Group	Pre-test		Post-test	
	M	SD	M	SD
<u>Observance</u>				
Control	27.72	5.27	28.73†	5.22
Experimental	26.97	4.72	28.31†	5.06
<u>Describe</u>				
Control	25.14	6.51	26.09††	7.12
Experimental	26.34	4.68	28.66††	4.27
<u>Act with Awareness</u>				
Control	23.73	6.30	24.82	6.27
Experimental	25.31	5.69	25.81	6.06
<u>Non-judgment</u>				
Control	24.05	6.37	25.27††	6.56
Experimental	24.88	6.36	27.41††	6.44
<u>Non-reactance</u>				
Control	21.73	4.46	21.41	4.26
Experimental	21.09	3.90	21.59	4.47

Note. For the respective dependent variables, † indicates a significant main effect of time with $p < .05$. †† indicates a significant main effect of time with $p < .01$.

Hypothesis 2. It was predicted that participants in the mindful meditation group would score significantly lower on perceived stress. A mixed-measures ANOVA was used to assess the effect of listening condition on perceived stress, yielding no significant result, $F(1, 52) = .54, p = .47, \eta^2 = .01$. There was also no significant interaction of type of audio and time $F(1, 52) = .45, p = .5, \eta^2 = .01$. However, there was a main effect of time on perceived stress, $F(1, 52) = 6.86, p = .01, \eta^2 = .12$. Perceived stress significantly decreased for both the control group from pre-test ($M = 20.91, SD = 7.64$) to post-test ($M = 19.72, SD = 7.22$) and the experimental group from pre-test ($M = 22.63, SD = 6.32$) to post-test ($M = 20.63, SD = 6.31$).

Hypothesis 3. Participants in the mindful meditation group were expected to score significantly lower on work-family-school conflict. A mixed-measures MANOVA was used to assess the effect of listening condition on work-school-family conflict, yielding no significant result, $F(12, 40) = .93, p = .53, \eta^2 = .22$. There was no main effect of time on work-family-school conflict, $F(12, 40) = .65, p = .79, \eta^2 = .16$ and no interaction effect of type of audio and time $F(12, 40) = 1.66, p = .11, \eta^2 = .33$.

Hypothesis 4. It was predicted that the mindful meditation group would score significantly higher than the control group in reported resilience. The between-groups effect for resilience was assessed using a repeated-measures

ANOVA and was not significant, $F(1, 52) = .36, p = .55, \eta^2 = .01$. There was also no significant main effect for time, $F(1, 52) = .44, p = .51, \eta^2 = .01$ or interaction effect of type of audio and time $F(1, 52) = .08, p = .79, \eta^2 = .001$. Resilience did not improve significantly more in the experimental group compared to the control group. Though resilience scores increased for both groups, the improvement in scores for each group from pre-tests to post-tests were negligible. In addition to limited power, the lack of significance in this case may have also been due to the fact that the BRS has not been used in past literature when examining the effect of mindful meditation on resilience.

Discussion

The current research examined the efficacy of guided mindful meditation increasing mindfulness and resilience and decreasing perceived stress and work-family-school conflict. It was expected that participants in the guided meditation group would experience greater benefits compared to the music control group. A number of a priori hypotheses were made; however, none of the hypotheses were supported.

Hypothesis 1. It was predicted that participants in the mindful meditation experimental group would score significantly higher across all five facets of mindfulness (e.g., ability to observe, describe, act with awareness, refrain from judgment, and non-reactance) compared to the control group. Perhaps the most surprising finding was that the mindful meditation group did not significantly

improve in mindfulness compared to the music-listening control group. Despite the fact that the current study included a greater amount of mindful meditation for the experimental group compared to several other studies, there still was not a significantly greater increase in mindfulness for the mindful meditation group compared to the music-listening group (Howells, Ivtzan, and Eiroa-Orosa, 2016; Creswell, Pacilio, Lindsay, and Brown, 2014).

However, a number of past experiments on the effects of mindful meditation also used notably higher amounts of mindful meditation (Carissoli, Villani, & Riva, 2015; Morledge et al., 2013; Shapiro, Astin, Bishop, & Cordova, 2005). Thus, it may be that the current study lacked enough power due to engender a between-groups effect. Another potential reason for the lack of significant between-groups effect may be that the current study did not start with an introductory class/teaching on how to meditate, or what it means to behave mindfully, such as not reacting to one's emotions, which is not uncommon in the literature (Morledge et al., 2013; Shapiro et al., 2005).

However, there was a significant main effect of time for three mindfulness facets, and the control group improved nearly the same amount as the mindful meditation group. It may be that simply planning and carrying through with time to relax such as listening to music allows greater mindfulness due to music listening reducing anxiety and stress (Winter, Paskin, & Baker, 1994; Pelletier, 2004).

Hypothesis 2. It was predicted that participants in the mindful meditation group would score significantly lower on perceived stress. However, the mindful meditation group did not significantly improve compared to the control group. This may have been due to the lack of mindful meditation teaching at the start of the current study compared to past literature, or the relatively smaller amount of mindful meditation in the current study compared to past literature (Morledge et al., 2013; Shapiro et al., 2005; Carissoli, Villani, & Riva, 2015; Morledge et al., 2013; Shapiro, Astin, Bishop, & Cordova, 2005)

Moreover, past literature on the efficacy of music in reducing perceived stress is mixed. In some cases music appears to have minimal effects in reducing music (Evans, 2002; Kämpfe, Sedlmeier, & Renkewitz, 2010). However, in another study, music was found to have a moderate effect size ($d = .64$) (Pelletier, 2004). Thus, it is highly feasible that the ambient music participants listened to was equally successful in reducing perceived stress for participants. This plausibly explains why there was a significant main effect of time on reducing perceived stress in the current study.

Hypothesis 3. Participants in the mindful meditation group were expected to score significantly lower on work-family-school conflict. This hypothesis was unsupported. A potential reason was that the current study used less mindful meditation and instruction on mindfulness compared to prior literature (Carissoli, Villani, & Riva, 2015; Morledge et al., 2013; Shapiro, Astin, Bishop, & Cordova,

2005). Additionally, music-listening can be efficacious in reducing stress (Pelletier, 2004). Given that work-family-school conflict is similar to stress, it may be that music was also efficacious in reducing role conflict, which may have potentially offset any between-groups effect. It may also be that neither mindful meditation nor music are particularly effective in reducing role conflict, as there was no significant main effect of time in reducing work-family-school conflict in the present study. However, the lack of a significant between-groups effect is plausibly due to a lack of power in the current study. For instance, relative to past literature on the effects of mindful meditation and music on stress, the current study had fewer participants due to attrition and participants not adhering to the study protocol (Pradhan et al., 2007; Nilsson, 2009).

Hypothesis 4. It was predicted that the mindful meditation group would score significantly higher than the control group in reported resilience. This hypothesis was unsupported. This lack of a significant finding was surprising given that past literature has found that mindful meditation increases resilience (Montero, 2017; Klatt, Steinberg, & Duchemin, 2015).

However, the current study was plausibly underpowered due to a lack of mindful meditation activity. Participants in the current study who followed the exact research protocol did a total of 4 hours and 20 minutes of mindfulness meditation. This is significantly lower compared to past research examining the efficacy of mindful meditation increasing resilience. For instance, Montero et al.

(2017) reported a significant increase in resilience in participants following a 4-hour in-person introduction to mindful meditation and ten hours of online mindfulness practice over one month. Moreover, Klatt et al. (2015) found mindful meditation increased resilience, but participants in the study completed 8 hours of meditation compared to 4 hours and 20 minutes at most in the current study.

Limitations.

There are several broader limitations for this study. One limitation was that data was collected through a convenience sample at a single university in the Southern United States. The results of the current study may thus not be generalizable to other populations. Additionally, this study does not include further follow-up measures to track how long the effects of mindful meditation and music listening on the facets of mindfulness and perceived stress last. Consequently, it is not clear how long the effects of planned relaxation time last.

There are also several limitations regarding the significant main effects of time in the current research. The significant main effect of time may have been the result of a placebo effect since the significance for this test was the result of improvements in both groups, each of which believed they had just completed a study on relaxation techniques as described in the informed consent form (Price, Finniss, & Benedetti, 2008). The significant main effect of time may also be explained by the good participant effect, in which participants consciously or

subconsciously attempt improve on a variable they think the researcher expects them to improve on (Nichols & Maner, 2008).

Attrition was a major limitation in the current study. Over 20% of the original sample failed to return to post-test measures, which reduced power and the internal validity of the study. Moreover, an additional 12% of participants failed to comply with the research protocol of listening to their assigned audio recording for 20 minutes each day for 14 days. Both attrition and failure of participants to adhere to the research protocol affected the statistical power of the experiment. One potential way of correcting for this may have been additional reminders.

Another limitation in the current study was the lack of experimental control regarding participants' listening outside the lab. Due to most of the audio-listening sessions being done outside the lab at the participants' discretion, researchers had less certainty that participants were consistently giving proper attention to the mindful meditation. Additionally, occasionally participants reported for the post-measures, but were unable to do so on the pre-scheduled date and instead arrived a day later, which may have reduced the measured effect of the audio-listening sessions done days earlier.

Future Research Directions

Future studies may benefit from using a different population sample that is more generalizable. Additionally, it may be beneficial to sample from different

ages and levels of work (e.g., full time, part time). For instance, when measuring work-family-school conflict in the future, it may be helpful to include parents who are working full time and going to school.

Future research may also benefit from increasing experimental control over participants' use of their audio. This may include having participants listen to their audio in the lab for more of their audio sessions. This change in protocol would reduce the likelihood of participants doing other tasks while listening, and give researchers more contact with participants, better ensuring that researchers know of any potential negative side effects for participants (Andersson & Titov, 2014).

In the present study, participants returned to the lab 2 weeks and one day after the pre-test measures in order to increase the amount of audio-listening sessions each group would complete during the study. Conversely, future research may benefit from scheduling pre-test and post-test times at the same time 2 weeks apart (e.g., Monday at 2 PM). This may enable participants to more easily foresee whether they will be able to return to the post-test measures, and consequently reduce attrition.

Future research may also examine the effects of mindful meditation on both work-family-school conflict and resilience using the WFS-Conflict and Brief Resilience Scales, as both of the scales used in the current study have not been regularly utilized in mindful meditation research in past literature. Future research

may also other measures of role conflict to assess concurrent validity.

Additionally, due to funding limitations, the current study used a resilience scale that is more trait-based than state-based. Future research may benefit from instead using a more state-based resilience scale, such as the Connor-Davidson Resilience scale (Connor & Davidson, 2003).

In summary, the current research may add new evidence on the benefits of purposefully setting aside time to relax through mindful meditation or music listening that include increased mindfulness abilities, observance and describing, as well as refraining from judgment. The current study also might support the claim that purposeful relaxation reduces perceived stress. The small amount of mindful meditation participants did in the current study relative to prior research and the substantial participant attrition and failure to follow protocol may explain why there were no significant between-group results.

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APPENDIX A

Informed Consent Document

The following study is being conducted by James Kunz in conjunction with Dr. Lora Jacobi who is overseeing this project. Participation in this experiment is completely voluntary and may be withdrawn at any time without penalty or prejudice.

If you have any questions regarding this project, please contact James Kunz or Dr. Lora Jacobi.

Email: kunz@jacks.sfasu.edu or jacobil@sfasu.edu; Phone: (936) 468-1407, (920) 289-0162

You may also contact the Office of Research and Sponsored Programs at (936) 468-6606 to learn more about your rights as a participant, or the SFASU Counseling Center at (936) 468-2401.

This study is focused on evaluating the effects of listening to audio on health. You will be asked to fill out five questionnaires today as well as entering your birth name at the start of the questionnaires, which will also be stored in the data that will not be disclosed to anyone. You will also be asked to listen to your pre-selected audio recording here in the lab to count for your listening session for today. You will also be asked to find a quiet place to listen to your pre-selected audio recording for 20 minutes **once-daily** for the next 12 days after today. Today you will also be instructed on how to download the Insight Timer application onto your phone that you will use to listen to your pre-selected audio recording.

On the 14th day of the study, you will return to the lab to fill out four questionnaires, as well as a short biographical questionnaire. Upon returning to the lab, the researcher will need to visually inspect the Insight Timer application on your mobile device in order to record what days you listened to your pre-selected recording and for how long. The researcher will open the Insight Timer app on your mobile device and click on the silhouette icon at the bottom right of the screen, and the “see detailed charts and stats” button on the next screen. The researcher will then click the three dots at the top right of the screen and

click the, “view logs” button to observe and record what days you listened to your pre-selected audio recording, and for how long in minutes and seconds. The amount of SONA R-points you receive for participating will depend on how much you have adhered to the protocol of listening to your pre-selected audio recording for 20-minutes daily for the 14-day study. You will also be asked to log/diary of when you listen to your pre-selected audio recording. To ensure you are fully informed of the potential consequences of participating in this study, it is important to be aware that your recording can potentially exacerbate symptoms of post-traumatic stress disorder (PTSD). Please immediately contact the researchers listed above if you have any symptoms of PTSD throughout the study.

You must be 18 years or older in order to participate. Your participation is completely voluntary, and you may withdraw at any time without penalty. Today will take no more than 60 minutes to complete. There are no anticipated risks associated with this study. Your name and participation in this study will not be shared with anyone else. All data will be reported in a group format.

Contact information will be available after the experiment is complete. Do you consent to participate in the following study?

Print name

Date

Signature

APPENDIX B

The Five Facets of Mindfulness Questionnaire (FFMQ)

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you.

- 1 = never or very rarely true
- 2 = rarely true
- 3 = sometimes true
- 4 = often true
- 5 = very often or always true

- _____ 1. When I'm walking, I deliberately notice the sensations of my body moving.
- _____ 2. I'm good at finding words to describe my feelings.
- _____ 3. I criticize myself for having irrational or inappropriate emotions.
- _____ 4. I perceive my feelings and emotions without having to react to them.
- _____ 5. When I do things, my mind wanders off and I'm easily distracted.
- _____ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.
- _____ 7. I can easily put my beliefs, opinions, and expectations into words.
- _____ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
- _____ 9. I watch my feelings without getting lost in them.
- _____ 10. I tell myself I shouldn't be feeling the way I'm feeling.
- _____ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
- _____ 12. It's hard for me to find the words to describe what I'm thinking.
- _____ 13. I am easily distracted.
- _____ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
- _____ 15. I pay attention to sensations, such as the wind in my hair or sun on my face.
- _____ 16. I have trouble thinking of the right words to express how I feel about things.

- _____ 17. I make judgments about whether my thoughts are good or bad.
- _____ 18. I find it difficult to stay focused on what's happening in the present.
- _____ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
- _____ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
- _____ 21. In difficult situations, I can pause without immediately reacting.
- _____ 22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.
- _____ 23. It seems I am "running on automatic" without much awareness of what I'm doing.
- _____ 24. When I have distressing thoughts or images, I feel calm soon after.
- _____ 25. I tell myself that I shouldn't be thinking the way I'm thinking.
- _____ 26. I notice the smells and aromas of things.
- _____ 27. Even when I'm feeling terribly upset, I can find a way to put it into words.
- _____ 28. I rush through activities without being really attentive to them.
- _____ 29. When I have distressing thoughts or images I am able just to notice them without reacting.
- _____ 30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
- _____ 31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
- _____ 32. My natural tendency is to put my experiences into words.
- _____ 33. When I have distressing thoughts or images, I just notice them and let them go.
- _____ 34. I do jobs or tasks automatically without being aware of what I'm doing.
- _____ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.
- _____ 36. I pay attention to how my emotions affect my thoughts and behavior.
- _____ 37. I can usually describe how I feel at the moment in considerable detail.
- _____ 38. I find myself doing things without paying attention.
- _____ 39. I disapprove of myself when I have irrational ideas.

APPENDIX C

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate by selecting a number regarding 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 something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and “stressed”?
4. In the last month, how often have you felt confident about your ability to handle your personal problems?
5. In the last month, how often have you felt that things were going your way?
6. In the last month, how often have you found that you could not cope with all the things that you had to do?
7. In the last month, how often have you been able to control irritations in your life?
8. In the last month, how often have you felt that you were on top of things?
9. In the last month, how often have you been angered because of things that were outside of your control?
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

APPENDIX D

Brief Resilience Scale (BRS)

Please indicate the extent to which you agree with each of the following statements by using the following scale:

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

1. I tend to bounce back quickly after hard times
2. I have a hard time making it through stressful events
3. It does not take me long to recover from a stressful event
4. It is hard for me to snap back when something bad happens
5. I usually come through difficult times with little trouble
6. I tend to take a long time to get over set-backs in my life

APPENDIX E

Work-Family-School Scale

Please indicate the extent to which you agree with each statement.

1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4, neither agree nor disagree,

5 = slightly agree, 6 = agree, 7 = strongly agree

Work-School Strain Dimension:

1. I am often so emotionally drained when I get done with work that it prevents me from doing school activities.
2. Due to all the pressures at work, sometimes when I go to school I am too stressed to do school work.
3. Because I am often stressed from work responsibilities, I have a hard time concentrating on my schoolwork.

Work-School Time Dimension:

1. The time I spend on work responsibilities often interferes with my school responsibilities.
2. My job interferes with my responsibilities at school such as getting to school and finishing homework on time.
3. The amount of time my job takes up makes it difficult to fulfill school responsibilities.

Work-School Behavior Dimension:

1. School demands often make me too tired to perform all aspects of my work.
2. After school, I am too tired to do my work duties

3. I am often so emotionally drained when I get done with school that it prevents me from contributing to my work responsibilities.

School-Work Strain Dimension:

1. School demands often make me too tired to perform all aspects of my work.

2. After school, I am too tired to do my work duties

3. I am often so emotionally drained when I get done with school that it prevents me from contributing to my work responsibilities.

School-Work Time Dimension:

1. The time I spend on school responsibilities often interferes with my work responsibilities.

2. The amount of time my school takes up makes it difficult to fulfill work responsibilities.

3. I have to put off doing things at work because of demands on my time at school.

School-Work Behavior Dimension:

1. Behaviors that are effective for me at school are counterproductive when I use them at work.

2. The problem-solving behaviors that are effective for me at school do not seem to be as useful at work.

3. The behaviors that make me effective at school do not help me to be a better employee.

Family-School Strain Dimension:

1. Due to all the pressures at home, sometimes when I arrive at school I am too stressed to do the things I want to do.

2. Due to stress at home, I am often preoccupied with family matters at school.

3. Because I am often stressed from family responsibilities, I have a hard time concentrating on my school work.

Family-School Time Dimension:

1. The time I must devote to my family keeps me from participating in school responsibilities and activities.

2. The time I spend on family responsibilities often interfere with my school responsibilities.

3. The amount of time my family takes up makes it difficult to fulfill student responsibilities.

Family-School Behavior Dimension:

1. The problem-solving behavior that works for me at home does not seem to be as useful at school.

2. The problem-solving behaviors I use at home are not effective in resolving problems at school.

3. My behaviors for interacting with people or completing tasks at home cause conflict when I use those strategies for school activities.

School-Family Strain Dimension:

1. I am often so emotionally drained when I get home from school that it prevents me from contributing to my family.

2. Because I am often stressed from school responsibilities, I have a hard time concentrating on my family.

3. Tension and anxiety from my school often weakens my ability to do my family responsibilities.

School-Family Time Dimension:

1. The time I spend on school responsibilities often interfere with my family responsibilities.

2. I have to put off doing things at home because of demands on my time at school.
3. The amount of time my school takes up makes it difficult to fulfill family responsibilities.

School-Family Behavior Dimension:

1. Behaviors that are effective for me at school are counterproductive when I use them at home.
2. The problem-solving behaviors I use at school are not effective in resolving problems at home.
3. It is problematic when I use my school behaviors at home.

APPENDIX F

Demographic Questions

INSTRUCTIONS: This survey asks you a series of questions about your background. Your answers are **completely anonymous**. **Your total honesty and completeness in answering the questions are essential to the value of this research.** Please answer the all of the questions. Read each item carefully.

Sex: (Male) (Female) (Other)

Age:

Your ethnicity: (American Indian) (Asian) (Black) (Hispanic/Latino) (Multicultural) (White) (Other)

If you selected other, please specify:

Please tell us any comments you may have had about taking the survey.

Academic Status: (Freshman) (Sophomore) (Junior) (Senior) (Graduate)

Your current GPA:

Your current major:

APPENDIX G

Experimenter script for first in-person meeting

1. Go to the subject waiting area at the exact time the study is supposed to start, and 2 minutes after the start time (if no one has arrived yet). Do not run participants who are more than 2 minutes late. *Tell them the lead researcher won't let you (so they don't blame you).
 - a. **Say:** Hi, are you here for the audio-listening study?
 - b. Participant: Yes.
 - c. **Say:** Great, you can take a seat at the table in the center of the room.

****Please make sure ALL participants hear these exact same instructions from you****

- a. **Say:** Thank you all for coming. In order to do this study you must be at least 18 years old. Are you at least 18?
 - a. If participant says "yes," continue with the study
 - b. If participant says "no," tell them they cannot do the study
- b. **Say:** If you have a **cell phone**, please turn it on right now if it's not already on. You will need your cell phone for this study.
- c. For your help today you'll receive 2 credit towards your research requirement after downloading an app on your phone, setting reminders in your phone, filling out some surveys, and listening to your pre-selected audio recording here in the lab.

For **each** audio-listening session you do at home over the next 12 days after today, you will receive one additional credit. When you return to the lab on the 14th day of this study and listen to your pre-selected audio recording and fill out the concluding surveys, you will receive 2 additional credits.

DISCLAIMER: In a moment we will ask you to read the informed consent. We want to be clear up front that for this study, we are

asking you to set aside 20 minutes **every day** for the next 12 days outside the lab to listen to a pre-selected audio track. If you do not think you are able to follow through with doing this or plan to only do enough to get your 12 credits necessary for class, we kindly ask you to not participate, as we need participants to commit to completing an audio session once each day for the next 12 days. Otherwise, we are not able to use the data, and it wastes the researcher's time.

If you agree to participate, please carefully read and sign this consent form on the back.

2. Leave the room and give the participants a minute or two to complete the consent form. When finished, take consent forms from participants.
 - d. **Say:** Do you have any questions before we begin? ... OK, then I'll take the copy of the informed consent that you just signed and you can keep the other one in case you need to get a hold of us during the study.
 - e. **Say:** Today you will be downloading an app called the Insight Timer onto your phone. This app will provide the pre-selected audio recording you will use, and will record **how often and how much** you listen to your pre-selected audio recording at home. Please do not sign out from your profile on the app or delete the app, as we would then not be able to see your progress later on and thus would not be able to assign credits for your audio-listening at home. While I give you the directions, please help me by showing me your phone so I can confirm you have completed each step. Please take your phone out now and open up the app store for your phone.
 - f. Then give the participant time to open the app store and **say:** Please search for and download the app titled, "Insight Timer"
 - g. Spell out insight for them (some will probably spell it incorrectly otherwise).
 - h. While the app downloads, I want to cover a couple thing

- i. Right now I'm going to give you just a minute to use whatever app of your own that you prefer to set at least two reminders for yourself, as we have had many participants not follow through on listening to their pre-selected audio track at home. Please set a reminder about this study for 4 days from now and for 1 week from now. I'll give you just a minute or two to do that.
 - j. Also, please also know we will send reminder emails to the email you have connected to your SONA account, so hopefully you check that email often to get those reminders to stay as consistent as possible with listening at home.
 - k. Then **Say:** Once the Insight Timer downloads and you open it, you will have to create a profile for the app. Do this either with your email or with your Facebook account, whichever you prefer. Also, it may ask about your past meditation experience, and you don't have to worry about that, as we won't be using that, so you can put any answer.
- 3.
- l. **Say:** Great, now that the app has downloaded and you've created a profile, I want you to open the it and click the headphones button on the bottom of the screen. Then click on the search box and type:
 - m. If they are in condition 0, say: "I am here," and make sure you scroll down to music and select the recording that is 21 minutes. (Check to make sure they have all clicked on the right recording). The author is "Swami Madhuram."
 - n. If they are in condition 1, say: "Elisha Goldstein" and make sure you click on the second recording that comes up, which has 21 minutes. (Check to make sure they have all clicked on the right recording).
4. Wait while they find it and **check each phone to make sure they selected the right recording (including length of the recording)** and **say:** Great, now just hit the ribbon icon at the top right of the screen so it will save to your bookmarks

- o. **After that, say:** Please close the app so I can show you how to find your bookmarks when you first open the app.
- p. Wait until they have all closed the app and then **say:** Thank you. Please open the Insight Timer back up. Then click the headphones icon at the bottom left of your screen. Next, click the “My Library” button on the middle of the screen. Please let me know if you are not able to see the recording I asked you to bookmark a few moments ago.
- q. Once everyone is ready, **say:** Great, if you can do me a favor, please turn your phone completely off while you complete several questionnaires on the computer you are about to work on. The computer will then actually let you know when to turn your phone on again. (**NOTE:** Be sure they turn off their phones and ask to see it if you’re not sure it’s turned off).
- r. Then **Say:** In a moment each of you will go into one of the empty side-rooms and fill out some surveys on the computer. You’ll have to move the mouse to get the monitor to light up. When the screen appears, enter your birth name into the first box and leave the condition box as it is. The light may turn off in the room due to lack of motion. Simply wave your hand in front of the light switch to turn it back on. Please close the door behind you while you fill out your surveys and knock on the door when you’re finished.

Participant Knocks

- 5. Once each person finishes, go back into the room and **say:** Thanks for doing that. Now please plug these headphones into your phone, **or use your own if you prefer**, and listen to the pre-selected audio recording we just downloaded on your phone, while giving all of your attention to the recording. Please turn off all other notification noises or vibrations from your phone including your ring tones so you are not interrupted. If something disrupts your session, please resume your session by pressing PLAY at the BOTTOM of the screen. If your phone cannot give audio through the headphones provided, please listen to your recording out loud at a volume that will not disrupt your neighbor. Once you’ve finished listening to the recording, please just knock on the door.
- 6. **Leave the room and close the door.**

When each person knocks, **say**: OK, just a few quick reminders before you go. Please remember you will only be assigned additional credits if you listen to your pre-selected audio recording in its entirety once **and only once** each day, and the app will record how consistently you do this. You can listen at any time of day or night as long as you give your full attention to the recording just as you have today in the lab.

7. Also, please do not sign out from your profile on the app or delete the app.
8. Last, here is your audio-listening diary, where you'll just record the date and time you listen to your pre-selected recording once each day for the next 12 days. You can record the session you just had in the lab as counting for today's session.
9. When you listen to audio outside the lab, your headphones or earbuds are optional, or you can also listen to it out loud so long as you can still focus on the pre-selected recording like you did today in the lab.
10. If you miss a day, don't beat yourself up, just be sure to get back in the habit and set more reminders in your phone for yourself. Thank you for your help and feel free to contact us with any questions

APPENDIX H

Experimenter script for second in-person meeting

11. Go to the subject waiting area at the exact time the study is supposed to start, and 2 minutes after the start time (if no one has arrived yet). Do not run participants who are more than 2 minutes late. *Tell them the lead researcher won't let you (so they don't blame you).

- a. **Say:** Hi, are you here for the audio-listening study?
- b. Participant: Yes.
- c. **Say:** Great, you can take a seat at the table in the center of the room.

****Please make sure ALL participants hear these exact same instructions from you****

- s. **Say:** Thank you all for coming. If you have a **cell phone**, please turn it off right now. For your help today you'll receive 2 credit towards your research requirement after filling out some surveys, and after I take a count of your listening-sessions recorded in your app. You will also be assigned additional credits in the next several days depending on how many listening sessions you completed at home.

Do you have any questions before we begin?

- t. Then **Say:** In a moment each of you will go into one of the empty side-rooms and fill out some surveys on the computer. You'll have to move the mouse to get the monitor to light up. When the screen appears, enter your birth name into the first box and leave the condition box as empty. As a reminder, the light may turn off in the room due to a lack of motion. Simply wave your hand in front of the light switch to turn it back on. Please close the door behind you while you fill out your surveys and knock on the door when you're finished

Participant Knocks

12. Once each person finishes, go back into the room and **say**: Thanks for doing that. You can now come back into the main room and take a seat at the center table, and then I'll explain the next step once we have the whole group together.

****Once everyone is back in the main room****

Say: Thank you for doing that. Now I'm going to have to just inspect each of your profiles on the Insight Timer app on your phones in order to see how many times you have completed your listening session outside the lab. If you could all help me by going through the following steps, I can get you out of here faster.

First, please open the Insight Timer app and hit the profile icon at the bottom right of your screen.

Second, hit the "See detailed charts and stats" row near the bottom of the screen.

Thank you.

*********Then with each person, one at a time, **YOU** will hit the three dots button at the top of the screen and click "view logs." Check how many of the last 12 days (starting yesterday and counting backwards) they did a listening session of at least 20 minutes. **REMEMBER** that the very first one on their list won't count for a credit since that was the one they did in the lab and thus already got credit for.

****Record the total number of credits they earned on the "Participant credits sheet" next to their name. (Be sure to tilt the clipboard away from them so they cannot see other participants' names).**

****Be sure to also record the number of days they missed a session of at least 20 minutes.**

Then say: Thank you for your participation in this study!

The principal investigators for this study were Dr. Jacobi and graduate assistant, James Kunz

The purpose of this study is to compare the effect of practicing mindful meditation on different forms of stress and resilience compared to the effect of listening to music on stress and resilience.

If you have any questions regarding this study please contact Dr. Jacobi at (936)468-1407 or jacobil@sfasu.edu or James Kunz at kunzj@jacks.sfasu.edu.

You may also contact the SFASU Office of Research and Sponsored Programs at (936) 468-6606 or osrp@sfasu.edu if you would like more information regarding your rights as a research participant. Also, if you have any negative emotional experiences, you may contact SFASU counseling services at 936.468.2401 or visit them on the 3rd floor of the Rusk building on the SFASU campus.

APPENDIX I




STEPHEN F. AUSTIN STATE UNIVERSITY

Institutional Review Board for the Protection of Human Subjects in Research
P.O. Box 13018, SFA Station • Nacogdoches, Texas 75962-3046
Phone (936) 468-5496 • Fax (936) 468-1573

TO: Lora Jacobi, Ph.D., & James Kunz
Psychology
PO Box 13046
Nacogdoches, TX 75962

RE: Project Title: The Effects of Relaxation Techniques on Health
Case # AY2018-1116

TYPE OF RESEARCH: Project Type: Thesis

FROM: Pauline M. Sampson, Chair, IRB-H 

DATE: January 24, 2018

I would like to thank you for submitting your project entitled "The Effects of Relaxation Techniques on Health" to the IRB for review. It has been reviewed and has been **Approved**, based on the following review criteria:

CFR §46.101(b)(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Your project has approval through **January 24, 2019**, should you need additional time to complete the study you will need to apply for an extension prior to that date. The IRB should be notified of any planned changes in the procedures during the approval period, as additional review will be required by the IRB, prior to implementing any changes, except when changes are necessary to eliminate immediate hazards to the research participants. The researcher is also responsible for promptly notifying the IRB of any unanticipated or adverse events involving risk or harm to participants or others as a result of the research.

All future correspondence regarding this project should include the case number **AY2018-1116**.

VITA

James Kunz earned a Bachelor of Arts in psychology from the University of Minnesota-Duluth in 2011 followed by a Bachelor of Science in philosophy from Minnesota State, University-Mankato in 2014, a Master of Arts in philosophy from Texas Tech in 2016, and finally a Master of Science in psychology from Stephen F. Austin State University in 2018.

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