ACCEPTABILITY AND OUTCOMES OF A GUIDED-MEDITATION INTERVENTION
FOR SCHOOL-AGE SECOND LANGUAGE LEARNERS

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CHAPTER I

Abstract

Second language (L2) learning anxiety (also known as foreign language anxiety) is a situation specific form of anxiety that negatively impacts language acquisition and performance. In the past decade, studies on the use of meditation—and mindfulness-based interventions in schools have found evidence that such interventions may benefit the psychological well-being and academic achievement of students. Research with college-level L2 learners has also found that higher levels of mindfulness are associated with lower levels of anxiety and enhanced language learning outcomes. However, no empirical studies were found exploring the use of meditation or mindfulness-based interventions with school-age L2 learners.
LITERATURE REVIEW

Second/Foreign Language Learning Anxiety

Second language (L2) learning anxiety (also known as foreign language anxiety or FLA) is a well-documented (Horwitz, Horwitz, & Cope, 1986; MacIntyre, P. D. 1999; Woodrow, 2006) barrier to language acquisition and performance. L2 learning anxiety has been defined as “…the worry and negative emotional reaction aroused when learning or using a second language” (MacIntyre, 1998, p. 27) as well as the “…distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process” (Horwitz, Horwitz and Cope, 1991, p. 31). Anxiety is conceptualized as either a trait (i.e., relatively stable personality trait across a variety of situations), state (i.e., a relatively brief/momentary experience of anxiety) or situation specific (i.e., a trait that arises in specific contexts) phenomenon (Craske, 1999). L2 learning anxiety is considered a situation specific form of anxiety (MacIntyre 1998), with classroom learning being a particularly salient learning situation for students. According to the most recent National K-12 Foreign Language Enrollment Survey (American Councils for International Education, 2017), approximately 20% of all U.S. school-age students enroll annually in a foreign language class. Although no studies were found exploring the proportion of U.S. high school students with L2 anxiety, Horwitz’s review (2016) of nearly three decades of studies involving her Foreign Language Classroom Anxiety Scale (FLCAS) found that approximately 30% to 40% of L2 learners report at least moderate levels of L2 anxiety. However, a Pew Research Center poll (2019) found 70% of U.S. teenagers (13-17) reported anxiety (and depression) as a “major problem.” This same survey also found that 61% of teenagers reported feeling “a lot of pressure to get good grades” (Pew Research Center, 2019). In addition to school-age students learning a
foreign language, English Language Learners (ELLs) made up 9.4% of the student population in the U.S. in the 2014-2015 school year, with this percentage steadily increasing over the past two decades (National Center for Education Statistics, 2017). In addition to the challenges of learning a new language, ELL and immigrant students often face additional potential sources of stress such as acculturative stress (Hwang, 2006; Li, Li, & Niu, 2016), prejudice and discrimination, limited financial resources, and safety concerns in their communities (Hinton & Lewis-Fernández, 2011). Thus, the capacity for students to cope with L2 learning anxiety may already be negatively impacted by additional stressors in their lives. This ecological (Ballou, Matsumoto, & Wagner, 2002; Bronfenbrenner, 2009) perspective on sources of stress for students indicates the need to consider the intersection between psychological well-being and academic success. It may well be that “academic achievement, social and emotional competence and physical and mental health are fundamentally and multiply interrelated. The best and most efficient way to foster any of those is to foster all of them” (Diamond, 2010, p. 789).

Impacts on Cognitive Processing and Learning

Like most (if not all) goal-oriented academic pursuits, L2 learning relies on cognitive processes for language acquisition and performance (McLaughlin, Rossman, & McLeod, 1983). The cognitive component of anxiety, worry, is theorized to interfere antecedently in the processing and storage abilities of working memory (Owens, Stevenson, Hadwin, & Norgate, 2012). Working memory is theorized as a four component model (Baddeley, 2001), featuring (a) a central executive for processing information and corresponding self-regulatory functions (e.g., stress monitoring and strategy selection); (b) a phonological loop for verbal information; (c) a visuospatial template for visual and spatial information; and (d) an episodic buffer for sequencing time with the integration of information from verbal, visual, and spatial domains
Worrisome thoughts are thought to have a particularly negative impact on the ‘phonological loop,’ as worry generally involves an internal verbal dialogue (Rapee, 1993). Thus, in the context of language learning tasks, worry has the potential to detrimentally impact the cognitive resources necessary for effective learning.

Accompanying anxiety and worry (as the cognitive component of anxiety), high levels of stress also feature physiological correlates that can have negative impacts on the brain’s capacities for learning. Psychological stress has been defined as “…a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her wellbeing” (Lazarus and Folkman, 1984). Stress can also be thought as a normal and biologically based reaction to changes in one’s environment, also known as allostasis (McEwen, 1998). However, “allostatic load” (McEwen, 1998) occurs when an organism faces chronic levels of stress or there is an inability for the body’s stress response systems to adequately dampen following a stressful encounter. Studies with non-human primates have shown that chronic stress can have toxic effects on the development of the prefrontal cortex, which is the brain region primarily tasked with executive functioning (e.g., working memory, shifting attention, etc.) (Bernier, Carlson, & Whipple, 2010). High levels of state anxiety also increase the activity of the hypothalamic–pituitary–adrenocortical (HPA) axis (i.e., ‘Fight or Flight’ response) (Arborelius, Owens, Plotsky, & Nemeroff, 1999), which shifts attentional processes towards threat-related stimuli (Eysenck, Derakshan, Santos, & Calvo, 2007). This state of heightened arousal is negatively associated with performance in cognitively demanding tasks (e.g., language learning), as the brain’s attentional and working memory capacities become overloaded (Richards, French, Keogh, & Carter, 2000). Chronic stress has
also been shown to have negative impacts on children’s capacities for school readiness, in that it impairs attention, memory, emotion regulation abilities, as well as sleep (Shonkoff et al., 2012).

**Helping Students Cope with Stress and Anxiety**

Given the negative impacts of stress and anxiety on higher-order learning, educators and school-based mental health professionals have increasingly explored the use of coping techniques for students. Examples have included psychoeducation about stress and anxiety through social-emotional learning (SEL) (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011), yoga (Galantino, Galbavy, & Quinn, 2008), and contemplative/meditative practices (such as mindfulness-based interventions or MBIs) (Zenner, Herrmleben-Kurz, & Walach, 2014). MBIs often utilize formal meditation as a technique for cultivating the attentional skills fundamental to MBIs. In their meta-analysis of 163 empirical studies utilizing meditation as a treatment variable, Sedlmeier et al. (2012) argue that forms of meditation can be classified as either: (a) concentrative meditation; (b) mindfulness meditation; or (c) guided meditation. Concentrative meditation emphasizes the use of an object of focus for helping practitioners to eventually transcend their usual thought processes. Mindfulness meditation aims to cultivate an alert, open awareness of present-moment experiencing in a non-evaluative way. Guided meditation uses words/imagery and sometimes music to guide the practitioner towards a deeper level of tranquility or awareness of a theme, such as loving-kindness. What is more, Sedlmeier et al. (2012) point out that there is substantial conceptual overlap and combining of techniques among these types of meditation. For example, mindfulness meditation often uses focusing on one’s breath as an anchor juxtaposed to the flow of one’s thoughts. Guided meditation also depends on a present and open experiencing of the object(s) of the guided meditation, such as progressively
relaxing parts of one’s body. Thus, the elements found within these forms of meditation are not mutually exclusive, and in fact seem to be mutually supportive (Awasthi, B, 2013).

Meditative practices have existed in numerous cultures, and in examples such as ancient India and China, have been refined over thousands of years (Johnson, 1986; Wynn, 2007). In religious traditions such as Hinduism, meditation is primarily a means of transforming one’s experience with consciousness so as to gain insight into deeper dimensions of pure or universal consciousness (Rao, 2005). Similarly in Buddhism, meditation is seen as a method of helping practitioners to perceive the “interbeing” (Hanh, 1998) of all phenomenon, which can only occur when the mind is free from attachments based on compulsive fears and desires (Ricard, 2013). In traditions such as Daoism, meditation has also been a means to harmoniously integrate the energies of one’s mind and body with the energy and flow of the natural world (Juzefovic, 2015). Health and equanimity are seen as natural consequences of the cultivation of higher consciousness and harmonious ways of living with others and the natural world (Hanh, 1991).

**Meditation as Self-Regulation**

Whereas meditation has generally been practiced as a means of transforming consciousness in Eastern religious traditions, more recent Western adaptations have tended to emphasize the self-regulatory and corresponding health benefits of meditation. In the 1970’s, Jon Kabat-Zinn began adapting mindfulness meditation practices as a therapeutic tool for patients suffering from chronic pain (Kabat-Zinn, 1982). Kabat-Zinn is largely credited with transmuting Zen Buddhist meditative practices into a more secularized form of medical intervention. However, other researchers, such as Herbert Benson who was conducting research on the
“relaxation response” (Benson, 1975) were also examining the relationships among stress, relaxation practices, and health outcomes (e.g., cardiovascular health).

Since this groundbreaking work, and especially within the past two decades, research and practice in mindfulness and meditation has grown in the fields of medicine (Arias, Steinberg, Banga, & Trestman, 2006), psychology (Hofmann, Sawyer, Witt, & Oh, 2010), and education (Kabat-Zinn, 2003; Zenner, Herrnleben-Kurz, & Walach, 2014). The initial research on mindfulness meditation was conducted with adults, finding evidence for its effectiveness in managing conditions such as anxiety (Vøllestad, Nielsen, & Nielsen, 2012), depression (Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000), chronic pain (Chiesa & Serretti, 2011), hypertension (Carlson, Speca, Faris, & Patel, 2007), and eating disorders (Wanden-Berghe, Sanz-Valero, & Wanden-Berghe, 2010) as examples.

Theorized Mechanisms Underlying Meditation

As described previously, because the different forms of meditation contain within and amongst themselves significant conceptual overlap (Sedlmeier et al., 2012), the theorized mechanisms of change underlying practices that utilize meditation also feature similar theoretical variables. In traditional Buddhism, the practice of consistent, long-term meditation is thought to enhance the quality of one’s consciousness (i.e., awareness and insight) in order to break free from the ‘illusions’ of the mind (Ricard, 2013). These illusions (also known as ‘ignorance’) are the result of an over-attachment to thought, particularly the thought that one’s own life (or ‘ego’) is separate from all of life (Hahn, 1998, Ricard, 2013). Since human beings have become so attached to their thoughts and egos, meditation aims to train the ability to observe the movement
of the mind (that has been called the “monkey mind” (Hahn, 1998) in order to cultivate a mind free of conditioned thought (that has been called “beginner’s mind” (Kabat-Zinn & Hahn, 2009).

Derivative of these traditional uses of meditation, other researchers have emphasized the role of mindful awareness (or mindfulness) in meditative practices. Jon Kabat-Zinn defines mindfulness as the “…awareness that arises through paying attention, on purpose, in the present moment, nonjudgmentally” (Kabat-Zinn, 1994). Many MBIs have been based on this definition, though it has been criticized for being too colloquial (Bishop et al., 2004). The definition of mindfulness operationalized by Bishop et al (2004) is used in the literature along with Kabat-Zinn’s (1994) definition. These authors operationalize mindfulness as “the self-regulation of attention so that it is maintained on immediate experience,” which is accompanied by “a particular orientation toward one's experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance” (Bishop et al., 2004). As can be seen, this definition of mindfulness is two-fold, namely a) The self-regulation of attention, and b) A particular orientation to experience (characterized by curiosity, openness, and acceptance). These definitions of mindfulness are also theorized to be tapping into the ‘active ingredients’ underlying psychological change through the practice of meditation. That is, by changing one’s relationship to one’s thoughts, feelings, and immediate experiences, one can eventually develop a more flexible relationship with such experience (Hayes, Strosahl, & Wilson, 1999). This change in altering one’s relationship to the phenomenal experience of the mind (rather than the contents (e.g., thoughts/feelings) of the mind itself) is theorized to foster an ‘approach’ orientation towards challenges (e.g., stress and anxiety) rather than ‘avoidance.’ MBIs are thus designed to encourage people to experience bodily sensations without judgment but instead with equanimity, which may help people to harness the benefits of the “relaxation response” (Benson,
1997) in situations that would typically elicit the ‘stress’ response. With this change in orientation towards potential stressors, systems within the body associated with the relaxation response may be more readily harnessed.

**Physiological responses associated with the practice of mindfulness-meditation.** But how does mindfulness-meditation access the “wisdom of the body” (Kabat-Zinn and Hanh, 2009) in the healing process? It appears that the consistent practice of mindfulness-meditation works synergistically with the neuroplasticity of the brain (Treadway and Lazar, 2010). Neuroplasticity is a term describing the brain’s ability to “reorganize” (Treadway and Lazar, 2010) itself throughout the lifespan through the creation of new neural connections. There is accumulating evidence that the practice of mindfulness-meditation is ‘rewiring’ the brain so that the stress response system handed down via evolutionary pressures can be reorganized in a more adaptive fashion towards the pressures of modernity.

Two vital parts of the brain associated with the stress response, the prefrontal cortex and the amygdala, appear to be especially prone to reorganization resulting from sustained mindfulness-meditation training. Experienced meditators have been found using MRI scans to have significantly decreased grey matter volume in their right amygdala and left caudate relative to less experienced meditators (Taren, Creswell, and Gianaros, 2013). What is more, experienced meditators have also been found to have increased thickness prefrontal cortical thickness relative to less experienced meditators (Lazar et. al, 2005). These findings imply that prolonged training in mindfulness-meditation may reorganize the brain so that one would have 1) Reduced stress reactivity and 2) An increased ability of higher-order attentional and executive functionality. It should be noted that the changes in these neurological pathways correspond with theoretical facets of mindfulness such as non-reactivity and describing (Baer et. al, 2008).
These structural changes in the brain may explain why experienced meditators are also found to have markers associated with positive psychological and physiological outcomes. For example, experienced meditators were found to have lower levels of c-reactive protein and interleukin 6, which are both pro-inflammatory (Creswell et. al, 2012). The adaptive functioning of experienced meditators may best be seen in the inhibition of the cortisol awakening response (CAR). Cortisol has the role of continuing the stress response system in the body if the perceptual system still registers the presence of a threat. Such threats include internal stimuli, such as negative emotions and/or worries. A study examining participants’ ability to 1) Label and describe inner experiences and 2) Accept negative thoughts and feelings without judgement found that such ‘dispositional mindfulness’ moderated the impact of negative stimuli on the CAR (Daubenmier et. al, 2014). These authors argue that it is not necessarily the content of one’s thoughts, but the way in which one relates to them that moderates the reactivity of the CAR. Moreover, they point out that because the CAR is strongly associated with the experience of waking up, a mindful disposition may be particularly salient in the intensity of HPA axis activity. This is because the process of awakening from sleep is generally paired with a resurfacing of personality characteristics, as well as “anticipation of daily events” (Daubenmier et. al, 2014). Thus, persons with higher dispositional mindfulness may relate to daily events with less anxiety-provoking appraisals, resulting in lower HPA axis activity than those more prone to react strongly to future uncertainties.

Sanada et. al (2016) conducted a (relatively small sample size) meta-analysis of five studies (many studies were excluded that did not meet the authors’ criteria, such as, cortisol could not be collected under stressed conditions, participants had to be healthy individuals, etc.) examining the connection between mindfulness-based interventions (MBIs) and salivary cortisol.
Their meta-analysis found a moderately low effect size (ES), although perhaps most interesting was the moderate heterogeneity found as a result of 1) Age, 2) The number of sessions and 3) The total time of the MBI. From the five randomized control studies (RCTs) examined, it appeared that MBIs had stronger effects for younger participants, the greater number of sessions attended, as well as the greater amount of hours spent practicing the MBI. The authors argue that there is evidence that MBIs can have beneficial effects on reducing cortisol levels in healthy individuals, though more rigorous RCTs are needed in order to support these findings.

It may also be informative to research and practice to examine the potential contraindicative elements of MBIs. There may be certain populations wherein the use of MBIs may actually increase stress reactivity rather than reduce it. For others, the thought that one could remain fully ‘nonjudgmental’ may feel like a cognitive impossibility, and thus may not be as receptive to the conceptualizations of mindfulness as espoused by researchers like Jon Kabat-Zinn. It may well be that interventions similar to MBIs may also be conducive to engendering the “relaxation response” (Benson, 1997) that may underlie the effectiveness of MBIs. If interventions could be designed that are more culturally appropriate and/or intellectually satisfying to the practitioner, then perhaps the beneficial impacts on stress reactivity could be enhanced.

**Psychological Treatments Involving Meditation**

In the West, the current evidence-based therapies that involve formal or informal meditation practices and/or integrate mindfulness into their treatments are mindfulness-based stress reduction (MBSR) (Kabat-Zinn, 1982), mindfulness-based cognitive therapy (MBCT) (Segal & Teasdale, 2018), acceptance and commitment therapy (ACT) (Hayes, Strosahl, & Wilson, 1999), and dialectical behavior therapy (DBT) (Linehan et al., 2006). MBSR teaches
meditation through the use of modeling as well as providing audio tapes for practice at home (Kabat-Zinn, 2003). The treatment also involves a substantial period of daily home meditation practice, such as 45-minutes per day. Along with formal meditation, skills in the area of mindfulness are taught and practiced through formal means such as yoga, as well as through informal awareness-building exercises, such as mindful walking (Kabat-Zinn, 2003). MBCT is similar to MBSR, though it focuses more on identifying ‘spirals’ of thought that one can become overly attached to (such as rumination in depression), and encourages the use of facets of mindfulness (such as observing and nonreactivity) to decrease patterns of ruminative thought and increase emotion regulation skills. ACT involves three main areas theorized to enhance “psychological flexibility” which is defined as “Contacting the present moment fully as a conscious human being, and based on what the situation affords, changing or persisting in behavior in the service of chosen values” (Hayes, Strosahl, & Wilson, 2009). ACT encourages formal meditation for increasing one’s ability to mindfully contact the present moment and “defuse” (Hayes, Strosahl, & Wilson, 2009) from mind content that one (unsuccesfully) tries to avoid. DBT similarly encourages formal meditation as a means of increasing mindfulness skills, such as observing, describing, acting with awareness, nonreactivity, and nonjudgment (Linehan et al., 2006, Baer et al., 2008).

**Research on MBIs in Schools**

Research on MBIs with children and adolescents is still considered in its nascence (Zenner, Herrnleben-Kurz, & Walach, 2014), with the first concerted efforts to use MBIs in schools occurring in the U.K. in 2007 (Crane, Kuyken, Hastings, Rothwell, & Williams, 2010). Since that time, a number of small-scale studies have been conducted in the U.K. and the U.S., and larger-scale research efforts are currently underway worldwide. For example, a seven-year
research effort (called the “Mindfulness and Resilience in Adolescence (MYRIAD) Project”) led by researchers at Oxford University began in 2016 and aims to implement a randomized controlled trial (RCT) of a standardized MBI with 5,700 students in 76 schools (Oxford Mindfulness Centre, 2016).

Informing such large-scale, systematic studies have been a number of small-scale studies examining the impacts of a range of MBIs with outcome measures relevant to student academic success and well-being. An example of a well-designed study was a randomized controlled trial of a classroom-based social-emotional learning program featuring daily meditation (MindUP; Hawn Foundation, 2008). This 12-week intervention resulted in a 15 percentile increase in math achievement and 20 percentile increase in self-reported well-being (calculated using Cohen’s $U_3$ “improvement” index) relative to children learning a social responsibility program without MBI components (Schonert-Reichl et al., 2015). Elementary-aged students trained in mindfulness meditation have also shown significant decreases in test anxiety relative to controls (Napoli, Krech, & Holley, 2005) and middle-school students who learned meditation were found to have significant pretest to posttest decreases in blood pressure compared with non-meditating peers (Barnes, Davis, Murzynowski, & Treiber, 2004). A study with 32 adolescents attending a private residential school for students with learning disabilities found that those who were led in mindfulness meditation at the beginning of class every day for five consecutive weeks reported lower state and trait anxiety compared to students who did not have a beginning of class mindfulness meditation (Beauchemin et al., 2008).

A systematic review and meta-analysis of school-based MBI studies up to August 2012 found a large between groups effect size for cognitive performance ($g = 0.80$) and small to medium effect sizes for stress ($g = 0.39$) and resilience ($g = 0.36$) (Zenner, Herrnleben-Kurz &
Walach, 2014). These authors concluded that MBIs show promise in schools, but more research is needed to understand the different effects of the wide variety of MBIs being studied. They also note the need for more reliable and valid outcome measures related to MBIs, as well as more well-designed RCTs with greater statistical power. Because the research base on MBIs in schools is considered to still be in the early stages, some researchers argue that more evidence is needed for understanding how MBIs interact with important child developmental variables (e.g., cognitive ability, history of trauma, etc.) before large-scale use of MBIs becomes commonplace (Chadwick & Gelbar, 2016).

Much of the research on MBIs with children and adolescents has been derivative of the research on empirically validated forms of mindfulness meditation training, namely mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT) with adults. As noted, the emerging research on adapting these programs for children and adolescents is overall promising, but there is still a need to understand the roles that different aspects of MBIs (e.g., formal meditation, relaxation, cognitive flexibility/decentering, etc.) have for specific student populations (e.g., culturally and linguistically diverse students, students with histories of trauma, etc.). Another critique of the current state of the research on MBIs in schools is that the target population and outcomes (e.g., stress reduction, academic learning, prosocial behavior, etc.) need to be more clearly defined, especially when implemented in a tiered service-delivery system (Chadwick & Gelbar, 2016). An example of this could include MBIs specifically designed to enhance language learning for students through a reduction in stress and language learning anxiety.

Meditation, Mindfulness, and Second Language Learning Anxiety
An online search of the research databases Psycinfo, Scholar OneSearch, and Google Scholar using the terms: (a) meditation, (b) mindfulness, (c) English language learners, (d) foreign language learning, (e) second language learning anxiety, and (f) foreign language anxiety resulted in several empirical studies exploring the role of mindfulness and/or meditation with college-level populations learning English as a second language, but no empirical studies were found with children or adolescents. The findings from the studies with college-level learners are reviewed below, as they might be informative for future research with children and adolescents.

Charoensukmongkol (2016) examined the relationship between state and trait mindfulness, English as a second language (ESL) public speaking anxiety, and public speaking performance with university students in Thailand. This study found that higher levels of state and trait mindfulness were associated with lower levels of anxiety while speaking English. Students with lower self-reported anxiety also tended to achieve higher scores on English public speaking tasks compared with students with higher self-reported anxiety. This study did not involve an intervention, but given the author’s findings, the next logical step would be a study examining the efficacy of an intervention intended to reduce this type of anxiety.

Onem’s (2015) study on the use of relaxation-focused meditation resulted in significant increases in vocabulary acquisition and decreases in anxiety (as measured by a Turkish version of the State and Trait Anxiety Inventory (STAI-Spielberger, Gorsuch & Lushene, 1970; Oner & Le Compte (1985). The meditation intervention in this study combined diaphragmatic breathing, relaxing imagery, and aromatherapy. Onem (2015) suggests that future iterations of this study should also examine the use of relaxing music during the meditation, as he previously found that playing relaxing music prior to beginning language classes also resulted in significant decreases in anxiety relative to control groups (Onem and Ergenc, 2013).
Fallah (2017) also examined the relationship between mindfulness and foreign language anxiety, as well as with coping self-efficacy. Coping self-efficacy is the belief whether one can or cannot cope effectively with a challenging situation (Chesney et al., 2006). In his survey of Iranian college students learning English, Fallah found that higher levels of mindful attention and awareness were associated with higher levels of coping self-efficacy, and lower levels of foreign language anxiety. Moreover, coping self-efficacy was found to partially mediate the relationship between mindfulness and foreign language anxiety. Fallah’s (2017) findings are supported by the previous research on mindfulness and self-efficacy for managing pain (Morone, Rollman, Moore, Qin, & Weiner, 2009) as well as alcohol relapse (Chang et. al, 2004; Witkiewitz, Marlatt, & Walker, 2005). Coping self-efficacy has also been found to partially mediate the relationship between the mindfulness facets of (a) acting with awareness, (b) describing, and (c) accepting without judgment with emotion regulation difficulties (Luberto, Cotton, Mcleish, Mingione, & O’Bryan, 2013). Fallah (2017) suggests that higher levels of mindful awareness help learners to not “…dwell on their mistakes” (p. 752) and thus have more cognitive and affective resources for managing challenging situations. This interpretation is also in line with previous research on the inverse relationship between self-efficacy and worry (Schwarzer, 1996). Fallah (2017) goes on to suggest that future studies with learners of foreign languages should explore the role of meditative and mindfulness practices in cultivating greater coping self-efficacy and decreasing the cognitive and affective barriers associated with anxiety and worry.

**Guided Meditation in the Language Learning Context**

Cai (2017) developed a Bilingual Guided Meditation (BGM) program designed to reduce foreign language learning anxiety through the cultivation of a relaxed and positive learning environment. By introducing this contemplative practice into the foreign language classroom,
Cai hoped to simultaneously enhance both the learning outcomes of students and their enjoyment of the process of learning a new language. Her development of the BGM program was informed by the research on formal meditation’s positive impacts on a variety of psychological challenges (e.g., stress and anxiety) and cognitive enhancements (e.g., working memory, executive functioning) described earlier, as well as the theorized relationship between meditation and some forms of hypnosis (e.g., Lozanov’s Suggestopedia theory, 1978, 2009).

**Suggestopedia**

Cai’s BGM program incorporates music, relaxation, and positive suggestion because Suggestopedia theory argues that these three elements are conducive to helping students “…tap into the normally unused reserves of the mind for increased learning” (Bancroft, 1999, p. 247; as cited in Cai, 2017). Suggestopedia postulates a gestalt effect of music, relaxation, and positive suggestion for increasing the cognitive and affective capacities necessary for learning. Similarly, Cai argued that incorporating these elements into a guided meditation format would help students associate language learning with relaxation and positive expectations. Although it may be difficult to measure whether or not the methods of Suggestopedia help students access the abovementioned reserved potentials of the unconscious, it may be possible to measure the hypothesized “restful alertness” (MaCown et al., 2011) suggested in the guided meditation through related outcomes such as mindful attention and awareness, L2 learning anxiety, and perceived stress.

In a controlled trial of the effects of the BGM program in college-level foreign language classes, Cai (2017) found that students in classes with the BGM intervention had a significant reduction in foreign language anxiety relative to control groups, with a small-to-moderate effect
size (n=60, \( p = .000, \eta^2 = .206 \)). In this same trial, the BGM groups also had significant gains in language learning relative to the control groups, although with a small effect size (n=60, \( p = .045; \eta^2 = .067 \)). The vast majority of the participants supported the continued use of the BGM in their classes, and themes from their qualitative feedback included: (a) greater relaxation and calmness; (b) stress and anxiety reduction; (c) more confidence in their language class performance; (d) enhanced learning (pronunciation, speaking, and listening) and (e) enhanced concentration abilities in the classroom.

Cai’s (2017) pioneering work in the area of guided meditation in the foreign language classroom has led to many related lines of inquiry. One potential avenue involves parsing out the potential differential influences in the BGM program. This is because the BGM program contains three key elements that could produce different effects: (a) bilingual input; (b) relaxing background music; and (c) positive suggestion. It remains unclear whether the same reductions in anxiety and increases in language learning would occur in groups only exposed to relaxing background music, or whether the addition of positive suggestion in the target language has additional influence. Questions have yet to be explored about the role of the classroom-based guided meditation in influencing the mindfulness of the students as well as their coping self-efficacy, both of which have been found to have a role in anxiety reduction and healthy emotion regulation. Cai’s (2017) study also took place in college-level language courses, and her ideas have yet to be explored in school-age populations, for whom learning a new language has potentially more immediate social necessities and pressures, such as is the case for school-age ELLs.
Summary and Implications

Although research suggests that meditation—and-mindfulness-based interventions may enhance L2 learning through reductions in L2 learning anxiety, no empirical studies have examined the use of meditation or mindfulness-based interventions with school-age L2 learners. Research with college-age second/foreign language learners points towards positive associations between classroom-based meditation practices, mindfulness, and anxiety reduction. Thus, adaptations of this research with school-age students may also yield positive results, although contextual and developmental factors should be considered in such adaptations. Contextual considerations could include assessing and enhancing teacher readiness and motivation for such interventions. Developmental considerations could include modifying the language of the intervention so that it can be readily learned and understood, as well as connecting the student’s backgrounds and past experiences into the design of the intervention (Goldenberg, 2008). The degree of acceptability of meditation—and-mindfulness-based interventions with school-age students is also unknown, and it will likely be a factor in the success of any such intervention.

Moreover, the preponderance of school-based interventions utilizing meditation as a treatment variable have involved mindfulness meditation formats. Despite the conceptual and procedural overlap between the three main categories of mediation (concentrative, mindfulness, and guided meditation), only Cai’s (2017) study specifically focused on the use of guided meditation in the context of language learning. Authors (e.g., Chadwick & Gelbar, 2016) have argued that school-based MBIs may benefit from a more specific delineation of the targets and corresponding design of such interventions. Thus, in the case of school-age students, no studies currently exist that examine the use of a specific meditation format (e.g., guided meditation) for addressing the unique needs of this population (e.g., second language learning).
The potential differential functions of meditation (e.g., relaxation, decentering, attention training, etc.) have also not been explored with school-age students. Previous studies with adults have found that both meditation training and somatic relaxation training resulted in decreased psychological distress and improved positive mood states, but meditation carried additional benefits in reducing ruminative thoughts (e.g., worry) and behaviors (Jain et al., 2007). As mentioned, worry is theorized to have particularly detrimental effects on language processing, due to interference effects on the verbal elements of working memory (Rapee, 1993). With this in mind, a direct empirical comparison of the impacts of meditation and relaxation interventions in the context of language learning could potentially advance both theory and practice.
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CHAPTER II

Abstract

Second language (L2) learning anxiety is a well-documented barrier to second language acquisition. In addition to L2 learning anxiety, students are often exposed to a variety of anxiety-provoking sources of stress that may negatively impact the cognitive and affective capacities necessary for learning a new language. Meditative practices in schools have been increasingly found to improve the emotion regulation skills of students. A previous study (Cai, 2017) on the use of guided meditation in college-level language classes resulted in reduced anxiety and enhanced language learning outcomes. The current study aimed to build on this previous research, by examining the potential differential effects of guided meditation elements (i.e., relaxing background music and positive suggestions in the target language) in a school-age population. The current study also examined multiple theoretically related outcomes beyond anxiety reduction and language learning, namely, perceived stress, mindfulness, and coping self-efficacy. Feedback from the participating teachers and students on their perceived satisfaction with and perceived effectiveness of the intervention was also sought in order to inform research and practice. Results found that both music and guided meditation were found acceptable by the majority of the students and all of their teachers. Students also tended to emphasize the perceived calming effects of the meditation music. Applied and theoretical implications are discussed with a focus on enhancing effectiveness with diverse, adolescent populations.
ACCEPTABILITY AND OUTCOMES OF A GUIDED-MEDITATION INTERVENTION FOR SCHOOL-AGE SECOND LANGUAGE LEARNERS

Introduction

Promoting safe and healthy learning environments composes one of the core ethos in the work of school psychologists (National Association of School Psychologists, 2010). School-based behavioral and mental health prevention programming, such as social-emotional learning (SEL) programs can help students learn skills conducive to the development of resilience (NASP, 2014). The most recent national poll of U.S. students aged 13-17 (Pew Research Center poll, 2019) found 70% reported anxiety and depression as a “major problem” facing students. This same survey also found that 61% of teenagers reported feeling “a lot of pressure to get good grades” (Pew Research Center, 2019). Such ‘pressure’ or ‘stress’ can be thought of as a normal and biologically based reaction to changes in one’s environment (McEwen, 1998), although like most things, it is most adaptive in moderate doses. Chronic levels of stress are considered “toxic” (McEwen, 1998), and for children, toxic stress has been found to have significant negative effects on school readiness, in that it impairs attention, memory, emotion regulation abilities, as well as sleep (Shonkoff et al., 2012). Any internal or external stimuli and/or experience that leads to a stress response can be called a stressor (Folkman, 2013). Anxiety and its often accompanying cognitive component of worry is considered an anticipatory, internally-based stress response to the perception of a future threat (Chua, Krams, Toni, Passingham, & Dolan, 1999). Although the object of anxiety and worry is an imagined future experience, the experience of anxiety itself can also function as a source of stress when it impairs present-moment functioning and leads to experiential avoidance (Sarason, 1984; Mitmansgruber, Beck, Höfer, &Schüßler, 2009).
For students learning a second language, such as English language learners (ELLs), anxiety about learning English as a second language is one of their most salient school-based stressors (Price, 1991; Woodrow, 2006). Of non-ELL students, reviews of foreign language learning anxiety research (Horwitz, 2016) have found that about 30% to 40% of students identify as foreign language learning anxious. Second language (L2) learning anxiety is considered a situation specific form of anxiety (MacIntyre, 1998), with the classroom being a primary context in which L2 anxiety arises. L2 learning anxiety, also known as foreign language anxiety (FLA), has been defined as “…the worry and negative emotional reaction aroused when learning or using a second language” (MacIntyre, 1998, p. 27) as well as the “…distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process” (Horwitz, Horwitz and Cope, 1991, p. 31). L2 learning is reliant on higher-level cognitive processes for language acquisition and performance (McLaughlin, Rossman, & McLeod, 1983). The cognitive component of anxiety, worry, is theorized to interfere antecedently in the processing and storage abilities of working memory (Owens, Stevenson, Hadwin, & Norgate, 2012). One component of working memory, the ‘phonological loop’ for verbal information, is theorized to be particularly flooded by worry, in that worry typically involves an internal verbal dialogue (Rapee, 1993). Thus, in the context of language learning tasks, worry has the potential to detrimentally impact the cognitive resources necessary for effective learning. In addition to L2 learning anxiety, a consideration of the broader ecological context of stress indicates a variety of sources of stress, such as acculturative stress (Hwang, 2006; Li, Li, & Niu, 2016), prejudice and discrimination, limited financial resources, and safety concerns in communities (Hinton & Lewis-Fernández, 2011). Thus, the capacity for
students to cope with stress who already have L2 learning anxiety may also be exacerbated by a variety of stressors in their lives.

**Helping Students Cope with Stress and Anxiety**

As a response to the increasing awareness of the effects of chronic stress on students, educators and school-based mental health providers have turned to a variety of interventions targeting stress reduction. These have included psychoeducation about stress and anxiety through social-emotional learning (SEL) (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011), yoga to enhance emotion-regulation abilities through increasing awareness of the connection between emotions and the body (Galantino, Galbavy, & Quinn, 2008), and meditative practices (Zenner, Herrnleben-Kurz, & Walach, 2014) (such as mindfulness meditation) to “…create an island of being in a sea of constant doing…” (Kabat-Zinn & Hanh, 2009). The aims of such interventions, generally referred to as mindfulness-based interventions (MBIs), have included enhancing attention (Jha, Krompinger, & Baime, 2007), emotion-regulation skills (Metz, Frank, Reibel, Cantrell, Sanders, & Broderick, 2013), academic success (Schonert-Reichl, Oberle, Lawlor, Abbott, Thomson, Oberlander, & Diamond, 2015), stress reduction (Sibinga, Webb, Ghazarian, & Ellen, 2016), anxiety reduction (Napoli, Krech, & Holley, 2005), and coping self-efficacy (Caldwell, Harrison, Adams, Quin, & Greeson, 2010).

The recent use of MBIs in schools has grown out of the research on MBIs with adult populations, which itself was distilled for medical use from religious practices refined, in examples such as ancient India and China, during thousands of years (Johnson, 1986; Wynn, 2007). Initial research on MBIs provided evidence that a consistent engagement in meditative practices could develop a psychologically flexible reengagement with aversive experiences (e.g.,
physical pain) that could result in reduced levels of stress (Kabat-Zinn, 1982). These findings were supported through similar lines of research, such as Herbert Benson’s work on the “relaxation response” (Benson, 1975) and its connection to health outcomes (e.g., cardiovascular health). In the following decades, MBIs with both clinical and non-clinical adult populations were found to be effective in the management of a range of conditions such as anxiety (Vøllestad, Nielsen, & Nielsen, 2012), depression (Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000), chronic pain (Chiesa & Serretti, 2011), hypertension (Carlson, Speca, Faris, & Patel, 2007), and eating disorders (Wanden-Berghe, Sanz-Valero, & Wanden-Berghe, 2010) as examples.

**Research on MBIs in Schools**

Given the wide range of benefits found in adults learning meditative techniques, the research on such interventions with children and adolescents has been growing, but it is however still considered in its nascence (Zenner, Herrnleben-Kurz, & Walach, 2014). The first systematic use of meditation in schools was done in the U.K. in 2007 (Crane, Kuyken, Hastings, Rothwell, & Williams, 2010), and since that time a number of small-scale, controlled studies have been conducted mostly in the U.K. and U.S. (Zenner, Herrnleben-Kurz, & Walach, 2014). A 2014 meta-analysis on published and unpublished studies on MBIs in schools found a moderate-to-large between groups effective size (Hedge's $g = .80$) in the domain of cognitive performance (e.g., grades, tests of creativity), and small-to-moderate between groups effective sizes for the domains of stress and coping (e.g., self-reports of perceived stress and the use of coping strategies) ($g = 0.39$) and resilience (e.g., self-reports of overall well-being, resilience, self-concept, etc.) ($g = 0.36$) (Zenner, Herrnleben-Kurz & Walach, 2014). These authors concluded that the trend of the research on transmuting MBIs for use in schools is promising, but that the
diverse array of MBIs studied and outcome measures employed makes it difficult to draw conclusions about the efficacy of MBIs for all students. This caution is echoed in other criticisms of the perceived rapid increase in the delivery of Tier 1 MBIs, as some authors argue that a more targeted use of meditation and mindfulness-based techniques would allow more specific problems to be addressed and prevented (Chadwick & Gelbar, 2016).

**Meditation, Mindfulness, and Second Language Learning Anxiety**

An example of this could include MBIs specifically designed to enhance language learning through a reduction in stress and language learning anxiety. An online search of research databases using the terms: (a) Meditation, (b) mindfulness, (c) English language learners, (d) foreign language learning, (e) second language learning anxiety, and (f) foreign language anxiety resulted in several empirical studies exploring the role of mindfulness and/or meditation with adult populations learning English as a second language, but no empirical studies were found with children or adolescents. Studies with adult learners of English were found however, and these may be informative for future research with school-age ELL students. For example, Charoensukmongkol (2016) examined the relationship between state and trait mindfulness, English as a second language (ESL) public speaking anxiety, and public speaking performance with university students in Thailand. His study found that higher levels of state and trait mindfulness were associated with lower levels of anxiety while speaking English. Students with lower self-reported anxiety also tended to achieve higher scores on English public speaking tasks compared with students with higher self-reported anxiety. This study did not involve an intervention, but given the author’s findings, the next logical step would be a study examining the efficacy of an intervention intended to reduce this type of anxiety.
Fallah (2017) also investigated the relationship between mindfulness and foreign language anxiety, as well as with coping self-efficacy. Coping self-efficacy is the belief whether one can or cannot cope effectively with a challenging situation (Chesney et al., 2006). In his survey of Iranian college students learning English, Fallah found that higher levels of mindful attention and awareness were associated with higher levels of coping self-efficacy, and lower levels of foreign language anxiety. Moreover, coping self-efficacy was found to partially mediate the relationship between mindfulness and foreign language anxiety. Fallah’s (2017) findings are supported by the previous research on mindfulness and self-efficacy for managing pain (Morone, Rollman, Moore, Qin, & Weiner, 2009) as well as alcohol relapse (Chang et al., 2004; Witkiewitz, Marlatt, & Walker, 2005). Coping self-efficacy has also been found to partially mediate the relationship between the mindfulness facets of (a) acting with awareness, (b) describing, and (c) accepting without judgment, with emotion regulation difficulties (Luberto, Cotton, Mcleish, Mingione, & O’Bryan, 2013). Fallah (2017) suggests that higher levels of mindful awareness help learners to not “…dwell on their mistakes” (p. 752) and thus have more cognitive and affective resources for managing challenging situations. He goes on to suggest that future studies with learners of foreign languages should explore the role of meditative and mindfulness practices in cultivating greater coping self-efficacy.

**Guided Meditation in the Language Learning Context**

In a meta-analysis of 163 empirical studies utilizing meditation as a treatment variable, Sedlmeier et al. (2012) argue that forms of meditation can be classified as either: (a) concentrative meditation; (b) mindfulness meditation; or (c) guided meditation. Concentrative meditation emphasizes the use of an object of focus for helping practitioners to eventually transcend their usual thought processes. Mindfulness meditation aims to cultivate an alert, open
awareness of present-moment experiencing in a non-evaluative way. Guided meditation uses words/imagery and sometimes music to guide the practitioner towards a deeper level of tranquility or awareness of a theme, such as loving-kindness. Furthermore, Sedlmeier et al. (2012) point out the substantial conceptual overlap and combining of techniques among these types of meditation. For example, mindfulness meditation often uses focusing on one’s breath as an anchor juxtaposed to the flow of one’s thoughts. Guided meditation also depends on a present and open experiencing of the object(s) of the guided meditation, such as progressively relaxing parts of one’s body. Thus, the elements found within these forms on meditation are not mutually exclusive, and seem to be mutually supportive (Awasthi, B, 2013).

Cai (2017) developed a Bilingual Guided Meditation (BGM) program designed to reduce foreign language learning anxiety by means of the cultivation of a relaxed and positive learning environment. By introducing this contemplative practice into the foreign language classroom, Cai hoped to simultaneously enhance both the learning outcomes of students and their enjoyment of the process of learning a new language. Her development of the BGM program was informed by the research on formal meditation’s positive impacts on a variety of psychological challenges (e.g., stress and anxiety) and cognitive enhancements (e.g., working memory, executive functioning) described earlier, as well as the theorized relationship between meditation and some forms of hypnosis (e.g., Lozanov’s Suggestopedia theory, 1978, 2009). Cai (2017) also argued that guided meditation would be particularly well-suited in the language learning context, given that the language used in the guided meditation could function as both a form of language exposure and (over time) a stimuli associated with relaxation and positive learning expectations.

In a controlled trial of the effects of the BGM program in college-level foreign language classes, Cai (2017) found that students in classes with the BGM intervention had a significant
reduction in foreign language anxiety relative to control groups, with a small-to-moderate effect size \( (n=60, p = .000, \eta^2 = .206) \). In this same trial, the BGM groups also had significant gains in language learning relative to the control groups, although with a small effect size \( (n=60, p = .045; \eta^2 = .067) \). The vast majority of the participants supported the continued use of the BGM in their classes, and themes from their qualitative feedback included: (a) greater relaxation and calmness; (b) stress and anxiety reduction; (c) more confidence in their language class performance; (d) enhanced learning (pronunciation, speaking, and listening) and (e) enhanced concentration abilities in the classroom.

Cai’s (2017) pioneering work in guided meditation in the foreign language classroom has led to many related lines of inquiry. One potential avenue involves parsing out the potential differential influences in the BGM program. This is because the BGM program contains three key elements that could produce different effects: (a) bilingual input; (b) relaxing background music; and (c) positive suggestion. It remains unclear whether the same reductions in anxiety and increases in language learning would occur in groups only exposed to relaxing background music, or whether the addition of positive suggestion in the target language has additional influence. There are also unexplored questions concerning the role of the classroom-based guided meditation in affecting the mindfulness of the students, as well as their coping self-efficacy, both of which have been found to have a role in anxiety reduction and healthy emotion regulation. Cai’s (2017) study also took place in college-level language courses, and her ideas have yet to be explored in school-age populations, for whom learning a new language has potentially more immediate social necessities and pressures, such as is the case for ELLs. The current study aimed to address these gaps in the knowledge and uses of guided meditation in language learning settings, and was thus guided by the following research questions:
Research Questions:

1. What is the acceptability of meditation-based practices for students learning a second language and their teachers?
2. What is the impact of either music meditation or guided meditation on L2 learning anxiety?
3. What is the impact of either music meditation or guided meditation on perceived stress?
4. What is the impact of either music meditation or guided meditation on trait mindfulness?
5. What is the impact of either music meditation or guided meditation on coping self-efficacy?
6. Will guided meditation have a statistically greater impact than music meditation for students in 2, 3, 4 and 5?

Methods

Approach and Positionality of the Researcher

This research project was approached from a whole child educational perspective on psychological well-being and academic success (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015) that is operationalized in schools through social and emotional learning (SEL). Whole child education has been defined as “the development of children who are healthy, safe, engaged, supported, and challenged within a sustainable approach to education and community engagement” (Association for Supervision and Curriculum Development, 2007, p. 3). This perspective argues that in order to promote the development of any one facet of student development (e.g., cognitive, emotional, social, academic skills) then all aspects of development must be holistically targeted in the schooling process (Elias, 2004; Diamond, 2010; Durlak et al.,
This whole child and holistic ethos informs the implementation of SEL programming, which has as part of its broad aims the provision of “…systematic classroom instruction that enhances children’s capacities to recognize and manage their emotions” (Payton et al., 2000). Although this study was based on empirical research and theory derived from research, the principal investigator’s (PI) work and personal experiences also influenced the specific areas that were investigated.

In the PI’s experiences working with students learning a second language (e.g., ELL students) in the public schools, he has informally observed the impact of stress and anxiety on physical and psychological well-being. The PI also has personal experience with meditation practices, and he has found the benefits of meditation to have both particular and generalized effects on physical and psychological functioning. The PI has also collaborated on meditation-based interventions in public schools, and he assisted Cai (2017) in her examination of the effects of the BGM program in college-level language courses. Thus, the PI was curious to empirically investigate the use of meditation with student populations vulnerable to the influences of chronic stress.

**Participants**

A public high school in Hawaii voluntarily agreed to participate in the current study. The school’s Spanish (three teachers), Japanese (one teacher), and ESL (one teacher) programs all agreed to participate. Of the student participants, 43% were male. Student ages ranged from 14 to 18 ($M = 15.59, SD = 1.09$). Grade levels ranged from 9th to 12th grade, with most classes featuring a mix of grades, with the exception of one 9th grade Japanese class. The racial/ethnic minority composition of the entire school was 73% (33% Hawaiian Native/Pacific Islander, 22%
Asian, 9% two or more races, 8% Hispanic, 1% American Indian/Alaskan Native, .3% Black), and 37% of its student were listed as economically disadvantaged. Of the eight ELL participants, all were foreign born, and their languages included Tagalog (3), Ilocano (1), Mandarin-Chinese (1), Thai (1), Vietnamese (1), and Spanish (1). Further participant and class data are in Table 1.

A priori power analysis using the G*Power software program (Faul, Erdfelder, Lang, & Buchner, 2007) was conducted for ANCOVA fixed effects, main effects, and interactions, two groups, power of .80, and an effect size of .25. The results indicated a recommended sample size of N = 119 with a critical F of 1.52. In that a MANCOVA was used (and G*Power offers only an ANCOVA calculation), a Bonferroni correction of .05 was added to the alpha level for each of the dependent variables (4; α = 0.05/4=.0125). Given that only 99 students completed informed assent/consent forms and successfully completed both Time 1 and Time 2 measures, it is possible that some of the statistically nonsignificant findings could have been significant with a modestly larger sample.

Measures

**Second language learning anxiety.** This was measured using the Foreign Language Classroom Anxiety Scale (FLCAS; Horwitz et al., 1986). The FLCAS is the most cited measure of foreign language anxiety (Cao, 2011). In addition to the original validation study conducted with groups of undergraduate students studying foreign languages at a university in the U.S. (Horwitz, 1986) (Cronbach’s alpha = .93), the FLCAS has demonstrated satisfactory internal consistency with different populations, including Greek high school students learning English (Cronbach’s alpha = .96) (Panayides & Walker, 2013) and Taiwanese university students learning English (Cronbach’s alpha = .95) (Cheng et al., 1999). In terms of construct validity,
Horwitz (1986) found that the FLCAS measured a unique form of anxiety arising from the language learning context, in that it had weak correlations with other anxiety constructs (e.g., State-Trait Anxiety Inventory, Spielberger, 1983; $r = .29$, $p = .002$). However, it was also moderately correlated with test anxiety (Test Anxiety Scale, Sarason, 1978; $r = .53$, $p = .001$). The entire scale consists of 33 self-report items that assess “…the degree of anxiety as evidenced by negative performance expectancies and social comparisons, psychophysiological symptoms, and avoidance behaviors” (Horwitz, 1986, p. 160). Furthermore, in her review on the original FLCAS study and the research that followed, Horwitz (2016) points out that it is “…likely that FLA varies with respect to learning context—a variable that overlaps with culture to an extent” (p. 118). Thus, she recommends that researchers using the FLCAS consider contextual influences (e.g., the degree of teacher support and student involvement in learning) in their studies.

Participants in this study responded to items on a five-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5). Higher scores on the FLCAS are indicative of higher levels of self-reported anxiety. Reliability estimates for the current study indicated satisfactory levels of reliability for both Time 1 (Cronbach’s $\alpha = .94$) and Time 2 (Cronbach’s $\alpha = .93$). Horwitz (2008) recommended that “Students with averages around 3 should be considered slightly anxious, while students with averages below 3 are probably not very anxious. Students who average near 4 and above are probably fairly anxious” (p. 235). According to this classification scheme, the students in the current study are in a borderline ‘probably not very anxious’ and ‘slightly anxious’ range at both Time 1 ($M = 97.60/33 = 2.96$, $SD = 20.22$) and Time 2 ($M = 99.17/33 = 3.01$, $SD = 18.85$).
**Perceived stress.** The 4-item version of the Perceived Stress Scale, Short Form (PSS-4; Cohen & Williamson, 1988) was used to measure the degree to which situations in a participant's life during the previous month were appraised as stressful on a 5-point Likert scale (*never to very often*). The PSS-4 is a short-form of the Perceived Stress Scale (PSS; Cohen, Kamarack & Mermelstein, 1983) (Coefficient $\alpha = .86$). In an example relevant to the proposed study, brief meditation training was associated with decreases in scores on the PSS (Seskevich & Pieper, 2007). Reliability estimates for the current study indicated a satisfactory level of reliability for Time 1 (Cronbach’s $\alpha = .80$) and a borderline Time 2 reliability (Cronbach’s $\alpha = .75$). The most recent study on normative data on the PSS-4 (Warttig et al., 2013) found a mean of 6.11 ($SD = 3.14$) across all ages, with a mean of 6.91 ($SD = 2.89$) for those under 18 in a majority White, English sample. No information on the socioeconomic status of the participants was provided in that study. Scores from the current study were substantially higher at both Time 1 ($M = 11.87$) and Time 2 ($M = 11.56$).

**Mindfulness.** Mindfulness was assessed using the Mindful Attention Awareness Scale-Adolescent (MAAS-A; Brown et al., 2011). This scale is an adaptation of the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The MAAS has demonstrated satisfactory psychometric properties in contexts such as university students (Cronbach’s $\alpha = .82$) and showed concurrent validity with a number of measures, such as the State-Trait Anxiety Inventory (STAI; Spielberger, 1983; $r = -.40$, $p < .001$) (Brown & Ryan, 2003). The MAAS-A altered the language of the items of the MAAS to be more developmentally compatible with adolescents, and it dropped one item from the original 15 item MAAS. The MAAS-A has displayed satisfactory psychometric properties in normative adolescent populations (Cronbach’s $\alpha = .84$) (Brown, West, Loverich, & Biegel, 2011) and was related to similar constructs such as life
satisfaction (Brief Multidimensional Students' Life Satisfaction Scale, Seligson, Huebner, & Valois, 2002; r = .34, p < .001). The MAAS-A is a unidimensional measure of trait mindfulness, namely, “…a receptive state of attention that, informed by an awareness of present experience, simply observes what is taking place” (Brown et al., 2011). The MAAS-A consists of 14-items, with respondents indicating their agreement with the items on a six-point Likert scale ranging from “Almost always” (1) to “Almost never” (6). Reliability estimates for the current study indicated satisfactory levels of reliability for both Time 1 (Cronbach’s α = .84) and Time 2 (Cronbach’s α = .86). The mean MAAS-A score in a large, healthy adolescent sample (Brown et al., 2011) was 52.60 (SD = 18.4), which was similar to the scores in the current study at both Time 1 (M = 52.14) and Time 2 (M = 50.23).

**Coping self-efficacy.** Coping self-efficacy beliefs were measured using the Coping Self-Efficacy Scale (CSES) (Chesney et al., 2006). The CSES has demonstrated satisfactory reliability and validity (Chesney et al., 2006). Chesney et al. (2006) conducted exploratory (EFA) and confirmatory factor analyses (CFA) and found three factors in the scale: (a) problem-focused coping (e.g., “Try other solutions to your problems if your first solutions don’t work”) (Cronbach’s α = .91); (b) emotion-focused coping (e.g., “Stop yourself from being upset by unpleasant thoughts”) (Cronbach’s α = .91); and (c) social support (e.g., “Get friends to help you with the things you need”) (Cronbach’s α = .80). Analyses of predictive validity also found increases in CSE to be associated with reduced psychological distress and increased psychological well-being over time (Chesney et al., 2006). The CSES has also been found to display adequate internal consistency in a sample of university students from Iran learning English (overall Cronbach’s α value of .84) (Fallah, 2017). The CSES consists of 26 items with participants responding on an 11-point scale with “Cannot do at all” (0) at the lowest end,
“Moderately certain can do” (5) in the middle, and “Certain can do” (10) at the highest end of the scale. Higher scores represent higher self-reported abilities to cope with stressful circumstances. Reliability estimates for the current study indicated satisfactory levels of reliability for the scale as-a-whole at both Time 1 (Cronbach’s $\alpha = .95$) and Time 2 (Cronbach’s $\alpha = .96$). The scale mean from the scale developer’s original study (Chesney et al., 2006) with an adult population was 137.40 ($SD = 45.6$). No studies with adolescents were found that used all of the original scale items and was with a non-clinical population. This mean was similar to the current study’s mean at Time 1 ($M = 139.90$) and slightly lower than the mean at Time 2 ($M = 147.70$).

**Acceptability.** This was explored using feedback questionnaires given to both the teachers and students. The feedback questionnaire given to the teachers is found in Appendix D. The student feedback questionnaire was based on the BGM questionnaire developed by Cai (2017) from her initial trials with the BGM (see Appendix C).

**Procedure**

**Intervention Implementation**

The four foreign language teachers had their classes randomly assigned (using a random number generator) to either the music meditation or guided meditation intervention. The one ELL class was prescribed the guided meditation intervention. Time 1 (pre-intervention) measures (e.g., L2 learning anxiety, perceived stress, trait mindfulness, and coping self-efficacy) were administered 1-3 days prior to beginning the intervention. Also prior to beginning the intervention, the teachers were trained by the investigator on how to introduce and implement the intervention. A sample script (see Appendix A) was provided to the teachers as well.
For the implementation convenience of the teachers, audio recordings for both the music meditation and the guided meditation were provided. The intervention was implemented at the beginning-of-class daily for 10 weeks, followed by Time 2 (post-intervention) data collection one day after the 10-week intervention period.

Steps to ensure implementation fidelity included meeting with each teacher individually or as a group once every two weeks to discuss the intervention implementation. Questions asked during these meetings included: “Are you experiencing any challenges implementing the intervention?” “Is the meditation audio being played at the beginning of every class?” “How are the students responding to the intervention?”

Implementation issues encountered included one of the teachers going on an extended leave, resulting in the need to train this teacher’s long-term substitute. Other issues included initial technology challenges, such as playing the meditation audio either too loudly or too softly, as well as occasional substitute teachers playing the incorrect meditation audio in some classes. The most frequently cited issue was behavior management challenges for some students (ranging from one to four students at a time) displaying off-task and disruptive behavior such as playing on their cell-phones or talking with other students during the meditation. This was addressed by asking those students to engage in a quiet alternative activity during the meditation (e.g., putting their heads down) though some classes required more frequent prompting for such behavior, with inconsistent behavioral responses from these students. The most extreme example of behavior management issues was during Time 2 data collection in one of the classes, when a student threw a chair at another student. These occasional challenges with behavior management likely negatively impacted the degree of implementation fidelity, especially because one of the main components of the intervention is cultivating a relaxed and positive classroom environment.
**Guided meditation group.** The classrooms assigned to the guided meditation group had a guided meditation (featuring language designed to cultivate a relaxed and positive learning mindset, accompanied by relaxing background music) played for three minutes at the beginning of each class. The intervention introduction script encouraged the students to attend to the guided meditation with an open attitude. The script for the guided meditation itself is found in Appendix B.

**Music meditation group.** The classrooms assigned to the music meditation group only had the background music from the guided meditation played at the beginning of class. The length of the music meditation (three minutes) was the same as the length of the guided meditation. The script encouraged the students to “relax and enjoy the music” but it did not explicitly encourage the students to attend to the music in a mindful manner (some students may have done this by their own volition, but they were only prompted to relax and enjoy the music).

**Data Collection**

**Informed consent.** Following the approval of the informed assent/consent forms by Northeastern University’s Internal Review Board (IRB) and the Hawaii Department of Education, participating teachers, students and the parents of students under 18 completed informed assent/consent forms.

**Data collection.** All outcome measures were administered at both pre (Time 1) -and post (Time 2) time points. These measures were disseminated via a Qualtrics computer survey. According to the various authors of the proposed measures, it should have taken approximately 15-20 minutes for the students to complete all of the measures, however, the majority of the students required about 20-25 minutes to successfully complete all measures.
Results

Data Preparation

The data were analyzed using a statistical software package (SPSS 25; IBM Corp., 2013). The data were checked for trends in missing data and outliers. Basic statistical assumptions (e.g., normality of the data) were also checked. No data transformations were necessary prior to running individual analyses. Relevant descriptive statistics regarding participants are found in Table 1. Correlations (see Table 2) among the four outcome variables resulted in significant positive correlations between Time 1 and Time 2 FLCAS scores, as well as between Time 1 FLCAS scores and Time 1 and Time 2 PSS-4 scores. Significant negative correlations were found between Time 1 FLCAS scores and both Time 1 and Time 2 MAAS-A and CSES scores. These correlations are consistent with the theory and research of the constructs associated with these measures.

Data Analysis

Research question 1. What is the acceptability of meditation-based practices for students and their teachers? Qualitative data from feedback questionnaires were analyzed using summative content analysis (Hsieh & Shannon, 2005) in order to generate themes. Data trustworthiness was enhanced by having the researcher and the school-based psychologist at the site independently analyze the same feedback sheet. Each independently generated themes, and then met to resolve any discrepancies between themes and examples of them. Quantitative data in the forms of the student participants ranking preferred aspects of the guided meditation, as well as providing simple ‘Yes, No, or Maybe’ responses to questions (e.g., “Would you recommend the use of meditation techniques to your friends?”) were also analyzed using
descriptive statistics (i.e., frequency). Descriptive statistics were also used to analyze responses to a Likert-type scale provided to participating teachers on their feedback questionnaire given at the end of the study.

**Student feedback questionnaires.** The Time 2 student feedback questionnaires measured student perceptions regarding: (a) perceived anxiety reduction; (b) perceived academic enhancement; (c) perceived effectiveness of meditation; and (d) feedback regarding structure and delivery of the intervention.

**Perceived anxiety reduction.** Three questions addressed perceived anxiety reduction. The first question, “How did you feel after you practiced the [Guided Meditation or Music Relaxation]?” was answered on a five-choice prompt with the options: (a) very relaxed; (b) somewhat relaxed; (c) same as before; (d) not sure; and (e) less relaxed (see Figure 1). For students in the music meditation group, 33% reported feeling ‘very relaxed,’ 38% reported feeling ‘somewhat relaxed,’ 21% reported feeling ‘same as before,’ 8% reported feeling ‘not sure,’ and 0% reported feeling ‘less relaxed.’ For students in the guided meditation group, 26% reported feeling ‘very relaxed,’ 43% reported feeling ‘somewhat relaxed,’ 21% reported feeling ‘same as before,’ 6% reported feeling ‘not sure,’ and 4% reported feeling ‘less relaxed.’

The other two questions also addressed perceived anxiety reduction (Q2: “Did you feel that your mind became clear after the [Guided Meditation or Music Relaxation] practice?” Q3: “Did you feel less anxious in your [NAME] class?”) (see Figure 2). Both were answered on a three-choice prompt with the options: (a) yes; (b) no; and (c) maybe. Regarding Q2, responses from the students in the music meditation group resulted in 37% reporting ‘yes,’ 17% reporting ‘no,’ and 46% reporting ‘maybe.’ Responses from students in the guided meditation group
resulted in 38% reporting ‘yes,’ 26% reporting ‘no,’ and 36% reporting ‘maybe.’ Regarding Q3, responses from the students in the music meditation group resulted in 42% reporting ‘yes,’ 33% reporting ‘no,’ and 25% reporting ‘maybe.’ Responses from students in the guided meditation group resulted in 34% reporting ‘yes,’ 34% reporting ‘no,’ and 32% reporting ‘maybe.’

**Perceived academic enhancement.** Two questions addressed perceived academic enhancement resulting from their meditation intervention. The first question, “Did you feel the [guided meditation or music relaxation] practice was useful to enhance your concentration ability in the class?” was answered on a four-choice prompt with the options: (a) very useful; (b) somewhat useful; (c) not sure; and (d) not useful (see Figure 3). For students in the music meditation group, 23% reported ‘very useful,’ 40% reported ‘somewhat useful,’ 29% reported ‘not sure,’ and 8% reported ‘not useful.’ For students in the guided meditation group, 21% reported ‘very useful,’ 40% reported ‘somewhat useful,’ 30% reported ‘not sure,’ and 9% reported ‘not useful.’

The second question, “Did you feel the meditation technique affected your performance in your [NAME] class?” was answered on a three-choice prompt with the options: (a) yes; (b) no; or (c) maybe (see Figure 4). For students in the music meditation group, 17% responded ‘yes,’ 27% responded ‘no,’ and 56% responded ‘maybe.’ For students who answered “yes,” they were also asked “why” this was the case. Eleven students provided qualitative responses to this “why” prompt. Their responses resulted in the following themes.

*Relaxed/Calm.* (6 of 11 students). Examples were:

- “It made me feel somewhat relaxed.”
- “I could talk with friends easier and feel less scared.”

*Increased focus.* (5 of 11 students). Examples:
“I became relaxed and was able to focus on the class and not other things.”

“Everyone was so much more focused.”

For this same question, responses from students in the guided meditation group resulted in 17% responded ‘yes,’ 30% responded ‘no,’ and 53% responded ‘maybe.’ Ten students provided responses to the “why” prompt. Their responses resulted in the following themes.

**Increased focus.** (5 of 10 students). Examples were:

- “I was able to focus a lot more than before the meditation.”
- “It helped me wake up and feel more aware of what was happening around me.”
- “It made me forget everything else that was happening and be more focused on what was going on in the class allowing me to absorb more information.”

**Relaxed/calm.** (3 of 10 students). Examples were:

- “Made me more relaxed so I could do my work.”
- “It made me feel calmer.”

**General/Vague ‘good.’** (2 of 10 students). Examples were:

- “All of them.”
- “Good ways.”

**Perceived effectiveness of meditation.** Three questions addressed perceived effectiveness of meditation. All three questions were answered on a three-choice prompt with the options: (a) yes; (b) no; or (c) maybe (see Figure 5). For the first question, “Did you feel any changes in your life outside of class as a result of the [Guided Meditation or Music Relaxation] practice?” students who answered “yes,” were also asked “in what ways?” For students in the music meditation group, 15% reported ‘yes,’ 56% reported ‘no,’ and 29% reported ‘maybe.’ Six
students in the music meditation group provided responses to the “in what ways?” prompt. Their responses resulted in the following theme.

*Calmer.* (6 of 6 students). Examples were:

- “It’s in the first period, so I tend to be more relaxed throughout the day.”
- “Yes, because when I am stressed I will remember how to meditate and it will calm me down.”

For students in the guided meditation group, 11% reported ‘yes,’ 53% reported ‘no,’ and 36% reported ‘maybe.’ Ten students provided responses to the “in what ways?” prompt. Their responses resulted in the following themes.

*Calmer.* (6 of 10 students). Examples were:

- “Outside of class, I am much more calmer, and happy no matter what has happened.”
- “I’m more calm.”

*Enhanced mood/energy.* (4 of 10 students). Examples were:

- “More positivity.”
- “It makes me less sleepy.”

The other two related questions were Q7: “Are you going to use the [Guided Meditation or Music Relaxation] technique in your life in the future?” and Q8: “Would you recommend the use of the [Guided Meditation or Music Relaxation] technique to your friends?” For Q7, responses from students in the music meditation group resulted in 38% of students reporting ‘yes,’ 12% reporting ‘no,’ and 50% of students reporting ‘maybe.’ For this same question (Q7), responses from students in the guided meditation group resulted in 38% reporting ‘yes,’ 19% reporting ‘no,’ and 43% reporting ‘maybe.’ For Q8, responses from student in the music
meditation group resulted in 52% reporting ‘yes,’ 8% reporting ‘no,’ and 40% reporting ‘maybe.’ Responses from students in the guided meditation group resulted in 43% reporting ‘yes,’ 6% reporting ‘no,’ and 51% reporting ‘maybe.’

*Feedback regarding structure and delivery of the intervention.* Three questions addressed student feedback regarding the intervention itself. The first question, “What did you think about the way the [Guided Meditation or Music Relaxation] was presented?” asked for qualitative responses. Thirty-five students in the music meditation group and thirty-seven students in the guided meditation group responded to this prompt. The responses from the music meditation group resulted in the following themes.

*Implementation challenges* (11 of 35 students). Examples were:

- “A lot of people talked during the meditation, which made it work less. The music is calming, but I wish it was a little longer.”
- “It should be louder, when [the] meditation is on, people should stop talking and get off their phones to get the full experience.”
- “Well there's always too much noises so I'm unsure if it works.”

*Enjoyed intervention.* (11 of 35 students). Examples were:

- “It was a smart thing to do because it gave us time be calm and relaxed before class.”
- “I think it allowed us student[s] to get a break when we just walk into class to calm down and not have to get straight into more work. Instead we got to sit for a minute and chill out.”
- “I like how we started it at the beginning of class, and the doors and windows got closed, and the lights got turned off. That helped us concentrate way more.”

*Unsure.* (7 of 35 students). Examples were:
• “I guess it was fine, I don’t know.”
• “It’s okay, I guess.”

Did not like meditation. (4 of 35 students). Examples:
• “When the meditation was presented I thought it would be interesting to try. When we did it, I was bored because I wasn't doing anything.”
• “I think it's fine, I just don't like to mediate.

Repetitive. (2 of 35 students). Examples were:
• “Because of the constant repetition, playing the same track every single day, caused me to be annoyed by the song that is played every single morning.”
• “I didn’t like how we used the same music every day.”

The responses from the guided meditation group resulted in the following themes.

Implementation challenges. (14 of 37 students). Examples were:
• “It was fine, it just needs [to be] a little more clear on your part because all it says is ‘clear your mind’ while some people do not know how to clear their minds[,] go more in depth about it.” (note: the meditation script does not use the words “clear your mind”).
• “Nobody really listened to it.”
• “I think it could have been improved because people were talking during it.”

Enjoyed intervention. (11 of 37 students). Examples were:
• “The Meditation Technique was used to clear your mind and calm your body and sooth[e] your spirit.”
• “It was an interesting way to use meditation for students.”
• “It helped me process all my thoughts and get the bad thoughts out of my brain…I just had to breath[e].”

One student seemed to enjoy the opportunity to meditate, but cautioned the importance of knowing how to handle one’s thoughts and feelings that might result from meditation:

• “It helps to channel several feelings, but when you meditate seriously in your house about a problem you have…you end up more confused than before, you have to know how to take it.”

_Undecided_. (8 of 37 students). Examples were:

• “Thought it was alright, never saw the point.”

• “I don’t get why we have to meditate for.”

_Did not like guided meditation_. (4 of 37 students). Examples:

• “I didn't like the talking one because it made me stressed. I don't know why.”

• “I prefer a different narrator voice, to no voice at all.”

For students in the guided meditation groups, they were also asked to rank which elements of the meditation they liked the most, namely: (a) positive suggestion input; (b) music; or (c) guided meditation (see Figure 6). These ranked preferences resulted in 81% of students ranking music as the most preferred element, followed by positive suggestion input (11%) and guided meditation (8%). The students in the guided meditation groups were also asked to write “why” they compiled their rankings in this way. Forty-two students responded to this prompt. Their responses resulted in the following themes.

_Calming music and/or enjoys music_. (28 of 42 students). Examples were:

• “Music helps my mind [become] clear or be sent off to another place.”
“The music was very nice and relaxing to listen to and the suggestions for positive learning might have helped other people but personally it did not really do much for me.”

“Everyone loves music, it changes how a person feels or their mood.”

Did not like guided meditation (4 of 42 students). Examples were:

“The person talking made it harder for me to focus because the voice wasn't pleasant to hear.”

“I enjoyed listening to the music the most, and didn't pay attention to the positive suggestions for learning.”

Liked the guided meditation. (4 of 42 students). Examples were:

“Because the guide[d] meditation helps me relax.”

“Because it guides me [in] a new direction.”

“The music made me feel quite relaxed, and I really liked that part. Also, I do guided meditation/relaxation a lot in swim, and both in swim and in class it helped me. I liked the positive suggestion too.”

Did not like intervention. (3 of 42 students). Examples were:

“I choose that order because I think if anything that the music was the best part. Mind you that the music wasn't good, it was just simply the least cringe.”

“The meditation was last because I don’t like to meditate.”

Overall enjoyment of intervention elements. (3 of 42 students). Examples were:

“Because it make[s] us feel better in [the] morning and it give[s] [us] something to learn more about.”

“It felt very positive and relaxing.”
Lastly, students were asked to provide any additional comments regarding their experience with the intervention. Sixteen students in the music meditation group and thirteen students in the guided meditation group responded to this prompt. The responses from the music meditation group resulted in the following themes.

*Implementation challenges/suggestions.* (7 of 16 students). Examples were:

- “I think we should be given more time because meditating made everyone tired, so we should have time to rest after.”
- “Maybe if you could have a couple more songs/tracks to play to keep people from being bored.”
- “Kids in this class are too loud to meditate.”
- “I slept through most of it.”
- “Sometimes when the meditation period starts, other people would pretend to be laying down, but their phone would be under the desk doing other things.”

*Overall positive experience.* (6 of 16 students). Examples were:

- “We should meditate all day.”
- “It made my mind clear.”

*Did not like intervention.* (3 of 16 students). Examples were:

- “I don't like meditation music because it reminds me of something that makes me uncomfortable.”
- “Really scary.”

The responses from the students in the guided meditation group resulted in the following themes.

*Implementation challenges/suggestions.* (8 of 13 students). Examples were:
• “You should really take a day to replace the audio of the lady speaking, the music, and the things she talks about. She also came off as bored, and because she sounded so out of it, it was quite difficult to take it seriously.”

• “Turn off all lights and windows, reduce the stereo volume, some of the meditations were very loud and not relaxing.”

• “It should be a little longer, mainly the music.”

• “Get better music and focus on the mind more, not the learning aspect of the mediation.”

• “The nonexistent mediation music/voice is better, because when the man speaks it just throws me all off, and I can't focus on the music.”

*Overall positive experience.* (5 of 13 students). Examples were:

• “I feel all classes should do this before class starts.”

• “Learning this is good for me, and the other things we do make me happy every day.”

(note: this comment was from an ELL participant. Informal conversations with the ELL participants during and after the intervention revealed that the majority of the ELL participants expressed gratitude for having the intervention. In-person explicit expressions of gratitude did not occur during informal conversations with students in the non-ELL classes).

**Teacher feedback questionnaires.** All five participating teachers were provided with feedback questionnaires at the end of the study. The teachers were asked to rate on a five-point Likert-type scale (ranging from 1 = Very much disagree to 5 = Very much agree) on the following questions: (a) the language-level used was appropriate for this class; (b) the students
seemed interested in engaging in meditation; (c) the students understood the purpose of engaging in meditation; (d) the provided materials (e.g., audio tapes) were sufficient for implementing the intervention; (e) meditation is helpful for students; (f) the guided meditation was more helpful for the students than the relaxation music; and (g) are you more motivated to use meditation techniques in your classes in the future as a result of this intervention? Teacher ratings across these items indicated overall satisfaction with the intervention. The average ratings on the Likert-type scale with corresponding items are found in Table 2.

The teachers were also asked to provide written responses to the following questions: “What was the best/strongest aspect of the intervention?” and “What would you suggest for improving the intervention for classrooms/students?” Their responses to the first question resulted in the following themes.

*Calming/grounding routine* (5 of 5 teachers). Examples were:

- “Calming the students after they arrived in class and making them more receptive to the lesson.”
- “I was impressed how the 9th graders were so ‘into’ it. They reminded me daily to do it. It started the class off with a more grounded atmosphere.”
- “It’s nice to use it as an aide, so that the students start the class with a better disposition.”

Teacher responses to the second question resulted in the following themes.

*Student motivational challenges* (3 of 5 teachers). Examples:

- “It may work even better if more students were more motivated to learn a new language.”
- “Sometimes some students were noisy and distracting others during the meditation.”
*More meditation options* (2 of 5 teachers). Examples were:

- “After the survey they wanted to continue the meditation but all preferred to do it with only the music.”
- “Sometimes the students asked if there were other meditation tracks.”

In summary, the majority of the students in both the music meditation and the guided meditation groups found the intervention to be at least somewhat helpful in terms of perceived anxiety reduction and perceived academic enhancement. In terms of perceived effectiveness, about half of the students in both groups did not report experiencing changes in their life outside of class as a result of the in-class meditation practice, though the vast majority of the students reported at least considering practicing such meditation techniques in the future or recommending them to friends. Regarding the intervention itself, many of the students described challenges with the quality of the intervention implementation, most notably issues with distraction (e.g., other students talking during meditation and students using their cell phones). The vast majority of the students ranked music as the preferred element of the meditation, and several students reported that they preferred the musical portions of the meditation instead of the guided portions.

All five participating teachers reported finding the intervention to be helpful in terms of providing a calming or grounding start to their classes. Due to their perception of overall positive impacts on calming and/or grounding the students, the teachers reported feeling motivated to continue using meditation techniques in their classes. The teachers did not perceive differential impacts between the music and guided meditations, though some teachers noted that many students voiced preferring the music meditation. Ratings from the teachers also indicated that the
language-level of the guided meditation may have beyond the students’ comprehension and therefore the students may not have had a strong understanding of the purpose of engaging in meditation.

**Research questions 2-6.** A one-way between-groups Multivariate Analysis of Covariance (MANCOVA) was conducted to examine differences in L2 learning anxiety, perceived stress, trait mindfulness, and coping self-efficacy according to group (music meditation or guided meditation) (see Tables 4 and 5). Time 1 scores were inputted as the covariate. Although there are limitations to statistical power due to the aforementioned sample size, the other assumptions of normality of the outcomes, outliers, linearity, homogeneity of regression, multicollinearity and singularity, equality of covariance matrices, and equality of error variances were met.

**Group differences on outcomes variables.** There was an overall statistically significant difference between the groups on the outcome variables, Pillai’s Trace = .103, $F(4, 89) = 2.54, \ p = .045$, partial $\eta^2 = .103$. Given the significance of the overall test, the univariate main effects were examined. Significant univariate main effects were obtained for perceived stress (guided meditation lower), $F(1, 99) = 6.33, p = .014$, partial $\eta^2 = .064$ and trait mindfulness (music meditation lower), $F(1, 99) = 4.23, p = .043$, partial $\eta^2 = .044$. Coping self-efficacy was marginally significant (guided meditation higher), $F(1, 99) = 3.77, p = .055$, partial $\eta^2 = .039$. There were no other significant group or main effects.

**Impact of either music meditation or guided meditation on L2 learning anxiety.** L2 learning anxiety was not significantly different between the two groups ($p = .242$).

**Impact of either music meditation or guided meditation on perceived stress.** There was no statistically significant change for the music meditation group (Time 1, $M = 11.73, SD = 3.64$;
Time 2, \( M = 12.00, SD = 3.12 \) and a slight decrease for the guided meditation group (Time 1, \( M = 12.02, SD = 2.99 \); Time 2, \( M = 11.06, SD = 2.88 \)). Follow-up \( t \) tests were conducted and found this was significant for the guided meditation group (\( p = .034 \)), but this \( p \) value is not significant with the Bonferroni correction.

**Impact of either music meditation or guided meditation on trait mindfulness.** Trait mindfulness decreased slightly for the music meditation group (Time 1, \( M = 53.65, SD = 11.92 \); Time 2, \( M = 49.32, SD = 11.57 \)) and increased slightly for the guided meditation group (Time 1, \( M = 50.47, SD = 10.04 \); Time 2, \( M = 51.23, SD = 9.84 \)). Follow-up \( t \) tests were conducted with a Bonferroni correction and found that these Time 1 to Time 2 changes were significant for the music meditation group (\( p = .009 \)) and non-significant for the guided meditation group (\( p = .545 \)).

**Impact of either music meditation or guided meditation on coping self-efficacy.** Coping self-efficacy remained nearly constant for the music meditation group (Time 1, \( M = 144.75, SD = 47.30 \); Time 2, \( M = 144.79, SD = 57.50 \)) and increased for the guided meditation group (Time 1, \( M = 134.53, SD = 55.00 \); Time 2, \( M = 150.94, SD = 51.14 \)). Follow-up \( t \) tests were conducted with a Bonferroni correction and found that these Time 1 to Time 2 changes were non-significant for the music meditation group (\( p = .994 \)) and significant for the guided meditation group (\( p = .002 \)).

As to Research Question #6 (Will guided meditation have a statistically greater impact than music meditation for students in 2, 3, 4 and 5?), the MANCOVA analysis resulted in significant group differences on the outcome variables of perceived stress and trait mindfulness, as well as a marginally significant group difference for coping self-efficacy. Univariate \( t \) tests
revealed significant within-group differences from Time 1 to Time 2 for the guided meditation group in coping self-efficacy (significant increase).

**Discussion**

There is accumulating evidence (Zenner, Herrnleben-Kurz, & Walach, 2014; Klingbeil, et al., 2017) that contemplative practices, such as meditation and mindfulness-based interventions, can be effective tools in social and emotional learning (SEL) programming for school-age populations. In the last 15 years, researchers and practitioners have been exploring varying methods for adapting such practices to enhance their acceptability and effectiveness for children and adolescents. One such method, namely, bilingual guided meditation (BGM) in L2 classrooms, has shown promising initial results with college-level foreign language learners (Cai, 2017). The purpose of this current study was to examine whether this intervention could be acceptable and effective with high school students (as well as their teachers) in the context of L2 learning. The overall results of this study indicated that the use of meditation in L2 classrooms was acceptable by the majority of students and all of their teachers, and that the majority of students in both music meditation and guided meditation groups reported at least moderate benefits from their assigned intervention. Moreover, both student and teacher participants provided feedback informative to the development of subsequent iterations of meditation-based interventions for adolescents. The results and implications of this study are discussed in greater detail below.

**Acceptability of Meditation-Based Intervention**

Although challenges with social validity and acceptability of meditation and/or mindfulness-based practices with adolescents have been discussed in the literature (Thompson &
Gauntlett-Gilbert, 2008; Wisner, 2017), the majority of student participants in the current study reported at least considering the continued use of the meditation intervention and/or recommending it to friends. Specifically, 38% of students in both groups reported that they would continue using the meditation intervention, with an additional 50% in the music meditation group and 43% in the guided meditation group saying that they would ‘maybe’ continue using the intervention. Interestingly, a higher proportion of students in both groups reported that they would recommend the use of the intervention to their friends, with 52% and 43% of the music meditation and guided meditation groups respectively reporting ‘yes’ and 40% and 51% respectively reporting ‘maybe.’ The students’ overall openness to continue using their respective meditation intervention was consistent with their self-reports of experiencing anxiety reduction and academic enhancement in both intervention groups. Regarding anxiety reduction, more students reported feeling at least somewhat more relaxed (71% and 69% in the music meditation and guided meditation groups respectively) than they did report feeling less anxious in their class. In response to the question “Did you feel less anxious in your [NAME] class?” 42% and 34% of students in the music meditation and guided meditation groups respectively reported ‘yes,’ although an additional 25% and 32% in the two groups respectively reported that they ‘maybe’ felt less anxious in their class. These results indicate that not only did the students appear to attach different meanings to the words “relaxed” and “anxious,” 25-32% did not definitively report (‘yes’ or ‘no’) if they felt less anxious in their classes after a daily 10-week meditation intervention. These findings may be explained by research on emotional intelligence (EI) in adolescence, which has found that adolescent confidence to understand one’s own emotions and emotionally self-regulate may decrease somewhat during puberty due to changes in emotional sensitivities associated with puberty (Somerville, Jones, & Casey, 2010; Keefer,
Holden, & Parker, 2013). It remains unclear why the students reported more ‘relaxation’ relative to ‘anxiety reduction,’ though it may be that worries associated with their performance in their classes may be limiting their experience of anxiety reduction. This finding may also have been influenced by the close proximity of the students’ final exams to the collection time for Time 2 measures, as well as by other environmental factors such as having a long-term substitute and classroom and safety climate issues. Furthermore, only 17% of students in both groups reported ‘yes’ to the question “Did you feel the meditation technique affected your performance in your [NAME] class?” though about half of the students in both groups responded ‘maybe’ as well. Moreover, since the majority of adolescents in the U.S. have been found to report feeling “a lot of pressure to get good grades” (Pew Research Center, 2019), it may be that additional worries are impacting student perceptions of anxiety in their classes.

Both the music meditation and the guided meditation groups had similar patterns of responses on questions pertaining to acceptability, although 81% of the students receiving the guided meditation reported music as being their preferred element of the intervention. Several students also explicitly requested either reducing or eliminating the “voice” aspect of the meditation, in favor of listening to the “calming” music. Student feedback on the perceived benefits of the guided meditation also emphasized the relaxing/calming effects of the music (28 of 42 students) whereas only 4 of 42 students commented about the benefits of guided meditation. It may be that the high school students in this study had different levels of motivation about the use of strategies to enhance language learning outcomes than Cai’s (2017) college-level students. There are also substantial SES differences between Cai’s (2017) sample and the students in the current study. The bilingual guided meditation was introduced as a means of enhancing language learning outcomes by cultivating a relaxed and positive mindset. The
bilingual input via the guided meditation was intended to integrate language learning and exposure with the potential grounding effects of meditation. The students in Cai’s (2017) study not only commented on the perceived relaxing effects of the meditation, but also on their learning of some of the phrases in the meditation. The high school students in this study only commented on the perceived relaxing effects of the meditation. Given one teacher’s observation that the intervention “… may work even better if more students were more motivated to learn a new language,” it may be informative to future iterations of this intervention to examine the relationship between student motivation and acceptability.

Teacher acceptability of the intervention was high, with all five participating teachers reporting that they would continue using meditation-based interventions in their classes. Two of the teachers reported that they would use music-only meditations, as they perceived the students to enjoy the calming aspects of the music more than the guided meditation elements. One of the teachers also requested more meditation audio options, as this teacher observed some of her students requesting different kinds of meditations to be played. Overall, all five teachers reported that their assigned meditation intervention resulted in a “calming” or “grounding” influence that was perceived to be a useful routine in their daily classes.

**Impact on L2 Learning Anxiety.** In addition to the absence of significant group differences on L2 learning anxiety as measured by the FLCAS, there was no significant change from Time 1 to Time 2 in either group. This was an unexpected finding, given previous findings by Cai (2017) on L2 learning anxiety in college-level classes, as well as studies with adolescents receiving a beginning-of-class meditation intervention that resulted in decreased state and trait anxiety (e.g., Beauchemin et al., 2008). Student responses on the FLCAS also seemed to contradict their responses on the Time 2 feedback questionnaire, wherein a majority of the
students in both groups reported feeling at least somewhat more relaxed following the intervention, as well as a majority of the students reporting that they may have felt less anxious as a result of the intervention. As Horwitz (1986; 2016) points out, the FLCAS is constructed to measure a unique form of anxiety that arises in the L2 learning process, thus, it is possible that even if the students experienced increased relaxation and decreased anxiety, their specific anxiety towards L2 learning may have required additional intervention. It may also be worth noting that the percentage of students in this study that definitively reported anxiety reduction (42% and 34% in the music and guided meditation groups respectively) correlates with Horwitz’s (2016) observation that about 30% to 40% of L2 learners are anxious. Thus, it could be that the meditation intervention is more impactful for students who have more L2 anxiety. Meta-analyses of mindfulness (Hoffman et al., 2010) and meditation-based interventions (Chen et al, 2012) have found that such interventions have overall moderate effects on anxiety reduction for those with low to moderate anxiety symptoms, with the strongest effect sizes occurring for those with clinically significant levels of anxiety.

The lack of cross-validation between the students’ reports of increased relaxation and non-significant changes in FLCAS scores may also be explained by the relatively low percentage of students (17% in both groups) reporting that their respective intervention enhanced their performance in class. Although the students may have experienced increased relaxation, other factors, such as perceived language learning aptitude (Sparks et al., 2018) or perceived teacher support (Piechurska, 2011; Djafri & Wimbarti, 2018) may have mitigated the potential effects of the intervention on L2 anxiety.

**Impact on Perceived Stress.** Students in the guided meditation group significantly differed in their Time 2 perceived stress scores than students in the music meditation group when
controlling for Time 1 scores. However, the decrease in perceived stress from Time 1 to Time 2 for the guided meditation group did not reach statistical significance ($p = .034$) with the Bonferroni correction. These findings from the PSS-4 measure are convergent with the student feedback at Time 2 wherein about half of the students in both groups reported a definitive “no” to the question “Did you feel any changes in your life outside of class as a result of the [Guided Meditation or Music Relaxation] practice?” with 15% (music) and 11% (guided meditation) reporting a definitive “yes” to this question.

**Impact on Trait Mindfulness.** Similarly, there was a significant difference between the groups on Time 2 trait mindfulness when controlling for Time 1 scores. Trait mindfulness slightly increased for the guided meditation group but this change was not statistically significant. However, the trait mindfulness scores decreased from Time 1 to Time 2 for the music meditation group, though this was a very small decrease. This may be explained by the fact that mindful awareness and attention skills were not taught as part of the intervention, though research on the impacts of meditation on anxiety reduction (Chen et al., 2016) and the inverse relationship between anxiety and trait mindfulness (Charoensukmongkol, 2016; Fallah, 2017) led to the expectation of similar relationships in this study. Increased scores on the MAAS-A were also expected given that the majority of the students in both groups reported that their intervention was at least somewhat useful in improving their “concentration abilities” in their class.

**Impact on Coping Self-Efficacy.** Although students in the guided meditation group did not report a statistically significant ($p = .055$) group difference from the music meditation group at Time 2 when controlling for Time 1 scores, the guided meditation group’s increase from Time 1 to Time 2 was significant after the Bonferroni correction. This was the only outcome collected
via standardized measures that supported the original hypotheses. In the guided meditation script, one line was added from the original Cai (2017) script, namely, “You will be able to handle any challenges” in an attempt to foster a sense of coping self-efficacy through the meditation. Although the guided meditation group significantly increased their scores on the CSES, related significant changes on measures of L2 anxiety and trait mindfulness were not found, unlike Fallah’s (2017) study with Iranian college students learning English. It remains unclear why only coping self-efficacy significantly improved whereas the other theoretically related measures (e.g., L2 anxiety, perceived stress, and trait mindfulness) did not. It is possible that the hypnotic elements of the Suggestopedia method (Bancroft, 1999) that Cai (2017) integrated into her bilingual guided meditation cultivated a change in coping self-efficacy beliefs for the guided meditation group.

**Music Meditation and Guided Meditation.** Although the guided meditation was hypothesized to result in greater impacts on all four outcomes variables (L2 anxiety, perceived stress, trait mindfulness, and coping self-efficacy), significant group differences were only found on perceived stress and trait mindfulness, and even then the changes from Time 1 to Time 2 were non-significant for the guided meditation group. Coping self-efficacy was almost but not statistically significant between the two groups, and the Time 1 to Time 2 change was significant for the guided meditation group. Ten of 47 students from the guided meditation group responded to a qualitative prompt about changes in their lives resulting from the meditation. These students noted feeling calmer and having an enhanced mood/energy during the school day. Only 6 of 52 students in the music meditation group responded to this same question, and they similarly noted feeling calmer during the school day, though none referenced an enhanced mood/energy.
Feedback from both students and some of the participating teachers indicated that the music elements of the meditation were generally preferred over the guided voice/prompts. Of students in the guided meditation group, 81% ranked music as their most preferred element of the meditation, and 6 of 47 of these students left feedback comments indicating that they did not like the “voice” in the meditation. Following the Time 2 data collection, one teacher asked her three classes whether they wanted to continue the meditation, and all three classes voted to continue, though only with the music meditation (once the guided meditation group learned there was a music-only meditation option). No studies were found directly comparing adolescent preferences for different types of meditation. However, the wealth of research on the functions and impacts of listening to music have found that the regulation of emotional arousal and mood is a fundamental aspect of this experience (Schäfer et al., 2013). Emotional induction techniques through the use of music have also been found to lead to at least short-term changes in emotional arousal and mood (Ribeiro et al., 2019). The emotional appraisal of different kinds of music have also been found to impact the degree of mind-wandering, i.e., self-generated and referential thought (Taruffi et al., 2017). Mind-wandering has been associated with decreased capacities to attend to immediate tasks (Franklin, Smallwood, & Schooler, 2011). Thus, it may be the case that the participants who preferred the music elements of the guided meditation over the guided imagery element were experiencing the music itself as a conduit to emotional (e.g., “calming”) induction. This hypothesis is supported by research that for adolescents, one of the primary functions of listening to music is to relieve tension/stress (North, Hargreaves, & O'Neill, 2000). It is also the case that several students were observed to be on their cell-phones during the meditation time, and some of the teachers wondered whether (a lack of) motivation to learn a new language influenced student receptivity to the intervention. Therefore, it remains to be seen
whether adolescents do tend to have preferences for certain types of meditation, and whether other variables (such as motivation) influence the perceived function of meditation.

**Limitations and Directions for Future Research**

**Implementation fidelity challenges.** Typical of research conducted in applied settings, this study encountered unexpected contextual variables that may have impacted the results. For example, one of the participating teachers went on extended medical leave following the completion of the Time 1 measures, with this teacher’s three classes completing the intervention and Time 2 measures with a long-term substitute. What is more, when the Time 2 measures were being collected in one of these classes, a student threw a chair at another student just as the students began filling out the measures. Following this behavioral incident, several students in the class requested that the meditation be played in order to lessen the perceived tension felt by many students in the classroom. This was a promising sign in terms of the acceptability of the intervention, although the behavioral incident itself may still have influenced the emotional state of some participants. Moreover, this example of distracting behavior in the participating classrooms can be considered an extreme example of classroom behavioral management challenges faced by the participating teachers throughout the intervention. For instance, several students reported that noisy classmates and classmates on their phones were sources of distraction, it is likely that the potential impacts of the intervention were confounded by frequent challenges with behavior management issues. Although teacher reports revealed that these distracting behaviors often stemmed from less than four students at-a-time, it is likely that antecedent strategies to enhance student buy-in and/or provide students disinterested in the meditation alternative choices (choices incompatible with distracting students interested in participating) would enhance the quality of intervention implementation.
**Measurement.** Although the standardized measures used in this study demonstrated adequate levels of reliability, observations of the student participants and informal conversations with the participating teachers revealed that many students were observed to ‘rush’ through the measures. Some students also made comments during data collection reflective of their frustration with the length of the measures. Therefore, reliability and validity of measurement with this population may be enhanced through the administration of shorter, simpler measures. Standardized measures of language learning outcomes were also unable to be obtained in this study due to staffing and curriculum changes at the site. Future studies would benefit from the inclusion of a standardized language learning outcome measure that is convenient for participating teachers to implement into their existing curriculum. This would allow for a more direct examination of the potential impacts of the intervention on academic outcomes.

**Intervention content, structure, and delivery.** An interesting finding from this study was that although students in both groups endorsed much higher levels of perceived stress than found on normative samples of the PSS-4 (from samples less ethnically diverse and with lower proportions of low SES adolescents), their non-significant change in perceived stress post-intervention was accompanied by a significant (though small) decrease in trait mindfulness scores in the music meditation group. Moreover, out of 72 comments about the structure of the intervention, 15 comments from the students reflected uncertainty about the purpose of the intervention, such as “[I] thought it was alright, never saw the point” and “I don’t get why we have to meditate for.” Given these findings, as well as previous research finding that higher levels of perceived stress are strong moderators for positive impacts of mindfulness interventions (Donald & Atkins, 2016) and increases in mindfulness mediate decreases in perceived stress, even in populations facing significant stressors (Boyle et al., 2017), meditation interventions
such as those used in the current study may benefit from explicit psychoeducation and/or integration of mindfulness teaching as supports for the intervention. It may also be informative to examine whether the delivery of such psychoeducation has differential impacts if delivered by the in-class teacher, an outside professional trained in mindfulness and/or meditation, or through supplemental materials such as videos. Such procedural elements may be critical to the success of such interventions, given Cai’s (2017) success in delivering a meditation intervention in her own foreign language classes, as well as research emphasizing the importance of interventionists having their own mindfulness and/or meditation training (Crane et al., 2010, 2012). It may also be the case that training teachers to supplement meditation interventions in their classrooms with additional psychoeducation may enhance student perceptions of teacher support and empathy, which have been associated with lower levels of learning anxiety in students (Piechurska, 2011; Djafri & Wimbarti, 2018).

In addition to considering the role and competencies of the person or program delivering the intervention, researchers have also found that providing adolescents with leadership roles and the perception of choice in the intervention implementation enhanced intervention acceptability (Thompson & Gauntlett-Gilbert, 2008; Wisner & Starzec, 2016). The quality of the intervention materials was also criticized by some of the student participants, namely, the type of background music used and the quality of the voice in the guided meditation audio.

**Implications for Practice**

Findings from the current study inform potential changes to future iterations of such interventions with adolescents, as well as related avenues of research, and they also carry implications for practice. Despite several implementation challenges noted by the student
participants, both meditation interventions were found acceptable by the majority of the students and all of their teachers. Feedback from all of the participating teachers described the meditations as a “grounding” or “calming” exercise that functioned as a classroom routine so that all of the classes continued using some kind of meditation audio after the 10-week intervention period. Although this intervention was introduced to teachers and students as a means of enhancing language learning through the cultivation of a relaxed and positive learning mindset, student feedback focused almost entirely on the perceived calming effects of the meditation, rather than perceived effects on academic enhancement. Motivational variables may have thus influenced the somewhat higher acceptability of the music meditation over the guided meditation. Student feedback also reflected a desire for a greater variety of meditation audio, thus, acceptability for adolescent populations may be enhanced by providing more meditation options. In the guided meditation group, 2 of 47 students reported feeling “less relaxed” following the meditation, thus, it is important to provide students uncomfortable with meditation with alternative choices.

Conclusions

The overall results of this study are supportive of the emerging literature finding beneficial impacts for school-age students receiving interventions with meditation as a core component. This study adds to the literature by exploring the use of such interventions in the context of language learning. Although the impacts of guided meditation in the target language were not as robust as those found with college-level students, the majority of the high school students in this study reported at least moderate benefits in terms of relaxation from both music and guided forms of meditation. Feedback from the student participants revealed that developmentally-informed adaptations may be important for the acceptability and effectiveness
of such interventions. This feedback, as well as observations of the students’ participation in the intervention by their teachers, indicate that adaptations should focus on enhancing student understanding of and motivation for the intervention. Such adaptations can be integrated not only into the content of the intervention, but in the delivery (e.g., role of interventionist, knowledge/skill of interventionist, modality of presentation) as well. The theoretical implications of this study point towards the differential functions of meditation. Although there is considerable overlap between the different types of meditation, the adolescents in this study tended to perceive meditation as a means to relaxation. Student participants’ comments about relaxation were rarely complemented by comments on other potential benefits of meditation, such as enhanced self-awareness and insight. Moreover, their reports of increased feelings of relaxation did not necessarily lead to decreased L2 learning anxiety. These findings may indicate that in the absence of explicit training in the different functions of meditation, adolescents may adhere to preconceptions or folk beliefs about meditation, thus potentially narrowing an intervention’s impacts.
References


Table 1  
*Demographic and Class Data for Intervention Groups*

<table>
<thead>
<tr>
<th>Intervention Group</th>
<th>Music Meditation (n = 52)</th>
<th>Guided Meditation (n = 47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22 (42%)</td>
<td>21 (45%)</td>
</tr>
<tr>
<td>Female</td>
<td>30 (48%)</td>
<td>25 (53%)</td>
</tr>
<tr>
<td>Non-binary/Third Gender</td>
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<td>0</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>0</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Language Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>35 (67%)</td>
<td>28 (60%)</td>
</tr>
<tr>
<td>Japanese</td>
<td>17 (33%)</td>
<td>11 (23%)</td>
</tr>
<tr>
<td>ELL</td>
<td>0</td>
<td>8 (17%)</td>
</tr>
</tbody>
</table>

*Note.* Ages ranged from 14 to 18 (M = 15.59, SD = 1.09). Grade levels ranged from 9th to 12th grade, with most classes featuring a mix of grades, with the exception of one 9th grade Japanese class.
Table 2  

**Correlations Among Outcome Variables**

<table>
<thead>
<tr>
<th></th>
<th>FLCAS_Time1</th>
<th>FLCAS_Time2</th>
<th>PSS_Time1</th>
<th>PSS_Time2</th>
<th>MF_Time1</th>
<th>MF_Time2</th>
<th>CSE_Time1</th>
<th>CSE_Time2</th>
</tr>
</thead>
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<td>.343**</td>
<td>.344**</td>
<td>-.239*</td>
<td>-.354**</td>
<td>-.390**</td>
<td>-.314**</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>.001</td>
<td>.000</td>
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<td>.000</td>
<td>.000</td>
<td>.000</td>
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<td>-.315**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
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<td>.000</td>
<td>.000</td>
<td>.001</td>
</tr>
<tr>
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<td>.297**</td>
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<td>-.408**</td>
<td>-.478**</td>
<td>-.412**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
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<td>.003</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
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<td>.475**</td>
<td>.549**</td>
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<td>-.490**</td>
<td>-.486**</td>
<td>-.526**</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
<td>.000</td>
<td>.001</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
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</tr>
<tr>
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<td>-.441**</td>
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<td>.544**</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>.007</td>
<td>.000</td>
<td>.001</td>
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<td>.000</td>
<td>.000</td>
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</tr>
<tr>
<td>MF_Time2</td>
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<td>-.515**</td>
<td>-.408**</td>
<td>-.490**</td>
<td>.544**</td>
<td>1</td>
<td>.467**</td>
<td>.411**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>CSE_Time1</td>
<td>-.390**</td>
<td>-.352**</td>
<td>-.478**</td>
<td>-.486**</td>
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<td>.467**</td>
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<td>.763**</td>
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<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
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<td>.000</td>
<td>.000</td>
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<tr>
<td>CSE_Time2</td>
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<td>-.315**</td>
<td>-.412**</td>
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<td>.274**</td>
<td>.411**</td>
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</tr>
<tr>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
<td>.000</td>
<td>.006</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Note.** N = 99

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).
Table 3

Likert-type Items on Teacher Feedback Form

<table>
<thead>
<tr>
<th>Item</th>
<th>Average Rating (n = 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The language-level used was appropriate for this class.</td>
<td>3.20</td>
</tr>
<tr>
<td>The students seemed interested in engaging in meditation.</td>
<td>4.00</td>
</tr>
<tr>
<td>The students understood the purpose of engaging in meditation.</td>
<td>3.20</td>
</tr>
<tr>
<td>Meditation is helpful for students.</td>
<td>4.80</td>
</tr>
<tr>
<td>The guided meditation was more helpful for the students than the</td>
<td>3.00</td>
</tr>
<tr>
<td>music meditation.</td>
<td></td>
</tr>
<tr>
<td>Do you think most of the students will be interested in using</td>
<td>3.60</td>
</tr>
<tr>
<td>meditation in their own lives in the future?</td>
<td></td>
</tr>
<tr>
<td>Are you more motivated to use meditation techniques in your classes</td>
<td>4.80</td>
</tr>
<tr>
<td>in the future as a result of this intervention?</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* 1 = Very Much Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Very Much Agree
Table 4

Descriptive Statistics for Outcome Variables

<table>
<thead>
<tr>
<th>Intervention Group</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL CAS (T1)</td>
<td>98.88</td>
<td>17.25</td>
</tr>
<tr>
<td>Music Meditation</td>
<td>96.17</td>
<td>23.17</td>
</tr>
<tr>
<td>Guided Meditation</td>
<td>97.60</td>
<td>20.22</td>
</tr>
<tr>
<td>FL CAS (T2)</td>
<td>101.13</td>
<td>16.80</td>
</tr>
<tr>
<td>Music Meditation</td>
<td>97.00</td>
<td>20.85</td>
</tr>
<tr>
<td>Guided Meditation</td>
<td>99.17</td>
<td>18.85</td>
</tr>
<tr>
<td>PSS (T1)</td>
<td>11.73</td>
<td>3.64</td>
</tr>
<tr>
<td>Music Meditation</td>
<td>12.02</td>
<td>2.99</td>
</tr>
<tr>
<td>Guided Meditation</td>
<td>11.87</td>
<td>3.33</td>
</tr>
<tr>
<td>PSS (T2)</td>
<td>12.00</td>
<td>3.12</td>
</tr>
<tr>
<td>Music Meditation</td>
<td>11.06</td>
<td>2.88</td>
</tr>
<tr>
<td>Guided Meditation</td>
<td>11.56</td>
<td>3.03</td>
</tr>
<tr>
<td>MAAS-A (T1)</td>
<td>53.65</td>
<td>11.92</td>
</tr>
<tr>
<td>Music Meditation</td>
<td>50.47</td>
<td>10.04</td>
</tr>
<tr>
<td>Guided Meditation</td>
<td>52.14</td>
<td>11.13</td>
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<tr>
<td>MAAS-A (T2)</td>
<td>49.33</td>
<td>11.57</td>
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<tr>
<td>Music Meditation</td>
<td>51.23</td>
<td>9.84</td>
</tr>
<tr>
<td>Guided Meditation</td>
<td>50.23</td>
<td>10.77</td>
</tr>
<tr>
<td>CSES (T1)</td>
<td>144.75</td>
<td>47.30</td>
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<tr>
<td>Music Meditation</td>
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<td>55.00</td>
</tr>
<tr>
<td>Guided Meditation</td>
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<td>51.09</td>
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<tr>
<td>CSES (T2)</td>
<td>144.79</td>
<td>57.50</td>
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<tr>
<td>Music Meditation</td>
<td>150.94</td>
<td>51.14</td>
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<tr>
<td>Guided Meditation</td>
<td>147.71</td>
<td>54.38</td>
</tr>
</tbody>
</table>

Note. Total participants = 99. Music Meditation participants = 52. Guided Meditation participants = 47.

FLCAS = Foreign Language Classroom Anxiety Scale, PSS = Perceived Stress Scale (short form), MAAS-A = Mindful Attention Awareness Scale-Adolescent, CSES = Coping Self-Efficacy Scale.
Table 5

**MANCOVA Results**

<table>
<thead>
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<th>Group effects</th>
<th>Pillai’s Trace</th>
<th>$F$</th>
<th>$df$</th>
<th>$p$</th>
<th>partial $\eta^2$</th>
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<tr>
<td></td>
<td>.103</td>
<td>2.54</td>
<td>4, 89</td>
<td>.045</td>
<td>.103</td>
</tr>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLCAS</td>
<td>1.38</td>
<td>1, 99</td>
<td></td>
<td>.242</td>
<td>.015</td>
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<tr>
<td>PSS</td>
<td>6.33</td>
<td>1, 99</td>
<td></td>
<td>.014</td>
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<tr>
<td>MAAS-A</td>
<td>4.23</td>
<td>1, 99</td>
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<td>.044</td>
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<td>CSES</td>
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<td>1, 99</td>
<td></td>
<td>.055</td>
<td>.039</td>
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</tbody>
</table>

*Note.* FLCAS = Foreign Language Classroom Anxiety Scale, PSS = Perceived Stress Scale (short form), MAAS-A = Mindful Attention Awareness Scale-Adolescent, CSES = Coping Self-Efficacy Scale.
Figure 1. Frequency distribution graph of student feedback responses to Q1: “How did you feel after you practiced the [Guided Meditation or Music Relaxation]?”
Figure 2. Frequency distribution graph of student questionnaire responses to Q2: “Did you feel that your mind became clear after the [Guided Meditation or Music Relaxation] practice?” and Q3: “Did you feel less anxious in your [NAME] class?”
Figure 3. Frequency distribution graph of student responses to Q4: “Did you feel the [guided meditation or music relaxation] practice was useful to enhance your concentration ability in the class?”
Figure 4. Frequency distribution graph of student responses to Q5: “Did you feel the meditation technique affected your performance in your [NAME] class?”
Figure 5. Frequency distribution graph of student responses to Q6: “Did you feel any changes in your life outside of class as a result of the [Guided Meditation or Music Relaxation] practice?” Q7: “Are you going to use the [Guided Meditation or Music Relaxation] technique in your life in the future?” and Q8: “Would you recommend the use of the [Guided Meditation or Music Relaxation] technique to your friends?”
Figure 6. Frequency distribution graph of student feedback response to ranking most preferred element of the meditation (note: Question only for guided meditation group participants).
Appendix A

Suggested Scripts for Introducing Music Meditation and Guided Meditation Groups

**Music Meditation Group:**

Dear students, this term I thought we could try something new in the beginning of class. I know you all are very busy and have a lot of stress, so I thought we could spend the first three minutes of each class listening to some relaxing music. I hope you can enjoy this time and relax to the flow of the music for three minutes. After we enjoy the music together, we can continue with our lesson. How does this sound?

**Guided Meditation Group:**

Dear students, this term I thought we could try something new in the beginning of class. I know you all are very busy and have a lot of stress, so I thought we could spend the first three minutes of class engaging in a (bilingual) guided meditation. This guided meditation encourages us to relax and feel positive about our [language] learning experience. I hope you all can keep your mind open and try your best to follow the words in the guided meditation. Here, before we listen to it, let’s go over the words together, and I can answer any questions you might have about the meaning.
Appendix B

Guided Meditation Script

_Gently close your eyes_

*Enjoy the flow of the music for a few minutes*

_The music will relax your body and mind_*

_No* your body is relaxed and your mind is alert*

_We are going to start our [language] learning_

_Our [language] learning will be interesting and easy_

_You will be able to handle any challenges_

_We will have a joyful learning time together today_

_Now, gently open your eyes*_
Appendix C

Meditation Intervention Integrity Check Form

Teacher(s): _____________________           Date: _______      Recorder:_________________

Instructions: Meet with participating teachers once every two weeks and have discussion with the following prompts:

1. Are you experiencing any challenges implementing the intervention?

Notes:

2. Is the meditation audio being played at the beginning of every class?

Notes:

3. How are the students responding to the intervention?

Notes:

Next steps to resolve issues:
Appendix D

Feedback Sheet for Students (based on Cai, 2017)

This questionnaire asks how you feel about our Guided Meditation in the classroom. Your feedback is very important to us. Please answer all the 11 questions below. Thank you.

1) How did you feel after you practiced the Guided Meditation?
   ___Very relaxed ___Somewhat relaxed ___Same as before ___Not sure ___Less relaxed

2) Did you feel that your mind became clear after the Guided Meditation practice?
   ___Yes ___No ___Maybe

3) Did you feel less anxious in your English class?
   ___Yes ___No ___Maybe

4) Did you feel the BGM® practice useful to enhance your concentration ability in the class?
   ___Very useful ___Somewhat Useful ___Not sure ___Not useful

5) Did you feel the anxiety reduction meditation technique affected your performance in your English class?
   ___Yes ___No ___Not sure

If yes, in which way?
6) Did you feel any change in your life outside of class as a result of the Guided Meditation practice?
   ___Yes  ___No  ___Maybe   If yes, in which way?

7) Are you going to use the anxiety reduction meditation technique in your life in the future?
   ___Yes  ___No  ___Not sure

8) Would you recommend the use of the anxiety reduction meditation technique to your friends?
   ___Yes  ___No  ___Maybe

9) What did you think about the way the guided meditation was presented?

10) Which elements did you like most (place them in order of 1, 2, 3: 1 is the most liked, 3 is the least liked)?
    ___positive suggestion input ___music, ___guided meditation
    Why?

11) Any other comments?

12) Demographic Info:
    Date of Birth: ________________
    Gender: ________________
    Language spoken at home (parents): ________________________
Appendix E

Feedback Form for Teachers

Dear Teacher:

Thank you for your participation in this study on meditation in the classroom. In order to improve future work in this area, I would appreciate your feedback on the questions below:

1. Please rate your satisfaction with the intervention in the areas listed below. Use the following scale:

<table>
<thead>
<tr>
<th>Rating</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very much disagree</td>
<td>Disagree</td>
<td>Neither agree nor disagree</td>
<td>Agree</td>
<td>Very much agree</td>
</tr>
</tbody>
</table>

RATING

_____ A. The language-level used was appropriate for this class

_____ B. The students seemed interested in engaging in meditation

_____ C. The students understood the purpose of engaging in meditation

_____ D. The provided materials (e.g., audio tapes) were sufficient for implementing the intervention.

_____ E. Meditation is helpful for students

_____ F. The guided meditation was more helpful for the students than the music meditation

_____ G. Do you think most of the students will be interested in using meditation in their own lives in the future?

_____ H. Are you more motivated to use meditation techniques in your classes in the future as a result of this intervention?

2. What was the best/strongest aspect of the intervention?

3. What would you suggest for improving the intervention for classrooms/students?