MINDFULNESS MEDITATION TRAINING FOR SPIRITUAL STRUGGLES: 
A RANDOMIZED CONTROLLED TRIAL

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ABSTRACT
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A growing literature demonstrates that spiritual struggles can have significant long-term negative consequences for psychological and medical adjustment (Abu-Raiya, Pargament, Krause, & Ironson, in press; Exline, 2013), making these struggles a potentially important target for intervention. A primary purpose of this study was to test the efficacy of one possibly crucial component of existing interventions for spiritual struggles—mindfulness training. A secondary aim of this study was to examine the incremental utility of explicitly addressing spiritual struggles and spiritual resources within a mindfulness intervention.

In the present study, 62 college students reporting modest levels of spiritual struggles were randomly assigned to a control condition or one of three online, month-long intervention conditions—mindfulness meditation training (M), mindfulness meditation training with spiritual content (MS), and progressive muscle relaxation training (PMR). Outcomes were assessed before and after the intervention, and again a month later. Results from 46 study-completers indicated that the M condition experienced greater improvements in somatic distress and spiritual growth relative to other conditions, though evidence for greater diminishment of spiritual struggles specifically was tenuous. Results failed to support the superior efficacy of the MS condition over other conditions. On the contrary, the M condition experienced greater improvements in outcomes relative to the MS condition.

These results extend prior research supporting the efficacy of mindfulness in promoting improved psychological functioning in a range of populations (e.g. Grossman, Niemann, Schmidt & Walach, 2004) and are consistent with a growing number of studies reporting that mindfulness training leads to improvements in spiritual functioning (e.g., Carmody, Reed,
Kristeller & Merriam, 2008; Oman, Shapiro, Thoresen, Flinders, Driskill, & Plante, 2007).

These results also suggest that caution should be used when explicitly addressing spirituality in brief mindfulness training for individuals struggling spiritually.
To Neil, with me every step of the way.
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INTRODUCTION

A growing literature demonstrates that spiritual struggles can have significant long-term negative consequences for psychological, medical and spiritual adjustment (Exline, 2013), making it a potentially important target for intervention. A small number of interventions have been developed for spiritual struggles (e.g., Dworsky, Pargament, Gibbel, Krumrei, Faigin et al., 2013), but controlled designs are lacking. This study will employ a controlled design to test the efficacy of an online mindfulness intervention for reducing distress related to spiritual struggles. Given that some mindfulness teachers suggest addressing spiritual content may be useful in mindfulness training, this study will also test whether adding spiritual material to mindfulness training enhances its efficacy. Here I review the literature on the adjustment-related consequences of spiritual struggles and provide a rationale for mindfulness as an intervention. I conclude by describing reasons to examine the incremental utility of explicitly addressing spirituality in mindfulness training.

Spiritual Struggles

While indicators of religious and spiritual engagement have been associated with resilience (e.g., Ano & Vasconcelles, 2005; Pargament, 1997), there is a growing literature demonstrating that some aspects of religion and spirituality can cause strain. These are broadly referred to as religious and spiritual problems (Murray-Swank & Murray-Swank, 2013; Pargament, 2007) and include compulsive rituals centered around religious purity, religiously-based aggression, and spiritually- or religiously-based passivity in the face of problems that require action.

One potential indicator of spiritual or religious problems that has received particular attention in the literature is spiritual struggle, which refers to distress and discord stemming from
religion and spirituality. When using a spiritual coping framework, spiritual struggles may be conceptualized as originating in stressors that destabilize a person’s spirituality, exacerbating the individual’s distress over and above what the original stressor would have precipitated.

Spiritual struggles may be categorized as divine, intrapsychic, or interpersonal (see Pargament, Murray-Swank, Magyar & Ano, 2005, for review). Divine struggles are characterized by turmoil in one’s relationship to the divine—for instance, feeling angry with (Exline & Martin, 2005), abandoned by or punished by God (e.g., Pargament, Koenig, Tarakeshwar & Hahn, 2004). Intrapsychic spiritual struggles include religious doubt (e.g. Kooistra & Pargament, 1999) and feelings of inadequacy or guilt regarding one’s inability to adhere to religious standards of virtue (Exline, 2002). Interpersonal struggles encompass tensions in one’s relationship with a spiritual community (e.g., Krause, Chatters, Melzter, & Morgan, 2000) or with friends and family regarding spiritual matters.

Data suggest that spiritual struggles are not uncommon. Regarding divine struggles, 62% of a national sample reported that they were sometimes angry at God, and 2.5% indicated frequent anger (Exline, Park, Smyth & Carey, 2011). The 1999 General Social Survey revealed that 23.2% of a national sample reported that they feel God may be punishing them and 12% reported wondering whether God had abandoned them (Fetzer Institute, 1999). In a sample of university students, 26% reported at least moderate distress related to religious or spiritual concerns (Johnson & Hayes, 2003). Similarly, 28% of a sample of parochial high school students reported current religious doubts, and only 9% indicated that had never had religious doubts (Kooistra & Pargament, 1999).

Interestingly, the experience of spiritual struggles is not limited to those who identify as religious or spiritual, and may in some cases be higher among non-affiliates. For example, in a
national sample, those indicating no religious affiliation reported more anger toward God than affiliates (Exline, Park, Smyth & Carey, 2011). Similarly, in a sample of college students, non-believers reported greater difficulty forgiving God than believers (Exline, Yali & Lobel, 1999).

**Spiritual Struggles and Adjustment**

A growing literature suggests that spiritual struggles are often a robust predictive of poor psychological and medical adjustment (Ano & Vasconcelles, 2005; Lucero, 2012). Lucero (2012) calculated an effect size (Zr) of 0.192 (95% C.I., 0.17 to 0.21) for the concurrent association between negative religious coping (NRC; an indicator of spiritual struggles) and psychological maladjustment, and an effect size of 0.072 (95% C.I., 0.04 to 0.10) for the concurrent association between NRC and medical maladjustment. Effect sizes for the longitudinal prediction of psychological and medical maladjustment from NRC were somewhat larger than those calculated for the concurrent prediction of adjustment from NRC (0.220 for psychological maladjustment and 0.094 for medical maladjustment; Lucero, 2012).

In addition to these findings across studies, carefully designed individual studies also suggest that spiritual struggles play a causal role in predicting adjustment. For example, in a sample of cancer patients, anger toward God at baseline predicted adjustment one year later, even after controlling for baseline adjustment and concurrent anger toward God (Exline, Park, Smyth & Carey, 2011). Two studies of an elderly medical population found that spiritual struggles longitudinally predicted greater risk of mortality, as well as declines in psychological, physical and spiritual health, even after accounting for baseline health and demographic variables (Pargament, Koenig, Tarakeshwar & Hahn, 2001; Pargament, Koenig, Tarakeshwar & Hahn, 2004). As another example, a study using structural equation modeling supported the causal role of spiritual struggles in fostering distress in a sample of orthodox Jews reporting
“worry and stress” (Pirutinsky, Rosmarin, Pargament, & Midlarsky, et al 2011). A model reflecting Primary Spiritual Struggles—in which spiritual struggles predict pathology—was compared to models reflecting Secondary Struggles, where pathology predicts spiritual struggles, and Complex Struggles, in which struggles and pathology have a reciprocal relationship. Analysis of two-week longitudinal data found that the Primary Struggles model fit the data best.

Note, however, that some studies have failed to find long-term negative effects of spiritual struggles. For instance, in a sample of heart-surgery patients, pre-surgery negative religious coping did not predict depression 30 months later after controlling for demographic, cardiac-related, religious and other psychosocial covariates (Ai, Ladd, Peterson, Cook, Shearer, & Koenig, 2010). Similarly, in an HIV/AIDS sample, only small associations were found between baseline negative religious coping and adjustment 12 to 18 months later when controlling for baseline adjustment and relevant covariates (Trevino, Pargament, Cotton, Leonard, Hahn, Caprini-Faigin, & Tsevat, 2010). It is not yet clear why some studies find non-significant or small effects for spiritual struggles, though emerging literature on moderators of the effect of spiritual struggles suggest that factors such as degree of religiousness (e.g., Park, Wortmann & Edmondson, 2011) and chronicity of spiritual struggles (e.g., Pargament, Koenig, Tarakeshwar & Hahn, 2004) may explain some of this observed variation in effects.

In summary, though some studies find only small effects, the current literature suggests that spiritual struggles may have important long-term negative consequences for psychological and medical adjustment.

**Interventions for Spiritual Struggles**

In light of this research on consequences of spiritual struggles, a number of interventions for spiritual struggles have been developed and tested. Two such interventions have been
developed for use in medical populations—one designed by Cole and Pargament (1999) for individuals with cancer, and another developed by Tarakeshwar, Pearce and Sikkema (2005) for adults with HIV/AIDS. Cole and Pargament’s (1999) intervention, called *Recreating Your Life*, was designed around a spiritual coping framework—aiming to help individuals with cancer harness spiritual resources and resolve struggles. Techniques addressing spiritual struggles included disclosure of struggles to God, guided exercises in which individuals were asked to imagine God listening to their loss and pain, and encouragement and guidance in reframing the meaning of their cancer in benevolent ways. A pilot study of cancer patients found that those who attended *Recreating Your Life* demonstrated stability in depression and pain severity from pre to post-test, while these symptoms worsened in a no-treatment control group assessed over the same time period (Cole, 2005).

Also based on a spiritual coping framework, Tarakeshwar and her colleagues (2005) developed an intervention to help individuals with HIV/AIDS harness positive spiritual coping strategies and manage spiritual struggles. Generally spiritual struggles were addressed by encouraging participants to reflect on ways their spirituality may cause distress and to identify and apply spiritual resources to these struggles. The 13 individuals who completed this intervention as a part of a pilot study demonstrated significant increases from pre- to post-test in self-rated religiosity and positive religious coping scores and significant decreases in negative religious coping scores and depression (Tarakeshwar, Pearce & Sikkema, 2005).

Other interventions have been developed targeting student and mental health populations who are struggling spiritually. Dworsky, Pargament, Gibbel, Krumrei, Faigin and their colleagues (2013) developed an intervention called *Winding Road* for college students struggling spiritually. As a part of the intervention, participating students described and shared their
spiritual struggles and were provided with guidance to increase the flexibility, integration, and differentiation of their spiritual perspectives. Pilot data suggest that this intervention was effective in reducing spiritual struggles and psychological distress and facilitating perceived congruence between spiritual values and behavior (Dworsky et al., 2013). As another example, Murray-Swank and Pargament (2005) developed and piloted a spiritually integrated intervention (Solace for the Soul) for victims of childhood sexual abuse through such techniques as encouraging clients to reflect on difficult spiritual questions, journaling about spiritual struggles and anger towards God, loving-kindness meditation, and deep breathing exercises framed as a way to connect with God (see Murray-Swank, 2003). A pilot study provided initial support for the efficacy of this intervention in improving spiritual well-being (Murray-Swank & Pargament, 2005). Yet another intervention addressing spiritual struggles is a psycho-educational group designed for individuals with serious mental illness (Phillips, Lakin & Pargament, 2002). This intervention was not evaluated empirically, but informal feedback suggested that participants were satisfied with the intervention, grateful for the opportunity to participate, and did not feel spiritually coerced.

Interventions addressing spiritual struggles that have yet to be evaluated empirically include Rachel’s Vineyard, a group intervention for women grieving an abortion (Burke & Cullen, 1995); Evangelical Renewal Therapy, an intervention for evangelical Christians (Saucer, 1991); and an interreligious encounter group designed for clients with spiritual distress (Genia, 1990). A number of untested self-help books have also been written addressing spiritual struggles, including Sit down, God... I’m Angry (Smith, 1997); Angry with God (Novotni & Petersen, 2001); and When Bad Things Happen to Good People (Kushner, 1981). Books addressing spiritual struggles from a non-theistic perspective include When Things Fall Apart
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(Chodron, 1997) and *A Path with Heart* (Kornfield, 2003). Historical texts that are frequently looked to for their treatment of spiritual struggles include *Dark Night of the Soul* (De La Cruz/Reinhardt, 1957) and *The Cloud of Unknowing* (Walsh [ed.], 1981).

These treatments describe a range of ways to manage struggles, including the following: normalizing struggles (e.g., Smith, 1997; Novotni & Peterson, 2001; Genia, 1990; Phillips, Lakin & Pargament, 2002); naming the struggles (e.g., Kornfield, 2003); communicating struggles to others and to God (e.g., Zornow, 2001; Genia, 1990; Phillips, Lakin & Pargament, 2002); acknowledging sinfulness (e.g., Burke & Cullen, 1995; Saucer, 1991); visualizing God as forgiving, benevolent, and/or sympathetic with struggles (e.g., Burke & Cullen, 1995); reframing struggles as an opportunity for growth (Phillips, Lakin & Pargament, 2002; De La Cruz/Reinhardt, 1957; Kornfield, 1993); encouraging persistence in the face of continued uncertainty and struggles (Chodron, 1997; De La Cruz/Reinhardt, 1957; Kornfield, 1993; Walsh [ed.], 1981); renewing commitment and intention to cultivate closeness with God (Walsh [ed.], 1981; Saucer, 1991); letting go of desire for control over interior experience (Chodron, 1997; De La Cruz/Reinhardt, 1957); and meditative techniques aimed at developing awareness and acceptance of struggles (Chodron, 1997; Kornfield, 1993).

Notably, some of the tools described in treatments of spiritual struggles—even in Judeo-Christian sources—share elements in common with Buddhist-derived mindfulness training (described in more detail below), including letting go of desire for control over interior experience, meditative instructions encouraging awareness and acceptance of struggles, normalizing struggles, and reframing struggles as an opportunity for growth. A few of the empirically tested interventions described also contain mindful elements. For instance, in *Winding Road*, participants are led to identify feelings and sensations related to their experience...
of the sacred and of their spiritual struggles (unpublished Winding Road materials; Desai, Faigin, Gear, Gibbel, Krumrei et al., 2008). As another example, Murray-Swank’s (2003) *Solace for the Soul* includes body awareness exercises and encouragement to approach rather than turn away from spiritual questions and concerns. The mindful-like elements in these and other treatments of struggles raise the possibility that mindfulness training may be a particularly useful intervention for spiritual struggles.

**Mindfulness for Spiritual Struggle**

Mindfulness training refers to a set of awareness practices derived from the Buddhist Insight Meditation tradition and aimed at cultivating the quality of mindfulness. While theorists and researchers face challenges in arriving at a definition of mindfulness (see Grossman, 2008; Davis, Lau & Cairns, 2009), a commonly cited definition is that of pioneering mindfulness trainer and researcher Jon Kabat-Zinn—“paying attention in a particular way: on purpose, in the present moment, and non-judgmentally,” (p. 4., Kabat-Zinn, 1994). Kabat-Zinn is credited with developing the earliest standardized therapeutic mindfulness intervention in the 1970’s and early 1980’s. Entitled Mindfulness-Based Stress Reduction (MBSR), this intervention was designed as an adjunct to medical treatment for medically ill individuals and consists of eight 1.5-hour sessions with prescribed practice between sessions. MBSR and similar mindfulness interventions are typically centered around a mindfulness-of-breathing meditation, in which the practitioner focuses attention on the breath, notes distracting thoughts or feelings that intrude on this focus, and gently brings attention back to the breath. Other mindfulness exercises are used as well, such as mindfulness of thoughts, mindfulness of sensations in different parts of the body, or mindfulness of sounds in the environment. The stated goal of MBSR is to begin to skillfully use mindful awareness in everyday life to cope with pain and distress and to experience what
Kabat-Zinn calls “wholeness”, the quality of being in touch with a sense of calm and an awareness of some unchanging True part of oneself, even in the midst of suffering and distress (Kabat-Zinn, 1990).

A small body of literature supports the efficacy of MBSR and similar interventions in improving health and mitigating distress in medical populations. A meta-analysis of 20 studies of MBSR (Grossman, Niemann, Schmidt & Walach, 2004) found effect sizes of about 0.5 for pre- to post-test improvement on measures of physical ($d = 0.42$; 95% C.I., 0.34 to 0.50) and mental health ($d = 0.50$; 95% C.I., 0.43 to 0.56). Among the five controlled studies examining physical health variables included in this meta-analysis, MBSR was found to have a between-condition effect size of 0.53 (95% C.I., 0.28 to 0.81). Another meta-analysis of eight randomized controlled studies of MBSR in chronic disease patients yielded a controlled pre-post effect size (the pre-post effect sizes of MBSR groups minus pre-post effect sizes of control groups) of 0.34 (95% C.I., 0.13 to 0.50) for psychological distress (Bohlmeijer, Prenger, Taal & Cuijpers, 2010).

These findings regarding the utility of mindfulness in mitigating distress suggest mindfulness may be appropriately applied to distress related to spiritual struggles. Supporting this possibility, a randomized controlled trial in a sample of self-selected students at a Roman Catholic college revealed that an 8-week MBSR program led to large (post test effect size, $d = 0.80$) decreases in negative religious coping relative to a no-treatment control group (Oman, Shapiro, Thoresen, Flinders, Driskill, & Plante, 2007). These decreases were mostly retained at follow-up 8 weeks later (follow-up effect size, $d = 0.63$). Also, indirectly supporting the possibility that mindfulness may be helpful for spiritual struggles are a number of studies
showing that MBSR yields benefits regarding spiritual well-being (Carmody, Reed, Kristeller, & Merriam, 2008) and forgiveness (Oman, Shapiro, Thoresen, Plante & Flinders, 2008).

Another reason that mindfulness may represent a promising intervention for spiritual struggle has to do with one of its posited mechanisms of action—exposure. Some researchers posit that mindfulness training is effective in part because it teaches practitioners that distressing thoughts and feelings can be tolerated without the need for suppression or avoidance (Sauer & Baer, 2010; Shapiro, Carlson, Astin & Freedman, 2006). Repeated exposure to spiritual struggles without the occurrence of feared negative consequences may result in decreased sympathetic activation when thinking about spirituality, which in turn may help individuals make prudent, rather than compulsive, decisions regarding their spirituality and the nature of their spiritual engagement.

A third reason to consider mindfulness as an intervention for spiritual struggles has to do with the ethical challenges of addressing spiritual struggles in clinical settings. Even though clinicians may come to understand that spiritual struggles are important to address in treatment, challenging an individual’s spiritual beliefs and practices can raise ethical questions and concerns (Barnett & Johnson, 2011). Mindfulness training may be a uniquely useful tool in this regard, as it emphasizes observing rather than interfering with distressing thoughts, allowing the clinician to provide guidance specific to dealing with spiritual distress without challenging or questioning spiritual beliefs or ontological assumptions.¹

¹ This is not to say that mindfulness training may be applied to struggle without any ethical ambiguity. Some Christian traditions teach that thoughts can be as sinful as actions in some cases—a teaching that conflicts with the emphasis in mindfulness training on nonjudgmental observation of thoughts.
Addressing Spirituality in Mindfulness Training

Mindfulness training is often described non-spiritually—that is, mindfulness training is thought of, at its core, as a set of skills to be applied to different areas of life. These skills do not require an underlying spiritual understanding or framework (e.g., Brown, Ryan & Creswell, 2007; Nyanaponika, 1973). However, we have good reason to believe that mindfulness training may be spiritual in nature, or at least compatible with spiritual concepts, in two ways—1) in its communication of an underlying framework of beliefs regarding the nature of moral reality, and 2) in its use of sacred language to help trainees to understand and cultivate mindful awareness (Feuille & Pargament, 2013). The implicitly or potentially spiritual nature of mindfulness leaves room for the possibility that the spiritual content in mindfulness training may in fact be an active ingredient, and that explicitly addressing spiritual content may enhance the effectiveness of mindfulness training. Tentative support for this conclusion was found in a randomized study of migraineurs in which spiritualized mindfulness instructions led to higher levels of mindful awareness compared to a more standard, or “secularized,” mindfulness script (Feuille & Pargament, 2013). Also, support for the utility of spiritual content was found in two studies (Wachholtz & Pargament, 2005, 2008) examining the efficacy of mantra meditation—a technique considered distinct from mindfulness meditation (though certainly there is overlap given their shared meditative basis).

There a number of other reasons to believe that explicitly and repeatedly addressing spirituality within mindfulness training may enhance its effectiveness regarding spiritual struggles. These include the fact that individuals with spiritual struggles probably relate to, or used to relate to, their experiences through a spiritual worldview. Providing guidance in connecting this worldview to mindfulness training may help strugglers better understand the
intended significance of mindfulness training and how to apply it to their own struggles. It is possible that the inclusion of spiritual content may be somewhat distressing for those experiencing spiritual struggles; however, the inclusion of spiritual content may provide helpful, real-time guidance to participants in what it means to bring mindfulness to the experience of their spiritual struggles. Finally, addressing spirituality within mindfulness training will communicate to participants that spirituality is valued and respected within the current framework, even as we acknowledge that spirituality can be a source of problems. This message may help individuals to move towards greater spiritual integration, flexibility and differentiation that may be important to building a resilient spiritual orienting system (Pargament, Desai & McConnell, 2006).

The Present Study

This study used a randomized controlled design with a sample of college students who indicated that they were experiencing significant spiritual struggles. The primary purpose of this study was to examine the efficacy of a mindfulness meditation intervention (M) for reducing distress stemming from spiritual struggle as compared to a progressive muscle relaxation intervention (PMR) and a no-treatment control group (C). A secondary aim of this study was to examine the incremental utility of explicitly addressing spiritual struggles and spiritual resources within a mindfulness intervention (MS condition).

The hypotheses of this study were as follows:

*Hypothesis 1.* The M condition will lead to greater improvements in psychological and spiritual outcomes relative to the PMR condition and the control condition.

*Hypothesis 2:* The MS condition will lead to greater improvements in psychological and spiritual outcomes relative to the M condition.
METHOD

Design Overview

This study was designed as a randomized controlled trial with a sample of psychology undergraduate students reporting spiritual struggles. There were three month-long treatment conditions—mindfulness (M), mindfulness with spiritual material (MS), and progressive muscle relaxation (PMR)—and a control condition that received no treatment (C). Each of the treatment conditions consisted of four online sessions of relaxation or meditation training and instructions to practice meditation/relaxation during the week that followed each session. Pre-intervention measures were administered during the week prior to the first session of the program. Post-test measures were administered a week after the last session. Follow-up assessments were administered one month after post-test.

Participants

Psychology students were recruited by hanging fliers on campus and posting the study to the online system used to advertise studies and assign required research credits to students (see Appendix R for recruitment materials, p. 153). Participants were offered a $15 gift card to amazon.com and research credits in return for their participation. The study was advertised as an intervention for individuals experiencing struggles and distress related to religion and spirituality. Interested individuals (expressing interest through emailing the researcher or signing up on the research scheduler) were provided with a link to the screener. Data was collected in the fall and spring of 2014.

Screener

Three close-ended questions from Desai’s (2009) assessment of spiritual struggles were used as a screening tool (see Appendix A, p. 115). The three questions assess the extent to
which respondents experience intrapsychic, interpersonal and divine struggle on a scale from 1, *Not at all,* to 5, *extremely.* In order to be eligible, respondents needed to have a total score of at least 5 (either by indicating their experience of one or more of the three types of struggle to a moderate extent, or by indicating experience of “a little bit” of two or more types of struggle). In addition, the screener asked about the extent of one’s current practice of meditation, relaxation or related activities (e.g., yoga, tai chi). Those endorsing regular practice of meditation or a similar technique were ineligible for participation. Finally, in the last question of the survey, respondents were prompted to create a unique ID consisting of the two digit number indicating the month of their birth, the last two letters of their last name, and the last three digits of their phone number (see Appendix B, p. 116). They were asked to email this ID to the experimenter in order to link their ID to their email address and name. This was the only email in which the student IDs were linked to student names and emails. The participant IDs were used in the remainder of the study in order to link together different surveys belonging to the same participant and to allow for assignment of research credits. Students who completed the screener were provided with 0.25 of research credit. Eligible participants were given a code to allow them to sign up for a specific start-date using the online research scheduler.

**Procedure**

Eligible participants who signed up for the study were provided with the informed consent (see Appendix T for informed consent, p. 157) and a link to the pre-test survey the day prior to their selected start date. After completing the pre-test, participants were assigned to conditions as follows: every other pre-test date was assigned to receive one of two sets of guided relaxation/meditation audio files—one with a female voice, another with a male voice. Male and female-voice participants were assigned to conditions using two separate lists—one ordered M,
MS, PMR and control, and the other in the opposite order. Participants were then sent an email informing of their assignment.

Intervention participants were emailed Week 1 intervention materials a week after receiving the pre-test. Intervention materials for each subsequent week were sent out at weekly intervals thereafter until the end of the intervention. Intervention participants were required to complete at least two weekly intervention surveys in order to be eligible to complete the post-test. The post-test was sent out to all control participants and eligible intervention participants a week after Week 4 interventions materials were sent out. Four weeks later, follow-up surveys were sent out. Debriefing information was provided to study completers (Appendix S, p. 156).

Reminders were used to help promote completion of pre-test, post-test and follow-up surveys. For control participants, an email reminding participants of the upcoming post-test was sent a week prior to the post-test. For all participants, an email reminding participants of the upcoming follow-up was sent out a week prior to the follow-up. Up to two reminder emails were sent to participants after a given survey was provided, in order to help ensure the completion of each survey in a timely manner—i.e. completion of pre-test prior to the start of the intervention, completion of post-test within 7 days of receiving it, and completion of follow-up within 10 days of receiving it. Surveys completed beyond these designated windows were not included in the data set.

Regarding incentives, intervention participants were provided with up to 4.5 research credits upon completion of the post-test survey, depending in part on how many weekly check-ins they completed. See Appendix R for more details regarding research credit (p. 153). Control participants were provided with 1.5 research credits upon completion of the post-test survey. Control and intervention participants were emailed a $15 gift card to amazon.com when they
completed the follow-up survey. In addition, control participants were offered the materials needed to complete one of the interventions of their choosing.

**Treatment Conditions**

There were three treatment conditions in this study—mindfulness (M), mindfulness with spiritual material (MS), and progressive muscle relaxation (PMR). Materials for each of these conditions were designed to be as similar as possible in length, tone and wording. Modeled on interventions developed by Falb (2015), each of the treatment conditions consisted of four online sessions to be administered one week apart. The four-session, four-week format was chosen in light of research suggesting that programs lasting longer than 30 days do not provide greater benefit than those lasting just 30 days (Sedlmeier, Eberth, Schwarz, Zimmerman, Haarig et al., 2012). Also, as pointed out by Falb (2015), while programs like these are typically delivered in person, initial studies suggest that online versions of these programs are acceptable and effective (Monshat, Vella-Broderick, Burns, and Herrman, 2012; Krusche, Cyhlarova, King, & Williams, 2012).

Each week in each of the intervention conditions, participants were asked to view a short video introducing that week’s technique, to complete comprehension questions regarding the video, to listen to an audio file containing guided meditation/relaxation instructions for that week, to practice the assigned technique for twenty minutes a day over the next week, and to keep track of their practice using a provided study calendar (see Appendix N, p. 142). Also, after week 1, participants were asked a number of questions regarding their practice over the prior week, and these questions about practice were also asked at post-test to assess practice during week 4 of the intervention. Questions about practice and comprehension questions were
together referred to as “Weekly check-ins” (see Appendix O, p. 144). For more information about practice and comprehension questions, see “Measures” section below.

Video and audio materials were created by the author using scripts adapted from other sources—see below. Videos were power-point-based and lasted two to five minutes. The author served as the voice for video introductions. Piloting of video materials for each of the treatment conditions revealed no significant differences in any of the following: percentage of comprehension questions answered correctly, respondents’ report of being able to understand and follow the materials, and the degree to which respondents reported finding the videos interesting and engaging. There were two versions of all guided meditation/relaxation audio files—one read by a female research assistant and another read by a male research assistant. These research assistants were trained by the primary author and were not informed of study hypotheses.

**Scripts for M and MS materials.** The video and audio scripts for the M and MS conditions were based on materials in *Mindfulness-Based Cognitive Therapy—2nd Edition*, by Segal, Williams and Teasdale (2013). The video scripts framed mindfulness as a skill to help individuals skillfully carry struggles with them, approaching struggles with openness and curiosity, rather than pushing them away or being defined by them. Techniques were assigned each week as follows: Week 1—body scan; Week 2—mindfulness of breathing; Week 3—mindfulness of discomfort; Week 4—mindfulness of sounds and thoughts. See Appendices C (p. 117) and D (p. 121) for the M and MS scripts.

The MS condition was designed to be as similar as possible to the M condition, while highlighting spiritual concerns and the connections between mindfulness and spirituality in the ways described below.
1) Throughout all four sessions: The MS condition repeatedly brought attention to painful thoughts and feelings related to spiritual struggle specifically, rather than painful thoughts and feelings generally. For instance, here are two sentences regarding the purpose of mindfulness in the M script:

But it’s important to remember that mindfulness cannot fix your pain or make it go away. Instead, it is a way to help you stay open-minded and curious about your experiences… The gentle attention you cultivate in mindfulness training can help you learn to skillfully and gently carry painful thoughts and feelings with you as you pursue what is most important to you in life.

The corresponding sentences in the MS condition are as follows, with asterisks to mark phrases that differ from the wording above.

But it’s important to remember that mindfulness cannot fix your *spiritual struggles or make them go away. Instead, it is a way to help you stay open-minded and curious about your experiences, *especially as they relate to spiritual struggles… The gentle attention you cultivate in mindfulness training can help you learn to skillfully and gently carry your *struggles with you as you pursue what is most important to you in life.

2) Session 1: The MS condition described reasons individuals may develop spiritual struggles and what different kinds of spiritual struggles may look like.

3) Session 1: The MS condition highlighted the use of mindfulness and similar awareness practices in a variety of spiritual traditions to address spiritual struggles.

4) Session 2: In the MS condition, the rationale for focusing on the breath included reference to the ways that spiritual traditions construe breath as a manifestation of the divine or sacred, while the M condition emphasized the breath as present through all of our lives (using similar wording to that of Feuille & Pargament, 2013)

5) Session 3: The MS condition described and normalized changing thoughts and feelings participants may be experiencing about their spirituality over the course of
the intervention so far (e.g., renewed or fading interest in religion, changing emotions towards God).

6) Session 4: The MS condition drew parallels between the “observing self” cultivated in mindfulness training and one’s true self, or “soul.”

**Scripts for PMR materials.** The PMR materials were based on materials provided in a chapter by Bernstein, Carlson, and Schmidt (2007). PMR was framed as a technique to help individuals lessen worry and struggle by reducing associated bodily tension. Assigned techniques were as follows: Week 1—tensing and relaxing eleven muscle groups; Week 2—tensing and relaxing seven muscle groups; Week 3—tensing and relaxing four muscle groups; Week 4—relaxation only. See Appendix E (p. 126) for the PMR session scripts.

**Measures**

**Pre-test only measures.** At pre-test, participants were asked to provide information regarding their demographics, religious affiliation, religious intensity, spiritual intensity, belief in God, religious and spiritual practices, and their prior exposure to meditative or relaxation techniques. They were asked an open-ended question about their spiritual struggle: “In a paragraph or two, please describe the struggle you’re having related to your religion or spirituality” (drawn from unpublished *Winding Road* materials; Pargament, Desai, Faigin, Gear, Gibbel, et al., 2008). This question provided participants with an opportunity to reflect on their spiritual struggles before proceeding with the study. See Appendices F through H for pre-test-only measures (pp.130-132).

**Dependent measures.** All of the below dependent measures were administered at pre-test, post-test and follow-up, with the exception of the spiritual transformation scale, which was administered at follow-up only.
**Psychological measures.** A number of reliable and valid measures of psychological functioning were used in this study.

**Somatic, anxiety, and depression symptoms.** Somatic, anxiety and depression symptoms were measured using the Patient Health Questionnaire--Somatic, Anxiety, and Depressive Symptoms Scales (PHQ-SADS; Kroenke, Spitzer, Williams & Lowe, 2010; see Appendix I, p. 133). As the name indicates, this instrument comprises three brief measures of symptoms of somatoform, anxiety, and depressive disorders. Each of these subscales was originally developed and validated separately. The somatic subscale (PHQ-15; Kroenke, Spitzer, & Williams, 2002) consists of 15 items asking individuals to rate how much a particular somatic symptom (e.g., fainting spells, headaches) has been bothering them during the past four weeks, on a three-point rating scale from 0, *not bothered at all*, to 2, *bothered a lot*. The anxiety subscale (GAD-7; Spitzer, Kroenke, Williams & Lowe, 2006) is a 7-item measure that asks respondents how frequently they have been bothered by each of seven anxiety symptoms on a four-point rating scale from 0, *not at all*, to 3, *nearly every day*. The depression subscale (PHQ-9; Kroenke, Spitzer & Williams, 2001) is a nine-item measure which asks how often respondents have been bothered by a particular depression symptom, using the same rating scale as the GAD-7. A recent systematic review of these measures (Kroenke et al., 2010) concluded that each of these subscales is a reliable and valid measure of the construct it is intended to measure. The review also concluded that the PHQ-9 has well-established sensitivity to change, while evidence for the sensitivity to change of the PHQ-15 and GAD-7 is emerging.

The last question in PHQ-SADS asks about how difficult the symptoms endorsed above make it to fulfill relationship and work roles. This item is not included in the overall score and instead may be examined separately as a global indicator of impairment in functioning. A
systematic review verified that this question is a valid indicator of functional impairment (Kroenke et al., 2010).

Note that the PHQ-SADS also includes five questions regarding panic attacks. These questions were left off the PHQ-SADS for the purposes of this study, as panic symptoms were not of primary interest here.

**Difficulties with emotion regulation.** The Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) were used to assess emotion regulation. This measure consists of 36 items. Respondents are asked to indicate how frequently each of the items applies to them. Findings in a university sample (Gratz & Roemer, 2004) indicate that this measure is internally consistent, reliable and valid. Notably, scores on this measure were significantly correlated with frequency of self-harm among male and female students and abuse of partner among male students.

The items in the full measure fall into six subscales. In order to reduce the number of items and to remain consistent with a prior study of spiritual struggles in college students (Dworsky et al, 2013), just three subscales were included in this study: Impulse Control Difficulties (DERS – Impulse), Difficulty Engaging in Goal-Directed Behavior (DERS – Goals), and Limited Access to Emotion Regulation Strategies (DERS – Strategies). Sample items from these each of subscales include, respectively, “When I’m upset, I feel out of control”; “When I’m upset I have difficulty getting work done”; and, “When I’m upset, I believe that wallowing in it is all I can do.” See Appendix J (p. 136).

**Mindfulness.** Mindfulness was measured using the Toronto Mindfulness Scale—Trait (TMS-T; Davis, Lau & Cairns, 2009). This measure consists of 13 items. Respondents are asked to indicate the degree to which the statement in each item reflects their own experience on a five-point rating scale from 0, not at all, to 4, very much. There are two subscales, called
Curiosity and Decentering, which are meant to assess curiosity towards internal experience and a sense of self as distinct from changing thoughts and feelings, respectively. Sample items for each of these subscales include “I am curious about my reactions to things” and “I experience myself as separate from my changing thoughts and feelings.” The validation study demonstrated that each of these subscales are psychometrically sound. Findings in particular supported the validity of the Decentering subscale (Davis, Lau & Cairns, 2009). See Appendix K (p. 137).

**Spiritual measures.** A number of measures of spiritual constructs were administered.

**Spiritual struggles.** Spiritual struggles were measured using the Religious and Spiritual Struggles (RSS) scale (Exline, Pargament, Grubbs & Yali, 2014). This measure consists of 26 items that assess six kinds of spiritual struggles: divine, interpersonal, doubt (doubting religious or spiritual beliefs), ultimate meaning (existential concerns), moral (guilt), and demonic (fears about the devil). Respondents are asked the extent to which they have had the experiences described in each of the items on a five-point rating scale, from 1, not at all, to 5, a great deal. Respondents are also given the option of indicating that the item does not apply to them (coded as 1). Confirmatory factor analysis supported a six-factor structure, and analyses of data gathered in a large sample of undergraduate supported the predictive, convergent and discriminant validity of this measure (Exline et al., 2014). The measure also demonstrated good internal consistency in the sample.

For the purposes of this study, two items were added at the end of the measure. One item was similar to the final item of the PHQ-SADS and asked the respondent to indicate how much difficulty any of the struggles described above caused them in fulfilling role obligations. This item was intended to measure struggles-related impairment. Drawing on a modification by Desai (2005) to a version of the negative RCOPE, the second item asked respondents to indicate
how much distress their struggles have been causing them,. This item was intended to measure an important target for mindfulness training—distress about distress, or *dirty pain*, to use terminology from Acceptance and Commitment Therapy (Hayes, Strosahl & Wilson, 1999). See Appendix L (p. 138).

**Spiritual transformation.** The Spiritual Transformation Scale (Cole, Hopkins, Tisak, Steel & Carr, 2008) was used to measure participants’ perceptions of whether and how their spirituality changed over the course of the study. This is a forty-item measure comprising two factors—spiritual growth and spiritual decline. Sample items include “I have a stronger spiritual connection to other people” and “I am more spiritually wounded.” Respondents are asked indicate how true each item is for them, comparing their current experience to their experience before pre-test. The rating scale ranges from 1, *It is not at all true for you* to 7, *It is true for you a great deal*. This measure was found to be psychometrically sound in a study of cancer patients, and scores on the subscales correlated in expected ways with positive and negative affect, depression, and daily spiritual experiences, among other measures (Cole et al., 2008).

This measure was shortened for the purposes of this study to include only those items with the highest factor loadings for a given subscale. For the spiritual growth subscale, only items with factor loadings of 0.87 and higher were included (items 1, 6, 9, 21, 26, and 28); for the spiritual decline subscale, only items with factor loadings of 0.71 and higher were included (items 31, 33, 34, and 37). This measure was administered at follow-up only. See Appendix M (p. 141).

**Adherence and practice quality.** To assess adherence, each week participants were asked to provide the number of minutes they practiced their assigned technique on each day of the prior week and were also asked to indicate when they made use of the provided audio file to
help them with their practice. At follow-up, participants, were also asked to estimate 1) the number of times they meditated/relaxed for at least five minutes at a time; 2) the average length of time they spent meditating/relaxing on each of these occasions. These numbers were multiplied together to estimate practice between post-test and follow-up.

Three questions were asked to assess practice quality on a weekly basis over the course of the intervention: using a scale from “not successful” to “very successful,” participants were asked the extent to which they were able to do each of the following during their practice over the prior week: practice in a relatively quiet environment, keep from dozing off for periods of time during their practice, and implement the instructions for the technique assigned for the prior week.

Finally, to assess comprehension of video materials, participants were asked one or two comprehension questions for the assigned video each week. These questions were also meant to correct misconceptions and promote retention of crucial information.

Together, these questions regarding comprehension, practice time, and practice quality were called “weekly check-ins” –see Appendix O (p. 144) for the full text of these questions.

Post-test only questions: subjective efficacy, relaxation, fit with spiritual background, connection to the sacred, and thoughts about spiritual struggles during practice. At post-test intervention participants were asked to report on their perception of their practice with regard to the following: how helpful they found it to be, how relaxing they found it to be, how well the intervention fit with their spiritual background, how often they felt connected to the sacred they felt during their practice, and how often thoughts or feelings related to their spiritual struggles came up during their practice. They were be asked to reflect on and share
what they found most helpful about the program overall and what they would like to remember and hold onto, as well as any other impressions or feedback they had. See Appendix P (p. 151).

Follow-up only questions. At follow-up participants were asked to reflect on what they learned about themselves, religion, and/or spirituality over the course of their involvement in the study. They were also asked to provide feedback or general impressions about their involvement in the study. In addition, as mentioned above in the sections on dependent variables and adherence, participants will also be asked to complete the Spiritual Transformation Scale and to provide information about whether and how often they practiced their technique during the past month. See Appendix Q (p. 152).

Statistical Analyses

All statistical analyses were conducted uses SPSS version 22.

Plan for analyzing variation by condition. The strategy described below was used to analyze variation by condition for all pre-test variables, post-test only variables, adherence, practice quality, and dependent variables. Note that for dependent variables measured at multiple time points, change scores were analyzed for variation by condition. Change scores were calculated for pre- to post-test changes and pre-test to follow-up changes by subtracting pre-test scores from post-test scores and follow-up scores.

Chi-square analyses were used for categorical variables, and ANOVAs were used for continuous variables and ordinal variables as well. ANOVA assumptions were examined and dealt with as follows for all dependent variables and process variables (as well as for other variables for which an ANOVA or a Kruskal-Wallis H test yielded a significant or marginally significant p-value). Outliers and extreme points were detected using a box-plot of change scores for each condition. Normality was assessed using Shapiro-Wilk’s test. Homogeneity of
variances was assessed using Levene’s test. If the variances between conditions were found to be significantly heterogeneous, Welch’s $F$ was interpreted. When normality was violated, an ANOVA was still interpreted because the risk of type I error is considered low for ANOVA even when normality is violated (Maxwell & Delaney, 2004). Note that Welch’s ANOVA is not as robust to non-normality (Lix, Keselman & Keselman, 1996), and for this reason a more careful approach was taken in the case that assumptions regarding both normality and homogeneity of variances were violated. Whenever ANOVA assumptions were violated, Kruskal-Wallis H Tests were also run for comparison. The Kruskal-Wallis H test is a nonparametric test of variation in ranks and is generally used in place of ANOVA when ANOVA assumptions regarding outliers and normality are not met. A drawback of this test is the increased risk of type II error compared to ANOVA, particularly if ANOVA assumptions are met and the sample size is small. If there were multiple outliers or extreme points in the data, the Kruskal-Wallis H test was interpreted instead of the ANOVA. Transformation of data was avoided due to problems with interpretation that this can generate.

In light of the small sample size and given that two of the conditions were expected to be somewhat similar (M & MS), the decision was made to examine post-hoc tests for all ANOVAs or Kruskal-Wallis H tests in which the $p$-value was less than than 0.1. Tukey-Kramer post-hoc tests were used to examine pair-wise comparisons between conditions. The Tukey-Kramer post-hoc test is a modified version of the Tukey test (the generally recommended post-hoc test for ANOVA; Kirk, 2013) and is used when sample sizes are not equal across groups. A drawback of the Tukey-Kramer post-hoc test is that it has been shown to be conservative (Hayter, 1984). Games-Howell post-hoc tests were used instead if variances were found to be significantly heterogeneous between conditions, as this is the generally recommended test for these
circumstances. Mann-Whitney tests with Bonferroni corrections were conducted for pair-wise comparisons following a Kruskal-Wallis H test. This is considered an acceptable manner in which to conduct pair-wise comparisons for Kruskal-Wallis H tests, although it does not use data from other groups besides the pair being examined. The above procedures were chosen in order to correct for family-wise error. Due to concerns about the small sample size and the fact that some of these post-hoc tests are conservative, Tukey-Kramer and Games-Howell post-hoc tests significant at the 0.10 level are also reported. For Mann-Whitney tests, results were reported when unadjusted p-values were less than 0.05, even if the corresponding unadjusted Bonferroni-corrected p-values were not significant. An exact sampling distribution was used to calculate p-values for Mann-Whitney U tests.

For dependent variables and process variables, effect sizes and confidence intervals were calculated for all omnibus analyses and all significant or marginally significant post-hoc tests. Effect sizes and confidence intervals for omnibus ANOVA results were calculated using SPSS syntax available through https://dl.dropboxusercontent.com/u/201857674/CIstuff/CI.html. This syntax is based on material from the book Confidence Intervals (2003) and corrects for non-centrality when calculating effect sizes. Effect sizes were not calculated for results of Kruskal-Wallis H tests, as standard effect size measures assume that ANOVA assumptions regarding normality and outliers have been met. A literature search revealed that there are no readily available equations or programs that can be used to calculate effect sizes for the $\chi^2$ statistic yielded by a Kruskal-Wallis H test.

Effect sizes for ANOVA post-hoc tests were calculated using the following equation, which is typically identified in the literature as $d$ (although it is in actuality an modification of $d$ known as Hedges $g$; Fritz, Morris & Richler, 2005):
\[ d = \frac{M_A - M_B}{s}, \]

where \( s \) is the pooled standard deviation. The pooled standard deviation was estimated by taking the square root of the mean squared error (MSE) from the ANOVA for which this post hoc test was conducted. (For this reason, the MSE is provided for all ANOVAs along with the \( F \)-statistic and \( p \)-value.) This is considered an acceptable estimate of the pooled standard deviation for post hoc tests (Grissom & Kim, 2005).

Confidence intervals for effect sizes for ANOVA post-hoc tests were estimated using a procedure outline in Grissom and Kim (2005). This calculation is based on the theoretical sampling distribution of \( d \) (Hedges & Olkin, 1985):

\[ s_d^2 = \frac{n_a + n_b}{n_a n_b} + \frac{d^2}{2(n_a + n_b)}, \]

where \( n_a \) and \( n_b \) are sample sizes. The upper and lower limits of the 95% confidence interval were then calculated using the following equation, where \( z_{0.025} \) represents the value of \( z \) at the desired cutoff for a 95% confidence interval:

\[
95\% \text{ CI} = d \pm z_{0.025} s_d.
\]

Regarding interpretation, \( d \) may be understood as the number of sample standard deviations by which the distributions differ. \( R^2 \) may be understood as the proportion of variance in the dependent variable (or change in the dependent variable, when using change scores) explained by variation due to condition. Each effect size is described as small, medium and large in the manner recommended by Cohen (1988), where \( d = 0.2, 0.5 \) and 0.8 for small, medium, and large effect sizes, respectively. The corresponding \( R^2 \) values are 0.010, 0.059, and 0.14, respectively. Note that all confidence intervals calculated for effect sizes were large,
without exception, due to the small sample size. Large confidence intervals mean effect sizes should be interpreted with caution.

**Process analyses.** Process analyses were conducted to better understand how and why participants did or did not experience improvement over the course of the study. Four treatment characteristics were deemed process variables of interest due to their relevance to study questions: decentering during practice (the degree to which participants experienced themselves as separate from their thoughts and feelings during practice), frequency of feeling connected to the sacred during practice, frequency of thoughts or feelings related to spiritual struggle during practice, and perceived fit of the intervention with participants’ spirituality. These first three were considered potential mediators of the effect of condition on outcomes, while the last was considered a potential moderator of outcomes across condition. Procedures for moderation and mediation are described below. More details regarding procedures used for process analyses are embedded in the results section.

**Mediation of the effect of condition.** Because regression analysis with categorical independent variables presents challenges in logistics and interpretation, individual post-hoc comparisons were tested for mediation rather than the omnibus analyses. Mediation analyses were conducted in SPSS using a macro called INDIRECT which can be found at [http://www.afhayes.com/spss-sas-and-mplus-macros-and-code.html#indirect](http://www.afhayes.com/spss-sas-and-mplus-macros-and-code.html#indirect) (accessed July 2015). This macro follows Baron & Kenny’s (1986) framework for mediation, providing the size and significance of the each of the four relationships \((a, b, c, c')\) commonly used to evaluate mediation. The macro employs a boot-strapping method to estimate the indirect effect and associated confidence intervals (see Preacher & Hayes, 2008). Mediation was determined to be significant if the 95% confidence interval for the indirect effect did not cross 0 and marginally
significant if the 90% confidence interval did not cross 0. Calculations were made using 5000 bootstrap samples and bias correction. Bias correction has been shown to increase the Type I error rate, but is recommended when power is a primary concern (Hayes & Scharkow, 2013).

**Moderation of the effect of condition.** Moderation was explored by comparing associations (Spearman correlations) between a potential moderator and outcome variable for intervention and control conditions separately. Moderation was determined to be significant (or marginally significant) if the interaction term was significant (or marginally significant) with the independent variable (condition) and the moderator in the model.
RESULTS

Preliminary Analyses

One hundred eighteen participants completed the screener, and 72 passed the screener and were invited to sign-up for pre-test. Sixty-two went on to complete the pre-test and were assigned to one of the four conditions: 15, 16, 16, and 15 participants were assigned to the M, MS, PMR, and control conditions respectively. Ten, 11, and 14 participants in the M, MS, & PMR conditions, respectively, completed at least two of the four weekly intervention surveys and were invited (along with the 15 control participants) to complete the post-test. Ten, 10, 14, and 12 participants completed post-test in the M, MS, PMR and control conditions, respectively and were included in analyses as study-completers. See Figure 1 for a flow-chart (p. 101).

Attrition. All participants who failed to complete at least two of the weekly intervention surveys (total of 12) were contacted regarding their reasons for doing so. Only four replied. Three participants cited problems with being too busy, and one cited problems with her email account preventing her from receiving email. Note there was one participant (in the MS condition) who completed at least two intervention surveys but who then failed to complete post-test within the allotted 7-day window, despite two reminders to do so. This lead to the total attrition of 13 participants who had been assigned to treatment conditions.

Attrition did not differ significantly or marginally significantly (p < 0.1) by condition, yet the pattern of findings showed somewhat lower levels of attrition in the PMR condition which was somewhat concerning given the small size of the samples in each condition. A closer look at completion of weekly intervention surveys revealed that 8 of the 12 who were ineligible for post-test did not complete any of the four intervention surveys—3, 4, and 1 in the M, MS and PMR conditions, respectively. The remaining four participants who were ineligible for post-test
completed only one of the intervention surveys—2, 1 and 1 in the M, MS and PMR condition. This information suggests that the apparently elevated attrition rates in the M and MS condition were due mostly to participants’ failing to initiate the intervention at all, rather than dropping out after starting the intervention.

Attrition was not significantly (nor marginally significantly) associated with any pre-test variable (including prior engagement in meditation-like activities, which was assessed at screening) or with male vs. female audio (as assessed by conducting Pearson correlations or Chi-square analyses as appropriate). There was one exception: higher TMS scores ($r(62) = -0.254$, $p = 0.046$) predicted greater likelihood of dropping out of the study. A closer look at the two subscales of the TMS revealed that it was TMS-decentering ($r(62) = -0.344$, $p = 0.006$) that significantly predicted attrition.

There were no significant (or marginally significant) differences between conditions in attrition from pre-test to follow-up or from post-test to follow-up. Also, completion of follow-up was not significantly predicted by pre- to post-test change scores in any dependent variable. However, the association between completion of follow-up and RSS change scores approached significance ($r(42) = -0.273, p = 0.067$)—that is, participants with larger decreases in religious/spiritual struggles were marginally more likely to complete follow-up. Similar associations were found for pre- to post-test changes in the RSS Divine struggles subscale ($r(42) = -0.265, p = 0.076$) and the RSS Meaning struggles subscale ($r(42) = -0.350, p = 0.017$).

**Sample characteristics.** Frequencies, means, and standard deviations of pre-test variables for study-completers can be found in Table 1 (p. 86). There were no significant differences between conditions on any pre-test variables, and none approached significance.
The sample was mostly female (89.1%), in their freshman year (69.6%), and white (84.8%). All reported being heterosexual. Regarding prior experience with meditation or similar activities (including yoga), a majority had no prior experience (60.9%), a third reported rarely practicing (32.6%), and 6.5% said they sometimes practiced. The most common current religious affiliation was Protestant (41.3%), followed by Catholic (32.6%); 8.7% identified as agnostic or atheist, and 4.3% identified themselves as having no affiliation. One participant identified as Eastern Orthodox, one as Jewish, one as Buddhist, and the remaining three participants identified with affiliations lacking a formal tradition: Deist (n =1), spiritual but not religious (n =1), and spiritualist (n =1). When given four choices about their belief in God, most participants reported believing in an ineffable God (54.3%), nearly a third reported having no doubts about God’s existence (30.4%), 10.9% reported being unsure, one participant (2.2%) reported no belief, and one participant (2.2%) chose not to answer. On average, participants attended 16 religious services a year and described themselves as “a little” to “moderately” religious (M = 1.43) and “a little” to “moderately” spiritual (M = 1.63).

Regarding mental health, on average students were mildly anxious (M = 9.46), mildly depressed (M = 8.61), and experiencing mild somatic symptoms (M = 9.17), using suggested cut-points of 5, 10, and 15 for mild, moderate and severe (Kroenke, Spitzer, Williams, & Lowe, 2010; 0 to 4, minimal; 5 to 9, mild, etc.). On average participants reported that their anxiety, depression, and somatic symptoms made normal functioning “somewhat difficult” (M = 1.02; PHQ-SADS Impairment).

Regarding spiritual struggles, on average participants reported struggling “a little bit” with religious or spiritual concerns (item mean of 2.09), experiencing “some distress” (M =1.65) related to their religious and spiritual struggles, and experiencing “a little” (M = 0.89) difficulty
in normal functioning due their religious and spiritual struggles (RSS impairment). Doubt appeared to be the greatest source of religious and spiritual struggles for this sample (item mean of 2.58): participants indicated struggling “a little bit” (2 on the Likert scale) to “somewhat” (3 on the Likert scale) for the Doubt subscale items. Doubt was followed closely by moral struggles (item mean of 2.57).

Note that multi-item measures showed acceptable internal consistency (Cronbach’s alpha) at pre-test, with the exception of TMS Decentering, with a Cronbach’s alpha just below the recommended minimum of 0.7. Cronbach’s alphas can be found in Table 1 (p. 86).

**Treatment characteristics.** Frequency counts, means and standard deviations for treatment characteristics can be found in Table 2 (p. 88). There were no significant differences between conditions on any of these variables discussed above and none approached significance (as assessed by chi-square analyses, ANOVAs and Kruskal-Wallis H tests, as appropriate).

A total of 34 individuals completed one of the three intervention conditions. Exactly half of these individuals received audio files with a female voice (vs. male). Most participants completed all four of the weekly intervention surveys (79.4%), with the remainder completing three of the four. (Recall that completion of at least two intervention surveys was required in order to be invited to complete the post-test). Participants answered an average of 4.53 of the 6 comprehension questions correctly. On average participants used the audio files to help them on 13.0 of the total possible 28 days of the intervention period. They reported engaging in an average of 324 minutes of the total of 560 recommended minutes of practice. On a scale from 0 (*not at all successful*) to 3 (*very successful*), participants on average reported being “moderately” successful in maintaining a quiet environment ($M = 2.09$), maintaining wakefulness ($M = 2.06$), and following the meditation/relaxation instructions during their practice ($M = 1.99$). On a scale
from 0 (*not at all*) to 4 (*very much*), on average participants found their technique “quite a bit” relaxing \((M = 2.68)\) to “moderately” helpful \((M = 2.24)\); they rated the intervention overall as “moderately” helpful \((M = 2.32)\).

Also, at follow-up participants were asked to estimate the number of times they practiced for five consecutive minutes or more over the past month, and were then asked to estimate the average length of time in minutes they spent practicing on each of these occasions. These numbers were multiplied together to obtain an estimate of the total number of minutes practiced between post-test and follow-up. This calculation yielded an average of 361 minutes of practice between post-test and follow-up, more than was reported for the intervention period between pre-test and post-test, which was seen as unlikely and generated concerns that prompts used to make this calculation were not understood as intended. This calculation also yielded extraordinarily high numbers for some participants \(i.e.,\) greater than 2000 minutes of practice), further raising concerns. For this reason, participants’ estimates of the number of times they practiced their assigned technique for five minutes or more were also examined. Participants reported practicing an average of 9.69 times between post-test and follow-up. No significant or marginally significant differences emerged in ANOVA and Kruskal-Wallis H tests for either total number of minutes or number of times practiced.

**Process variables.** Means and standard deviations can be found in Table 3 (p. 89), along with medians and frequency counts for variables with multiple extreme points.

On a scale from 0 (*not at all*) to 4 (*very much*), participants endorsed the descriptors “a little” to “moderately” to describe decentering during practice \((M = 1.68)\), and they indicated that the interventions fit “moderately” \((M = 2.21)\) well with their spirituality. On a scale from 0 (*never or almost never*) to 3 (*always or nearly all of the time*), on average participants reported
“sometimes” ($M = 0.85$) feeling connected to the sacred while practicing their technique and “sometimes” ($M = 0.79$) having thoughts or feelings related to their spiritual struggles while practicing their technique.

For decentering during practice, an ANOVA revealed scores varied significantly by condition, $F(2, 31) = 7.319$, $p = 0.002$, MSE = 0.689. The effect size was large, $R^2 = 0.32$, 95% CI [0.05, 0.50]. Scores were not normally distributed within each condition, but Kruskal-Wallis H test results were similar, $\chi^2(2, N = 34) = 8.861$, $p = 0.012$. Reported decentering during practice was significantly higher in the M condition relative to the MS condition (mean difference = 1.00, $p = 0.030$) and the PMR condition (mean difference = 1.29, $p = 0.002$), using Tukey-Kramer post-hoc tests. The effect sizes were large ($d = 1.20$, 95% CI [0.49, 2.16] for the M/MS comparison; and $d = 1.44$, 95% CI [0.46 to 2.35] for the M/PMR comparison). Scores in the M condition were higher than the PMR condition, but this comparison was not significant and did not approach significance. Mann-Whitney U test results were generally consistent with the above. (For the M/MS comparison, without Bonferroni correction, $U = 22.50$, $z = -2.197$, $p = 0.035$ without correction, $p = 0.105$ with Bonferroni correction. For the M/PMR comparison, $U = 27.00$, $z = -2.687$, $p = 0.011$ without correction, $p = 0.033$ with Bonferroni correction.)

Scores did not vary significantly (or marginally significantly) by condition for fit with spirituality, frequency of thoughts and feelings related to spiritual struggle, and frequency of feeling connected to the sacred. Notably, however, means were again highest in the M condition for all of these variables (though, for fit with spirituality, only marginally more so than the MS condition). Kruskal-Wallis H tests were used in place of ANOVA for frequency of thoughts and feelings related to spiritual struggle during practice ($\chi^2[2, N = 34] = 4.407$, $p = 0.110$) and frequency of feeling connected to the sacred during practice ($\chi^2[2, N = 34] = 4.538$, $p = 0.103$).
due to multiple extreme points (three and six, respectively, both high and low) in the M condition (and MS condition as well, for the latter). An ANOVA was interpreted for fit with spirituality, $F(2, 31) = 0.979, p = 0.387$. The effect size was medium, $R^2 = 0.06, 95\% CI [0, 0.22]$. There was one outlier (low) in the MS condition. Eliminating the outlier reduced the $p$-value somewhat (0.216), but it was still not significant and did not approach significance.

**Dependent Variables**

See Table 4 (p. 90) for means, standard deviations, and medians (where appropriate) of pre- to post-test change scores in dependent variables. See Table 5 (p. 91) for means, standard deviations, and medians (where appropriate) of pre-test to follow-up change scores, as well as spiritual growth and decline. ANOVA assumptions were met unless otherwise noted.

**Anxiety.** For pre- to post-test changes, there were three outliers: one in the control condition (high) and two in the MS condition (one high, one low). An ANOVA yielded a similar $p$-value (0.059) to a Kruskal-Wallis H test, $\chi^2(3, N = 46) = 7.231, p = 0.065$. The decision was made to interpret the ANOVA including the outliers in the analysis. Scores varied by condition with marginal significance, $F(3, 42) = 2.685, p = 0.059, MSE = 24.92$. The associated effect size was large, $R^2 = 0.16, 95\% CI [0.00, 0.32]$. All intervention conditions experienced greater decreases in anxiety relative to the control group, with the M condition demonstrating the largest decreases. Only the comparison between M and the control group emerged as significant (mean difference $= 6.05, p = 0.034$). The effect size was large, $d = 1.21, 95\% CI [0.30, 2.12]$. A Mann-Whitney U test yielded a similar $p$-value, $U = 19, z = -2.72, p = 0.006, 0.018$ with Bonferroni correction.

For pre-test to follow-up changes, there were two outliers in the data, one in the control condition (high) and one in the mindfulness condition (low). Distributions of scores were
significantly non-normal in the control condition. An ANOVA yielded a similar $p$-value (0.125) to a Kruskal-Wallis H test, $\chi^2(3, N = 46) = 5.819, p = 0.121$. The decision was made to interpret the ANOVA including the outliers in the analysis. Scores did not vary significantly by condition, $F(3, 38) = 2.037, p = 0.125, \text{MSE} = 24.43$. The effect size was large, $R^2 = 0.14, 95\% \text{CI } [0, 0.29]$. All the intervention conditions experienced greater decreases in anxiety relative to the control condition, with the M condition again showing the greatest decrease.

See Figure 2 (p. 102) for changes in anxiety scores over time.

**Depression.** For pre- to post-test changes, there was one outlier in the M condition (low). A Welch ANOVA (chosen because variances were heterogeneous) yielded a similar $p$-value (0.063) to a Kruskal-Wallis H test, $\chi^2(3, N = 46) = 6.761, p = 0.080$. The decision was made to proceed with the Welch ANOVA including the outliers, which revealed that scores varied by condition with marginal significance, Welch’s $F(3, 22.296) = 2.806, p = 0.063, \text{MSE} = 26.482$. The effect size was large, $R^2 = 0.20, 95\% \text{CI } [0, 0.42]$. As with anxiety, all intervention conditions experienced greater decreases in depression relative to the control condition, with the M condition showing the greatest decrease. However, no Games-Howell post-hoc tests were significant or approached significance.

For pre-test to follow-up changes, all ANOVA assumptions were met. An ANOVA revealed that scores did not vary significantly by condition, $F(3, 38) = 1.154, p = 0.340, \text{MSE} = 22.86$. The effect size was medium to large, $R^2 = 0.08; 95\% \text{CI } [0, 0.22]$. As before, all intervention conditions experienced larger decreases in depression than the control condition, with the M condition showing the greatest decrease.

See Figure 3 (p. 103) for a graph of changes in depression scores over time.
**Somatic symptoms.** For pre- to post-test changes, all ANOVA assumptions were met. An ANOVA revealed that scores varied significantly by condition, $F(3, 42) = 3.497, p = 0.024$, MSE = 15.98. The associated effect size was large, $R^2 = 0.20$, 95% CI [0.00, 0.36]. As with anxiety and depression, all intervention conditions showed greater decreases in somatic symptoms relative to the control condition, with the M condition again showing the greatest decrease. The comparison between the M condition and the control condition was significant (mean difference = 5.167, $p = 0.022$). The effect size for this comparison was large, $d = 1.29$, 95% CI [0.37, 2.21]. The comparison between M and PMR approached significance (mean difference = 4.357, $p = 0.055$). The effect size for this comparison was large, $d = 1.09$, 95% CI [0.22, 1.96].

For pre-test to follow-up changes, distributions were normal in each condition except in the control condition. There were two outliers, one in the PMR condition (high) and one in the control condition (low)—this was also an extreme point. However, an ANOVA revealed a similar $p$-value (0.002) to a Kruskal-Wallis H test, $\chi^2(3, N = 46) = 13.70, p = 0.003$. The decision was made to interpret the ANOVA, which revealed significant variation by condition, $F(3, 38) = 5.761, p = 0.002$, MSE = 12.92. The effect size was large, $R^2 = 0.29$, 95% CI [0.05, 0.45]. Again, all intervention conditions experienced greater decreases relative to the control condition, with the M condition again experiencing the greatest decrease. Decreases were significantly larger in the M condition compared to the control condition (mean difference = 6.55, $p = 0.002$, $d = 1.82$, 95% CI [0.71, 2.93]), the PMR condition (mean difference = 5.46, $p = 0.008$, $d = 1.52$, 95% CI [0.54, 2.50]), and the MS condition (mean difference = 5.35, $p = 0.017$, $d = 1.49$, 95% CI [0.44, 2.54]). The effect sizes were large (see prior parentheses). Results of Mann-Whitney U tests were also examined for the M/control and M/PMR comparison due to
outliers in those conditions, and the results were consistent. (For M/control comparison, \( U = 5.5, z = -3.085, p = 0.001, 0.006 \) with Bonferroni correction. For M/PMR comparison, \( U = 13.5, z = -2.914, p = 0.002, 0.012 \) with Bonferroni correction.)

See Figure 4 (p. 104) for a graph of changes in somatic symptoms over time.

**PHQ-SADS impairment.** For pre- to post-test changes, there were three extreme points in the M condition. For this reason, the results of the Kruskal-Wallis H test were interpreted instead of an ANOVA \( (F(3, 40) = 1.031, p = 0.389, \text{MSE} = 0.647) \). Means ranks did not vary significantly by condition, \( \chi^2(3, N = 44) = 2.397, p = 0.494 \).

For pre-test to follow-up changes, distributions of scores were significantly non-normal in all conditions. There was one outlier in the control condition (high). When the outlier was winsorized, an ANOVA yielded a similar \( p \)-value (0.939) to a Kruskal-Wallis H test, \( \chi^2(3, N = 41) = 0.264, p = 0.967 \). The decision was made to interpret the ANOVA, which revealed that scores did not vary significantly by condition, \( F(3, 37) = 0.135, p = 0.939, \text{MSE} = 0.558 \). The effect size was small, \( R^2 = 0.02, 95\% \text{ CI } [0, 0.11] \).

The results were not graphed.

**TMS—Curiosity.** For pre- to post-test changes, there were four outliers, one in the MS condition, two in the control condition, and one in the PMR condition. A Kruskal-Wallis H test yielded a somewhat different \( p \)-value (0.684) than an ANOVA, \( F(3, 38) = 0.804, p = 0.499, \text{MSE} = 20.32 \). The decision was made to interpret the Kruskal-Wallis H test, which revealed that mean ranks did not vary significantly by condition, \( \chi^2(3, N = 42) = 1.491, p = 0.684 \).

For pre-test to follow-up changes, there was one outlier in the MS condition (low). An ANOVA yielded a similar \( p \)-value (0.030) to a Kruskal-Wallis H test, \( \chi^2(3, N = 42) = 8.088, p = 0.044 \). The decision was made to interpret the ANOVA, which revealed that scores varied
significantly by condition, $F(3, 38) = 3.316, p = 0.030, \text{MSE} = 25.89$. The effect size was large, $R^2 = 0.21, 95\% \text{ CI} [0, 0.37]$. The M condition experienced an increase in curiosity scores, while the other conditions demonstrated a decrease. Only the comparison between the M and MS conditions was significant (mean difference = 7.40, $p = 0.020$). The effect size was large, $d = 1.45, 95\% \text{ CI} [0.40, 2.50]$. A Mann-Whitney U test was run for comparison and yielded a significant $p$-value, $U = 10.50, z = -2.627, p = 0.006, 0.036$ with Bonferroni correction.

For a graph of changes in TMS curiosity scores over time, see Figure 5 (p. 105).

**TMS—Decentering.** For pre- to post-test changes, there were two outliers in the M condition (one high, one low). An ANOVA including outliers yielded a similar $p$-value (0.065) to a Kruskal-Wallis H test, $\chi^2(3, N = 46) = 6.821, p = 0.078$. The decision was made to interpret the ANOVA, which revealed scores varied by condition with marginal significance, $F(3, 42) = 2.60, p = 0.065, \text{MSE} = 47.921$. The effect size was large, $R^2 = 0.16, 95\% \text{ CI} [0.00, 0.31]$. As with TMS curiosity, the M condition experienced the greatest increase in decentering. The MS and control condition showed smaller increases in decentering, while decentering increased in the PMR condition. The comparison between the M and PMR conditions approached significance (mean difference = 7.271, $p = 0.069$). The effect size was large, $d = 1.05, 95\% \text{ CI} [0.19, 1.91]$. A Mann-Whitney U test yielded a somewhat similar result, $U = 31.0, z = -2.29, p = 0.022, 0.132$ with Bonferroni correction.

For pre-test to follow-up changes, all ANOVA assumptions were met. An ANOVA revealed that scores varied significantly by condition, $F(3, 38) = 3.120, p = 0.037, \text{MSE} = 38.24$. The effect size was large, $R^2 = 0.20, 95\% \text{ CI} [0, 0.36]$. As with pre- to post-test changes, the M condition experienced the largest increase in decentering, followed by the MS condition, and then the control condition, while the PMR condition showed a decrease in decentering. Again,
the comparison between the M and PMR condition was significant (mean difference = 8.054, \( p = 0.027 \)), with a large effect size, \( d = 1.30 \), 95% CI [0.35, 2.25].

For a graph of changes in TMS decentering scores over time, see Figure 6 (p. 106).

**Emotion regulation difficulties.** For pre- to post-test changes, there were two outliers in DERS change scores, one in the MS condition (low) and one in the control condition (high). An ANOVA yielded a somewhat different \( p \)-value (0.052) than a Kruskal-Wallis H test, \( \chi^2(3, N = 46) = 5.961, p = 0.114 \). A closer look at the outliers revealed that removing the control condition outlier substantially affected the ANOVA results (\( p = 0.127 \)). The outlier was winsorized, and an ANOVA of the modified data revealed that scores varied by condition with marginal significance, \( F(3, 42) = 2.626, p = 0.063, \) MSE = 111.521. The effect size was large, \( R^2 = 0.16 \), 95% CI [0.00, 0.31]. As with anxiety, depression, and somatic symptoms, all intervention conditions experienced greater reductions in emotion regulation difficulties relative to the control condition, with the M condition again showing the greatest decrease. The comparison between the M condition and the control condition approached significance (mean difference = 11.57, \( p = 0.053 \)). The effect size was large (\( d = 1.10 \), 95% CI [0.20, 2.00]).

For pre-test to follow-up changes, there was one outlier in the control condition (low). A Welch ANOVA (chosen because variances were heterogeneous across conditions) yielded a somewhat different \( p \)-value (0.308) than a Kruskal-Wallis H test, \( \chi^2(3, N = 42) = 1.771, p = 0.621 \). A Welch ANOVA without the outlier made this difference more pronounced (\( p = 0.110 \)), suggesting that including the outlier would not inflate the effect size. The decision was made to interpret the Welch ANOVA including the outlier, which revealed that scores did not vary significantly by condition, Welch’s \( F(3, 18.631) = 1.286, p = 0.308, \) MSE = 142.73. The associated effect size was large, \( R^2 = 0.17 \), 95% CI [0, 0.37]. Although not significant, the same
pattern emerged as with pre- to post-test changes: decreases in emotion regulation difficulties were larger in the intervention conditions than the control condition, with the M condition experiencing the greatest decrease.

A graph of changes in DERS scores over time can be found in Figure 7 (p. 107).

**Religious and spiritual struggles (RSS).** For pre- to post-test changes, there were five outliers—four in the PMR condition and one in the M condition. A Kruskal-Wallis H test yielded a $p$-value (0.646) that was somewhat different from the ANOVA, $F(3, 42) = 1.262, p = 0.300$, MSE = 161.0. For this reason the Kruskal-Wallis H test was interpreted, revealing that mean ranks did not vary significantly by condition, $\chi^2(3, N = 46) = 1.659, p = 0.646$.

For pre-test to follow-up changes, all ANOVA assumptions were met. An ANOVA revealed that scores did not vary significantly by condition, $F(3, 38) = 0.887, p = 0.456$, MSE = 194.07. The effect size was medium, $R^2 = 0.07$, 95% CI [0, 0.19]. Though non-significant, a pattern again emerged similar to other dependent variables: decreases in religious and spiritual struggles were larger in intervention conditions compared to the control condition, with the M condition showing the greatest decrease.

The results were not graphed.

**Exploratory RSS subscale analyses.** For pre- to post-test changes, exploratory analyses of subscales revealed that variation by condition approached significance for two of the subscales—Meaning and Moral struggles. For pre-test to follow-up changes, variation by condition was significant only for Moral struggles.

**Meaning struggles.** For pre- to post-test changes, distributions of scores were normal in all conditions except the M condition. There were two outliers—one in the M condition (low) and one in the PMR condition (low). An ANOVA yielded a similar $p$-value (0.085) to a Kruskal-
Wallis H test, $\chi^2(3, N = 42) = 6.362, p = 0.095$. The decision was made to interpret the ANOVA including the outliers, which revealed that scores varied by condition with marginal significance, $F(3, 38) = 2.359, p = 0.085$, MSE = 0.547. The effect size was large, $R^2 = 0.16$, 95% CI [0, 0.32]. As with other dependent variables, all intervention conditions experienced greater decreases relative to the control condition, with the M condition showing the greatest decrease. However, no post-hoc comparisons were significant or approached significance.

For pre-test to follow-up changes, scores did not vary significantly by condition, $F(3, 38) = 0.549, p = 0.652$. Normality was violated for the control and PMR condition. There was one outlier and one extreme point in the PMR condition. Eliminating both outliers further diminished significance ($p = 0.741$). A Kruskal-Wallis H test was also not significant, $\chi^2(3, N = 42) = 2.580, p = 0.461$.

See Figure 8 (p. 108) for a graph of Meaning struggles over time.

Moral struggles. For Moral struggles pre-test to post-test, all ANOVA assumptions were met. Scores varied by condition with marginal significance, $F(3, 42) = 2.297, p = 0.091$, MSE = 0.624, and the effect size was large, $R^2 = 0.15$, 95% CI [0, 0.31]. As with other dependent variables, all intervention conditions showed greater decreases relative to the control condition, with the M condition experiencing the greatest decrease. The comparison between the M condition and the control condition approached significance (mean difference = 0.888, $p = 0.056$) with a large effect size, $d = 1.12$, 95% CI [-0.74, 2.12].

For Moral struggles pre-test to follow-up, ANOVA assumptions were met, and the ANOVA revealed scores varied significantly by condition, $F(3, 38) = 3.686, p = 0.020$, MSE = 0.868, with a large effect size $R^2 = 0.23$, 95% CI [0, 0.39]. Again, all intervention conditions showed greater decreases relative to the control condition (which experienced a small increase
here), with the M condition experiencing the greatest decrease. Only the comparison between
the M and control condition emerged as significant, mean difference = 1.417, \( p = 0.014 \). The
effect size was large, \( d = 1.52 \), 95% CI [0.46, 2.58].

See Figure 9 (p. 109) for a graph of changes in Moral Struggles over time.

**Distress due to RSS.** For pre- to post-test changes, distributions of scores within
conditions were not normal. An ANOVA yielded a similar \( p \)-value (\( p = 0.262 \)) to a Kruskal-
Wallis H test, \( \chi^2(3, N = 46) = 4.288, p = 0.232 \). The decision was made to proceed with the
ANOVA, which revealed that score did not vary significantly by condition, \( F(3, 42) = 1.380, p = \
0.262 \), MSE = 0.974. The associated effect size was medium, \( R^2 = 0.09 \), 95% CI [0.00, 0.23].
Though non-significant, the same pattern emerged here as in other dependent variables: all
intervention conditions experienced greater decreases in distress relative to the control condition,
with the M condition experiencing the greatest decrease.

For pre-test to follow-up changes, scores were normally distributed in all conditions
except the PMR condition. An ANOVA revealed that scores did not vary significantly by
condition, \( F(3, 38) = 1.178, p = 0.331 \), MSE = 1.202. The associated effect size was medium, \( R^2 \\
= 0.09 \), 95% CI [0, 0.22]. Again, though non-significant, the same pattern in scores emerged
here as with other dependent variables: all intervention conditions experienced greater decreases
in distress relative to the control condition, with the M condition experiencing the greatest
decrease.

Results were not graphed.

**Impairment due to RSS.** For pre- to post-test changes, there was one outlier in the
PMR condition (high). Distributions of scores within conditions were not normal. An ANOVA
yielded a similar \( p \)-value (0.270) to a Kruskal-Wallis H test, \( \chi^2(3, N = 46) = 3.953, p = 0.267 \).
The decision was made to interpret the ANOVA with the outlier included, which revealed that scores did not vary significantly by condition, $F(3, 42) = 1.353, p = 0.270$, $\text{MSE} = 0.884$. The associated effect size was medium, $R^2 = 0.09$, 95% CI [0, 0.22]. Though non-significant, the same pattern emerged as with other variables: all intervention conditions experienced greater decreases in distress relative to the control condition, with M condition experiencing the greatest decrease.

For pre-test to follow-up changes, scores were not normally distributed in the M or MS condition. An ANOVA yielded a similar $p$-value (0.167) to a Kruskal-Wallis H test, $\chi^2(3, N = 42) = 4.179, p = 0.243$. The decision was made to interpret the ANOVA, which revealed that scores did not vary significantly by condition, $F(3, 38) = 1.781, p = 0.167$, $\text{MSE} = 0.875$. The effect size was medium, $R^2 = 0.09$, 95% CI [0, 0.22]. All intervention conditions experienced greater decreases in impairment from religious and spiritual struggles as compared to the control condition (which showed a small increase), this time with PMR demonstrating the greatest decrease.

Results were not graphed.

**Spiritual growth.** Distributions of scores were significantly non-normal in the control condition. There was one outlier (low) in the mindfulness condition. Variances were heterogeneous across conditions. A Welch ANOVA yielded a similar $p$-value (0.011) to a Kruskal-Wallis H-test, $\chi^2(3, N = 42) = 8.449, p = 0.038$. The decision was made to interpret the Welch ANOVA, which revealed that scores varied significantly by condition, Welch’s $F(3, 18.99) = 4.839, p = 0.011$, $\text{MSE} = 160.85$. The effect size was large, $R^2 = 0.28$, 95% CI [0.03, 0.44]. Scores were highest in the M condition, as with other dependent variables. Scores in the control condition were next highest. In Games-Howell post-hoc tests, the comparison between
the M and MS conditions was significant (mean difference = 16.65, \(p = 0.026\)), as was the comparison between M and PMR (mean difference = 17.39, \(p = 0.010\)). Effect sizes for these comparisons were large: for the M/MS comparison, \(d = 1.31\), 95% CI [0.28, 2.34]; for the M/PMR comparison, \(d = 1.37\), 95% CI, 0.41 to 2.33. Results of non-parametric post-hoc comparisons were consistent with this. (For M & MS comparison, \(U = 11.5, z = -2.539, p = 0.009, 0.054\) with Bonferroni correction. For M & PMR comparison, \(U = 12.5, z = -2.571, p = 0.002, 0.012\) with Bonferroni correction.)

See Figure 10 (p. 110) for a graph of results.

**Spiritual decline.** Spiritual decline was measured only at follow-up. Distributions of scores were significantly non-normal in all conditions. There was one outlier (high) in the MS condition. Variances were not homogenous across conditions. A Welch ANOVA yielded a \(p\)-value (0.048) that differed from results of a Kruskal-Wallis H test, \(\chi^2(3) = 4.352, p = 0.226\). The Welch ANOVA results were not appreciably affected by eliminating the outlier but moved in the direction of greater significance \((p = 0.023)\). Non-normality remained a concern given that the Welch procedure is not considered as robust to non-normality as a standard ANOVA. Specifically, the Welch ANOVA may result in inflated Type I error rates with small group sizes (less than 10, which is the case for one condition here) or for data that has highly skewed distributions (skewness in excess of 2.0, which is not the case here; Lix, Keselman & Keselman, 1996). The decision was made to interpret Welch’s ANOVA, with caution, including the outlier in the analysis. This revealed scores varied significantly by condition, Welch’s \(F(3, 16.767) = 3.260, p = 0.048\), MSE = 27.14. The effect size was large, \(R^2 = 0.37, 95\% \text{ CI} [0, 0.55]\). The control condition had the highest scores, followed by the PMR condition and then the M condition. No Games-Howell post-hoc comparisons were significant or approached significance.
See Figure 11 (p. 111) for a graph of results.

**Summary.** For pre-test to post-test changes, significant or marginally significant variation by condition was found for three of ten dependent variables (anxiety, somatic symptoms, and emotion regulation difficulties; note that TMS variables were not included in this list of ten dependent variables). For three of these (anxiety, somatic symptoms, emotion regulation difficulties), post-hoc comparisons between the M condition and the control condition were significant or marginally significant, with the M condition experiencing greater improvements. For one of these (somatic symptoms), post-hoc comparisons between the M and the PMR condition were significant or marginally significant, with the M condition experiencing greater improvements. There were no significant post-hoc comparisons found between the MS condition and the control condition; the PMR condition and the control condition; or the PMR condition and the MS condition.

For pre-test to follow-up analyses, significant or marginally significant variation by condition was found for three of twelve dependent variables (somatic symptoms, spiritual growth, and spiritual decline). For only one of these (somatic symptoms), the post-hoc comparison between the M condition and the control condition was significant (or marginally significant), with the M condition experiencing greater improvements. For two dependent variables (somatic symptoms and spiritual growth), the post-hoc comparison between the M condition and the PMR condition was significant or marginally significant, with the M condition experiencing greater improvements. For two dependent variables (somatic symptoms and spiritual growth), the post-hoc comparison between the M condition and the MS condition was significant or marginally significant, with the M condition experiencing greater improvements. There were no significant or marginally significant post-hoc comparisons found between the MS
condition and the control condition; the PMR condition and the control condition; or the PMR condition and the MS condition.

**Process Analyses**

**Associations between dependent and process variables.** For intervention participants, associations between process variables and changes in dependent variables from pre-test to follow-up were examined to determine whether and how process variables affected participants experience of treatment conditions. Change scores were used for dependent variables measured at pre-test and follow-up, which was the case for all dependent variables except spiritual growth and decline, which were measured only at follow-up. Spearman correlations were selected in order to obviate problems with meeting assumptions required when calculating Pearson correlations. See Table 6 (p. 92).

Alongside process variables mentioned above, correlations are also provided for relaxation during practice, TMS curiosity change scores, TMS decentering change scores, and RSS change scores. Relaxation during practice (“how relaxing did you find your assigned techniques to be?”) was not considered a process variable of interest because it did not relate to questions regarding spirituality and mindfulness, but was included for comparison to other process variables. Changes in TMS decentering and TMS curiosity were included here because of their relevance to study questions regarding the effect of mindfulness on mental health and spirituality. Also, correlations could be examined across all conditions for these variables, not just treatment conditions. Finally, though not considered a process variable, RSS changes were examined as well, to assess whether changes in spiritual struggles were related in expected ways to changes in other dependent variables.
**Decentering during practice.** Correlations with decentering during practice were generally in expected directions—that is, indicating greater improvement as decentering increased. Correlations reached significance for spiritual growth \( r_s = 0.44 \) and for indicators of maladjustment (depression, -0.40; anxiety, -0.47; somatic symptoms, 0.48). Correlations with TMS curiosity \( r_s = 0.28 \), TMS decentering (0.28), and emotion regulation difficulties (-0.40) were non-significant but medium to large in size, indicating possible trends towards greater increases in trait curiosity and trait decentering and greater decreases in emotion regulation difficulties as decentering during practice increased. Correlations with spiritual decline \( r_s = -0.26 \) and RSS distress (-0.20) and RSS impairment (-0.24) were non-significant and medium in size, indicating possible trends towards lower spiritual decline scores and greater decreases in RSS distress and impairment as decentering increased. The correlation with RSS was small and non-significant \( r_s = -0.08 \).

**Connection to the sacred during practice.** Correlations were generally in expected directions for frequency of feeling connected to the sacred during practice, indicating greater improvement as connection to the sacred increased. Correlations reached significance for spiritual growth \( r_s = 0.49 \) and marginal significance for anxiety (-0.31). Correlations with TMS curiosity, TMS decentering, RSS, RSS distress, RSS impairment, spiritual decline, and emotion regulation difficulties were generally non-significant and small.

**Thoughts and feelings related to spiritual struggle during practice.** All correlations were non-significant but generally in expected directions given an understanding of meditation as exposure. Correlations were negative and medium in size for depression, somatic symptoms, emotion regulation difficulties, RSS, and RSS impairment \( -0.27 < r_s < -0.22 \), indicating a trend towards decreased problems as thoughts/feelings related to struggle during practice increased.
**Relaxation during practice.** Relaxation during practice was generally associated with greater improvement as relaxation increased. The correlation with depression was significant ($r_s = -0.46$), indicating greater decreases in depression as relaxation increased. Correlations reached marginal significance for spiritual growth ($r_s = 0.32$), somatic symptoms (-0.31), and PHQSADS impairment (-0.33), indicating trends towards higher spiritual growth scores and greater decreases in somatic symptoms and PHQGADS impairment as relaxation increased. Correlations with TMS curiosity, TMS decentering, emotion regulation difficulties, RSS, RSS distress, RSS impairment and spiritual decline were generally small and non-significant.

**Fit with spirituality.** Better fit with spirituality was generally associated with greater improvement as fit improved. Correlations were significant for spiritual growth ($r_s = 0.36$), depression (-0.37), and somatic symptoms (-0.39). The correlation with TMS curiosity was small, but the correlation with TMS decentering reached marginal significance ($r_s = 0.33$), indicating greater increases in decentering as fit with spirituality increased. Correlations with RSS, RSS distress, and RSS impairment were small and non-significant.

**TMS curiosity.** Correlations were generally in expected directions for indicators of maladjustment and reached marginal significance for somatic symptoms ($r_s = -0.26$), indicating trends towards decreased maladjustment as TMS curiosity increased. Interestingly, correlations were positive and medium in size (and non-significant) for RSS, RSS impairment, and spiritual growth, suggesting possible trends towards greater struggle but also more growth with increased curiosity.

**TMS decentering.** Correlations were generally in expected directions for indicators of maladjustment but never reached significance or marginal significance and tended to be small.
Correlations were medium in size (and non-significant) for RSS and RSS distress, suggesting possible trends towards decreased problems with spiritual struggle with increased decentering.

**Changes in religious and spiritual struggles.** Correlations were in expected directions, confirming that increases in spiritual struggle were associated with increases in maladjustment in this sample. Correlations reached significance for depression ($r_s = 0.38$) and emotion regulation difficulties (0.53) (and for RSS distress and impairment, though these are not remarkable given their affiliation with RSS). The correlation with anxiety was marginally significant ($r_s = 0.27$). Notably, correlations with spiritual growth ($r_s = -0.06$) and decline (0.07) were small and non-significant.

**Exploratory mediation analyses for decentering during practice.** The above analyses together with analysis of variation by condition suggest that decentering during practice may have acted as a mediator for the effect of condition on somatic symptoms and spiritual growth. Mediation analyses were run for the comparison between the M and MS conditions and the comparison between M and PMR to test whether decentering during practice mediated observed between-treatment differences in somatic-symptom changes from pre-test to follow-up and spiritual growth at follow-up.

See Figure 12 (p. 112) for a model of decentering as a mediator of the effect of condition on somatic symptoms and decentering during practice.

**Somatic symptoms.** Given the significant correlation found between somatic symptoms and decentering during practice and the similar patterns in significant variation by condition found for these two variables, decentering was tested as a mediator of the effect of condition on somatic symptoms from pre-test to follow-up. See Table 7 (p. 93) for mediation results.
M vs. MS. There was one outlier (studentized deleted residual greater than 3 standard deviations from the mean) and four leverage points (leverage values above 0.2) in the M condition, with leverage values in the range considered risky (0.2 to 0.5) rather than clearly large (>0.5; Huber, 1981). Eliminating all of these points was deemed impractical due to the already small sample size. Eliminating any one of these points still yielded data with three or more unusual points. An analysis including these unusual points yielded significant $a$, $b$, and $c$ paths and a significant indirect effect, $B = -1.87$, 95% CI [-3.16, -0.58].

M vs. PMR. Again there was one outlier and three leverage points, with leverage values in a range considered risky. Eliminating all of these points was deemed impractical due to the already small sample size. Eliminating any one of these points still yielded data with three or more unusual points. An analysis including these unusual points yielded significant $a$ and $c$ paths, a marginally significant $b$ path, and an indirect effect that approached significance, $B = -2.45$, 90% CI [-6.77, -0.29].

Summary. These results suggest that differences in decentering during practice partially explain the greater improvement in somatic symptoms experienced by the M condition as compared to the MS condition, and may partially explain greater improvement relative to the PMR condition.

Spiritual growth. Given the significant correlation found between somatic symptoms and decentering during practice and the similar patterns in significant variation by condition found for these two variables, decentering was tested as a mediator of the effect of condition on spiritual growth. See Table 8 (p. 94) for mediation results.

M vs. MS. There were three leverage points, with leverage values in a range considered risky. Eliminating all of these points was deemed impractical due to the already small sample
size. Eliminating any one of these points still yielded data with three leverage points. An analysis including these unusual points yielded a non-significant $b$ path, which also did not approach significance, $B = 4.89, p = 0.172$, indicating that the data do not meet criteria for mediation.

*M vs. PMR.* There were three leverage points, with leverage values in a range considered risky. Eliminating all of these points was deemed impractical due to the already small sample size. Eliminating any one of these points still yielded data with three unusual points. An analysis including these points yielded a non-significant $b$ path, which also did not approach significance, $B = 2.84, p = 0.282$, indicating the data do not meet criteria for mediation.

*Summary.* These results indicate that the significant relationship found between decentering during practice and spiritual growth (described in the prior section) may not be independent of the effect of condition on both of these variables. For this reason, decentering during practice may not partially explain higher spiritual growth scores in the M condition as compared to the MS and PMR conditions.

**Exploratory analyses of participants’ spiritual background.** Associations between fit with spirituality and aspects of participants’ religious and spiritual background were examined to shed light on whether the interventions tested in this study might be more suitable for some spiritual backgrounds over others. The background characteristics chosen for examination were belief in God, prayer habits, service attendance, subjective religiousness, and subjective spirituality. Belief in God was transformed into a dichotomous variable by coding “I know God really exists and I have no doubts about it” as 1 and all other responses as 0. Prayer habits was transformed into a dichotomous variable by coding “Prayer is a regular part of my daily life” as
1, and all other responses as 0. Spearman correlations were used to obviate problems with Pearson correlation assumptions. See Table 9 (p. 95).

Indicators of conventional, organizational religiousness (belief in God without doubt, service attendance, subjective religiousness) tended to diminish fit, while indicators of more independent religious or spiritual practice (regular prayer, subjective spirituality) tended to enhance fit. The correlations with service attendance (-0.49) and subjective religiousness (-0.30) reached significance and marginal significance, respectively.

Given this information, service attendance was correlated with dependent variables separately for intervention conditions (all three together) and control conditions, to test whether this variable may have differentially affected outcomes for control and intervention participants. See Table 10 (p. 96). For both intervention and control conditions, service attendance was associated with increases in maladjustment, with the exception of somatic symptoms. Somatic symptoms correlated negatively (and non-significantly) with service attendance in the control condition ($r_s = -0.32, p > 0.10$), but positively (and non-significantly) in the intervention condition ($r_s = 0.25, p > 0.10$), suggesting service attendance moderated the relationship between condition and somatic symptoms, such that service attendance promoted improvement in control participants, but had the opposite effect in intervention conditions. Discrepancies also emerged for emotion regulation difficulties and TMS decentering, with service attendance promoting improvement in the control condition but apparently hampering improvement in the intervention conditions. For spiritual growth, service attendance was very modestly correlated with spiritual growth in the intervention conditions ($r_s = 0.14, p > 0.10$), but was highly correlated with the growth in the control condition ($r_s = 0.80, p < 0.01$).
Correlations were also examined for each intervention condition separately to explore whether service attendance may have been more problematic in one condition compared to another—see Table 10 (p. 95). Comparing the M and MS conditions, higher attendance was associated with problems to a greater extent in the MS condition as compared to the M condition for every indicator of psychological maladjustment. Regarding indicators of struggle, there were notable differences for RSS distress and RSS impairment as well: correlations were medium and negative in the M condition ($r_s = -0.25, -0.28$, respectively), but positive and medium to large in the MS condition ($r_s = 0.23, 0.61$, respectively). Also, differing correlations for TMS curiosity, TMS decentering, spiritual growth, and spiritual decline in the M and MS conditions indicate the same conclusion—that attendance may have been more problematic for the MS condition than the M condition. The contrast for spiritual growth was pronounced: $r_s = 0.55$ for the M condition, and $r_s = -0.15$ for the MS conditions.

Comparing the M and PMR conditions, the pattern was less clear. Higher attendance was associated with problems to a greater extent in the PMR condition as compared to the M condition for three of five indicators of psychological maladjustment. As with the MS condition, there were notable differences for RSS distress and RSS impairment, with attendance again emerging as more problematic for the PMR condition than the M condition (for M condition, $r_s = -0.25, -0.28$, respectively; for PMR, $r_s = 0.40, 0.26$, respectively). Spiritual growth correlations were similar for the M condition ($r_s = 0.55$) and the PMR condition ($r_s = 0.40$).

**Service attendance as a moderator of intervention involvement.** The above patterns suggested that service attendance may have moderated the degree of benefit participants experienced in the intervention conditions relative to the control condition. This hypothesis was tested for somatic symptoms, TMS decentering, emotion regulation difficulties, and spiritual
growth, as correlations between intervention conditions and the control condition were most pronounced for these variables. To run these analyses, condition was dichotomized into intervention (any intervention condition) vs. control, with the control condition as the reference category. To create graphs, the moderator was dichotomized by splitting it at the median. Note that moderation was not tested for individual conditions. Moderation analyses are very low in power when they involve one or more continuous variables (McClelland & Judd, 1993). Due to small sample sizes, it was deemed unlikely that analyses using this approach to moderation would reveal significant or marginally significant effects.

Somewhere symptoms. Regression diagnostics revealed three unusual points: one outlier (studentized deleted residual > 3 SDs from the mean) that was also an influential point (Cook’s D > 1) and two leverage points, with leverage points in the range considered clearly large (> 0.5). The outlier was removed from analysis. Other unusual points were not removed as doing so propagated the number of unusual points in the data set.

The interaction term was not significant, $B = 0.005, p = 0.961$, indicating that service attendance was not a significant moderator of the effect of condition (intervention vs. control) on somatic symptoms. See Table 11 (p. 97) for regression results.

TMS centering. An outlier that was also an influential point and a leverage point was not included in analysis. An influential point that was also a leverage point was also excluded. Diagnostics revealed that eliminating these points caused another point to become both a leverage point and an influential point. When this point was eliminated, diagnostics revealed three leverage points in a range considered risky but not clearly large (0.2 to 0.5), and these points were included in the analysis.
The interaction term was marginally significant, $B = -0.501, p = 0.097$, indicating that service attendance marginally significantly moderated the effect of condition on TMS decentering, such that higher attendance diminished the effectiveness of treatment in promoting decentering. More specifically, high attenders tended to experience decreases in decentering in treatment conditions but increases in control condition, while low attenders tended to experience the opposite—increases in decentering in treatment conditions and decreases in the control condition. See Table 12 (p. 98) for regression results and Figure 13 (p. 113) for a graph.

**Emotion regulation difficulties.** There were two leverage points in a range considered clearly large (>0.5). These points were not eliminated because doing so propagated the number of unusual points in the data set.

The interaction term was not significant, $B = -0.111, p = 0.401$, indicating that service attendance was not a significant moderator of the effect of condition (intervention vs. control) on emotion regulation difficulties. See Table 13 (p. 99) for regression results.

**Spiritual growth.** An influential point that was also a leverage point was removed from the analysis. Diagnostics of this data revealed that two leverage points remained. These points were not removed as doing so propagated the number of unusual points in the data set. Residuals were not normally distributed, as assessed by Shapiro-Wilk’s test ($p < 0.05$). Regression is considered robust to deviations from normality, so long as sample sizes are not too small. Given the small number of individuals in the control condition (9, after removal of the outlier/influential point), results should be interpreted with caution.

The interaction term was significant, $B = -0.751, p = 0.014$, indicating that service attendance may be a significant moderator of treatment involvement, such that higher attendance diminished the beneficial effect of treatment on spiritual growth. More specifically, high
attenders tended to experience more growth in the control condition relative to treatment conditions, while low attenders tended to experience more growth in treatment conditions compared to the control condition. See Table 14 (p. 100) for regression results and Figure 14 (p. 114) for a graph.
DISCUSSION

Spiritual struggles have been repeatedly tied to declines in mental and physical health (Abu-Raiya, Pargament, Krause, & Ironson, in press; Exline, 2013). In light of this, a number of interventions have been developed to help individuals who are experiencing spiritual struggles, some of which employ mindfulness or similar techniques (e.g., Dworsky, Pargament, Gibbel, Krumrei, Faigin, et al, 2013; Murray-Swank, 2003). Given evidence for the effectiveness of mindfulness in other populations and for other problems (e.g., Grossman, Niemann, Schmidt & Walach, 2004), this controlled study evaluated the efficacy of a brief online mindfulness intervention in reducing spiritual struggles and related distress in a small sample of college students experiencing modest levels of spiritual struggles. It was hypothesized that mindfulness would lead to greater improvements in psychological and spiritual functioning than the progressive muscle relaxation and the control condition. Results partially supported this hypothesis, though spiritual struggles specifically were not significantly affected by condition.

In addition, a spiritual mindfulness condition was developed and evaluated alongside other conditions, in order to test the potential benefit of adding spiritual content to mindfulness training. It was hypothesized that the spiritual mindfulness condition would experience greater improvements in psychological and spiritual functioning relative to the standard mindfulness condition. Results did not support this hypothesis, and, on the contrary, suggested that standard mindfulness training led to improved outcomes relative to spiritual mindfulness.

Mindfulness and Psychological Functioning

Results partially supported the hypothesis that mindfulness training would lead to greater improvements in psychological functioning relative to a control condition. Five variables were considered indicators of psychological functioning—anxiety symptoms, depression symptoms,
somatic concerns, impairment as a result of the prior listed symptoms (PHQSADS impairment), and emotion regulation difficulties. From pre- to post-test, the M condition experienced significantly or marginally significantly greater reductions in three of these variables—anxiety, somatic symptoms, and emotion regulation difficulties—when compared to the control condition. This general pattern held at follow-up as well, though comparisons for anxiety and emotion regulation difficulties lost their significance, suggesting that the effects of mindfulness training may not have persisted in a meaningful way after the intervention was over.

Regarding non-significant findings for depression, for PHQSADS impairment, and for anxiety and emotion regulation difficulties at follow-up, it may be that mindfulness training did not have a meaningful or lasting impact on these variables in this study. However it is difficult to conclude this with confidence for two reasons. First, non-significant patterns in scores for all of these variables favored the M condition over all other conditions—with the exception of PHQSADS impairment. Also, effect sizes for significant or marginally significant pair-wise comparisons in this study were universally quite large ($d \geq 1$), suggesting that there may have been post-hoc comparisons with large effect sizes which were not statistically significant (nor marginally so), as was the case for omnibus analyses for anxiety, depression, and emotion regulation at follow-up.

Regarding the efficacy of mindfulness relative to progressive muscle relaxation, there were indications that mindfulness training led to meaningfully greater improvements in psychological functioning relative to the PMR condition in this sample. The M condition experienced significantly greater reductions in somatic symptoms than the PMR condition at follow-up. Also, at both post-test and follow-up, group means favored the M condition for three of four psychological functioning variables for which variation by condition was not significant.
Further, in contrast to the M condition, the PMR condition did not differ significantly from the control condition for any indicators of psychological functioning at either post-test or follow-up, though there were non-significant trends towards greater improvements in the PMR condition relative to the control condition in five out of the five dependent variables assessing psychological functioning at both post-test and follow-up.

Process analyses suggested that differences in one mindfulness-related construct played an important role in promoting greater efficacy in the M condition as compared to the PMR condition. Process items tested for variation by condition included fit with spiritual background, frequency of spiritual struggles during practice, connection to the sacred during practice, and decentering during practice. Of these, only decentering during practice was found to significantly (or marginally significantly) differ between the M and the PMR condition, with scores higher in the M condition. Further, decentering during practice was shown to partially mediate the discrepancy in somatic symptom improvement in the M condition as compared to the PMR condition, with marginal significance. In addition, trait decentering increased significantly more in the M condition as compared to the PMR condition, which actually experienced a decrease in trait decentering. Note that mediation by decentering during practice was partial, indicating there may have been another important mediator or mediators of the impact of mindfulness on adjustment. One such possible mediator is acceptance (not assessed here), as a recent study found that experiential avoidance—the inverse of acceptance—moderated the relationship between spiritual struggles and several indicators of adjustment (Oemig Dworsky, 2014). Another possibility is that mindfulness training promoted spiritual experiences outside of mindfulness practice or during practice in a manner not captured by the item used here assessing connection to the sacred during practice, and then these spiritual
experiences in turn promoted improvements in somatic distress. In this vein, as part of a larger evaluation of a mindfulness intervention program for college students dealing with the ending of romantic relationships, Falb (2015) found that the links between mindfulness and a variety of measures of adjustment were mediated by daily spiritual experiences.

Overall, these results suggest that online mindfulness training promotes improvement in somatic concerns, and possibly other indicators of psychological functioning, in individuals with modest spiritual struggles, and that mindfulness training may be more effective in this regard than a comparable relaxation condition. These findings are generally consistent with a growing body of literature supporting the efficacy and effectiveness of mindfulness training in improving psychological functioning across a range of populations (Chiesa & Serretti, 2009; Grossman, Niemann, Schmidt & Walach, 2004; Khoury, Lecomte, Fortin, Masse, Therien, et al, 2013; Hofmann, Sawyer, Witt & Oh, 2010), as well as a small number of studies suggesting that mindfulness can be effectively taught in an online format (Cavanaugh, Strauss, Griffiths, Wyper & Jones, 2013; Davis & Zautra, 2013; Krusche, Cyhlarova, & Williams, 2013).

**Mindfulness and Spiritual Functioning**

Results partially supported the hypothesis that mindfulness training would lead to better spiritual functioning relative to the control condition and the PMR condition. Five variables were considered indicators of spiritual functioning—religious and spiritual struggles (RSS), RSS-related distress, RSS-related impairment, spiritual growth, and spiritual decline. For these variables, the only significant finding was that spiritual growth scores were higher in the M condition than the PMR condition. There were no significant comparisons between the M condition and the control condition for any of the planned analyses of spiritual dependent variables.
An important question is how mindfulness practice promoted spiritual growth in this study, given that connection to the sacred during practice was not significantly greater in the M condition relative to the PMR condition. Among process variables tested, decentering during practice was the best candidate, but mediation analyses revealed that the effect of decentering during practice on spiritual growth may not have been independent of the effect of condition. Perhaps some other facet of mindfulness during practice—for instance, curiosity during practice, not assessed in this study—may have played a more important role than decentering during practice. Or perhaps acceptance or spiritual experiences were key to the efficacy of mindfulness for spiritual growth, as suggested above with regard to psychological adjustment. Further research should consider a variety of other potential mediators of these links, including spiritual as well as psychological and social variables.

An unexpected finding with regard to spiritual functioning was that the M condition led to greater spiritual growth relative to the PMR condition but *not* relative to the control condition. Exploratory examination of correlations between service attendance and dependent variables by condition suggest that this result may have been due to the fact that higher service attendance tended to promote spiritual growth to a greater extent in control participants relative to intervention conditions. Supporting this possibility, service attendance was found to significantly moderate the impact of intervention participation on spiritual growth. It’s possible that high service attenders had a more difficult time mastering key tasks of mindfulness, perhaps due to subtle biases against or hesitations about meditation as a quasi-spiritual but non-religious practice, and this difficulty with mindfulness practice may have in turn negatively impacted spiritual growth.
Regarding non-significant findings for spiritual struggles and related constructs, these findings may indicate that brief mindfulness training does not have a meaningful impact on spiritual problems. However, it may not be appropriate to reach this conclusion. As with the psychological variables above, non-significant patterns in group means consistently favored the M condition over the control condition and the PMR condition for spiritual struggles, struggles-related distress, and spiritual decline. In addition, omnibus analyses for RSS, RSS-related distress, and RSS-related impairment were medium in size and yet still not significant or marginally significant, suggesting that there may also have been post-hoc comparisons with meaningful effects that were still not significant (nor marginally so) due to the small sample size. Another reason to suspect that mindfulness training had a meaningful impact on spiritual struggles grew out of exploratory analyses which revealed that moral struggles were significantly diminished in the M condition relative to the control condition with large effect sizes at both post-test ($d = 1.12$) and and follow-up (1.52).

Overall these results suggest that brief online mindfulness training promotes spiritual growth in individuals experiencing modest spiritual struggles, though this finding may not generalize to a more religiously committed sample. Results also suggest that mindfulness training may be helpful in mitigating moral struggles, though benefits regarding spiritual struggles generally are questionable and further research is necessary. Findings regarding benefits to spiritual functioning would be consistent with other studies that reported increases in positive spiritual constructs after mindfulness training (e.g., Carmody, Reed, Kristeller & Merriam, 2008; Greeson, Webber, Smoski, Brantley, Ekblad et al 2011; Shapiro, Schwartz & Bonner, 1998) and one study finding that that mindfulness training leads to decreased spiritual struggles (Oman, Shapiro, Thoresen, Flinders, Driskill, & Plante, 2007).
Spirituality as a Resource in Mindfulness Training

Results failed to support the hypothesis that adding spiritual content to mindfulness training would lead to superior outcomes relative to standard mindfulness training. In fact, findings suggested the opposite. Relative to the MS condition, the M condition experienced significantly greater decreases in somatic symptoms and greater increases in trait decentering, trait curiosity, and spiritual growth at follow-up. Further, trends in correlations between spiritual growth and service attendance suggested that the M condition may have promoted spiritual growth more effectively than the MS condition among high service attenders, a group for which it was hoped that a spiritually integrated mindfulness would be especially beneficial.

This is not to say that the experience of the sacred was unimportant to mindfulness and relaxation practice in this study, as connection to the sacred during practice was strongly associated with spiritual growth and was marginally significantly associated with decreases in anxiety. What is clear, however, is that addition of spiritual material to mindfulness training did not help participants feel more connected to the sacred. Recall that the MS condition contained almost identical material to the M condition with the exception of added information intended to help participants to 1) see mindfulness as a potentially sacred activity and 2) practice bringing mindfulness to their thoughts and feelings related to their spiritual struggle. Yet the MS condition did not promote greater connection to the sacred during practice or more frequent thoughts/feelings related to struggles during practice. In fact, non-significant patterns in means for these process variables favored the M condition over the MS condition.

Given that connection to the sacred predicted decreased anxiety and more spiritual growth, it would seem plausible that a mindfulness intervention promoting greater connection to the sacred during practice would lead to better outcomes. One might also reasonably conclude
that incorporating sacred concepts would be an effective way to do this. However, perhaps connection to the sacred during mindfulness practice is not best achieved through incorporation of spiritual concepts. Indeed, some mindfulness teachers see mindfulness as promoting connection to the sacred by helping people let go of concepts and stories, spiritual or otherwise, thereby achieving greater intimacy with and appreciation of their unfiltered, moment-by-moment experience (Bergemann, Siegel, Belzer, Siegel, and Feuille, 2013; personal communication, Tempel Smith, May 2010). Alternately, perhaps spiritual concepts can be useful in mindfulness practice, but just not in the manner employed here. Perhaps framing mindfulness as a spiritual activity is helpful, but deliberately bringing spiritual struggles to mind during meditation is too challenging for spiritual strugglers trying to learn mindfulness with only brief instruction.

Process analyses suggested that the superior efficacy of the M condition relative to the MS condition was due to diminished decentering in the MS condition. Decentering during practice was higher in the M condition relative to the MS condition, and decentering during practice significantly partially mediated the impact of condition (M vs. MS) on somatic symptoms. Together these findings suggest that the spiritual material may have detracted from participants’ effective implementation of mindfulness instructions during practice, thereby diminishing the efficacy of the MS condition with regard to psychological functioning. Reasons for diminished efficacy in promoting spiritual growth were less clear, as decentering did not significantly mediate the effect of condition on spiritual growth.

In summary, these findings suggest that the addition of spiritual material may detract from effective implementation of brief mindfulness training in individuals with modest spiritual struggles. Notably, these results differ from those of a prior study finding that a spiritual mindfulness script led to higher state decentering relative to a standard mindfulness script during
a cold pressor task (Feuille & Pargament, 2013). A potential explanation for the discrepancy in these findings is that spiritual material distracts from key mindfulness tasks among those struggling spiritually, while those with less salient struggles may find spiritual material helpful in promoting decentering. Another possible explanation is that the spiritual mindfulness condition in the prior study did not ask participants to make spiritual struggles a focus of mindfulness, as was done in one of the sessions for the current study.

Yet overall the results of these two studies of spiritual mindfulness meditation are similar in that they did not favor spiritual meditation over secular meditation in the striking manner that was observed in two studies of spiritual and secular mantra meditation, one in a general sample of college students (Wachholtz & Pargament, 2005) and another in a sample of migraineurs (Wachholtz & Pargament, 2008; Wachholtz, Malone, & Pargament, 2015). In both of these studies, spiritual meditation led to greater decreases in anxiety, greater increases in spiritual experiences, and higher pain tolerance relative to secular meditation. In addition, among migraineurs, spiritual meditation led to greater increases in headache-related self-efficacy and greater decreases in migraine headache frequency and migraine medication use (Wachholtz & Pargament, 2008; Wachholtz, Malone, & Pargament, 2015). Why might the results of the current study differ so markedly from these two studies of mantra meditation?

Perhaps the type of meditation—mindfulness vs. mantra—may be important in explaining these different results (Feuille & Pargament, 2013). Mantra meditation involves mental repetition of a chosen mantra, in addition to instructions about how to focus one’s attention on the task of repeating the mantra, while mindfulness asks participants to focus their attention on some aspect of present-moment experience—for instance, the breath or body sensations—without deliberately interfering with that aspect of experience. It’s common for
mantra meditation teachers to emphasize the process of focusing on the mantra and the soothing sound quality of the mantra over the semantic meaning of the mantra (Benson, 1975; Carrington, 1978), but it may be the case that the semantic meaning of the mantra can enhance the effectiveness of the meditation. Perhaps the same is not true for mindfulness meditation—that a mindful focus on the breath, for example, is effective in a manner independent of the understood spiritual or non-spiritual significance of the breath.

Another possible explanation of these differing results is that spiritualizing meditation is more straightforward in the case of mantra meditation and may therefore be more effective. In the mantra meditation studies mentioned above, a spiritual meditation was developed by asking participants to choose from a set of spiritual mantras, such as “God is love” and “God is peace,” and participants uncomfortable with the word “God” were asked to substitute another word more appropriate for their own spirituality. In contrast, the approach taken here and in a prior study (Feuille & Pargament, 2013) was more subtle and involved prompts to help participants understand mindfulness meditation as a potentially spiritual activity—for instance, by providing information on the sanctity of the breath across traditions. It may be that the challenges of incorporating spirituality into mindfulness meditation, in a manner that is both effective and accommodative of a range of spiritual backgrounds, generalizes to efforts to integrate spirituality into other similarly complex psychological treatments, or it may be that this challenge is specific to brief mindfulness training.

**Limitations and Future Directions**

This study had a number of important limitations. The small sample size was particularly problematic, making it difficult to interpret non-significant findings as indicative of a lack of meaningful effects. There are a number of reasons to believe that a larger sample size may have
yielded more significant findings favoring the M condition over other conditions, and possibly favoring the MS or PMR condition over the control condition, including the following: 1) large yet non-significant (nor marginally significant) effect sizes were found for omnibus analyses of anxiety, depression and emotion regulation difficulties at follow-up; 2) medium yet non-significant (nor marginally significant) effect sizes were found for omnibus analyses of RSS at follow-up and RSS-related distress and RSS-related impairment at both post-test and follow-up; and 3) in all of the cases just mentioned, trends favored M condition over all other conditions, as well as favoring all intervention conditions over the control condition.

Also, there are a number of limitations of this study regarding generalizability of findings to other samples. Participants were exclusively college students enrolled in psychology courses and were mostly Christian, and these results may not hold for a community sample or a more religiously diverse sample. Moderation analyses raise particular concerns about generalizability to a more religiously committed sample, as higher service attenders tended to experience interventions as less helpful in the current study. Also, while regular practitioners of meditation or similar practices were excluded, those with prior instruction in meditation or similar practices were not excluded. Forty percent of the sample reported prior exposure to meditative or similar techniques, and this conceivably could have diminished between group differences (Verkaik, 2013). On the other hand, given how pervasive yoga and similar practices have become in Western culture, those most amenable to these practices may already be engaging in them, generating concern that an entirely meditation-naïve sample would find a mindfulness intervention less helpful.

Another important drawback of the study was reliance exclusively on self-report measures. The most robust findings in this study involved a measure of somatic symptoms
called the PHQ-15, a validated indicator of somatoform disorder symptoms that asks individuals how much each of a set of 15 bodily symptoms have “bothered” them. We cannot know for certain whether participants in the M condition actually were less bothered by symptoms than participants in the PMR condition and control condition, or whether they were simply more motivated to perceive themselves as less upset by symptoms, given repeated instructions to nonjudgmentally observe and “welcome” various experiences, particularly body sensations.

Future studies might address these limitations by recruiting a larger, more diverse sample and utilizing less subjective indicators of psychological and spiritual functioning—for instance, reports of close others, frequency of medical appointments, indicators of academic or job performance, physiological data, engagement in private religious practice, and attendance of religious ceremonies. Future studies might also look more carefully into how mindfulness affects spiritual growth by assessing potential mediators not assessed here—for instance, curiosity during practice, acceptance of struggle, measures of spiritual experiences or spiritual emotions, or a measure of living in accord with one’s values.

**Conclusion**

This study extends prior research supporting the efficacy of mindfulness. Results indicate that brief online mindfulness training is effective in diminishing somatic concerns and promoting spiritual growth among individuals with modest spiritual struggles. Further, results suggest that adding explicitly spiritual content may detract from effective implementation of brief mindfulness training among spiritual strugglers, suggesting caution should be used when specifically addressing spirituality in brief mindfulness training for those struggling spiritually.
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reduction on medical and premedical students. *Journal of Behavioral Medicine, 21*(6), 581-599.


Table 1. Demographics and pre-test values of dependent variables among study completers.

<table>
<thead>
<tr>
<th>Condition (n)</th>
<th>Total (46)</th>
<th>Control (12)</th>
<th>M (10)</th>
<th>MS (10)</th>
<th>PMR (14)</th>
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<td><strong>Beliefs about God</strong></td>
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<td>1 (7.1%)</td>
</tr>
<tr>
<td>Ineffable God</td>
<td>25 (54.3%)</td>
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<tr>
<td>Believe fully</td>
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<td>Choose not to answer</td>
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<td><strong>Prayer habits</strong></td>
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<tr>
<td>Regularly</td>
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<td>1 (10.0%)</td>
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</tr>
<tr>
<td>In times of need</td>
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<td>6 (50.0%)</td>
<td>6 (60.0%)</td>
<td>5 (50.0%)</td>
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<td>Ceremonies only</td>
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<td>1 (10.0%)</td>
<td>3 (21.4%)</td>
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<tr>
<td>Never</td>
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<td>2 (16.7%)</td>
<td>1 (10.0%)</td>
<td>1 (10.0%)</td>
<td>2 (14.3%)</td>
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</table>
## MINDFULNESS AND SPIRITUAL STRUGGLES

<table>
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<tr>
<th>Condition (n)</th>
<th>Total (46)</th>
<th>Control (12)</th>
<th>M (10)</th>
<th>MS (10)</th>
<th>PMR (14)</th>
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<td>Variable (Cronbach’s alpha if applicable)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
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<td>Age</td>
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<td>18.83 (0.58)</td>
<td>19.70 (1.82)</td>
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<td>19.29 (1.54)</td>
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<td>Services attended in the past year</td>
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<td>23.33 (44.03)</td>
<td>19.70 (32.17)</td>
<td>7.20 (10.51)</td>
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<td>Subj. religiousn.</td>
<td>1.43 (0.91)</td>
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<td>1.60 (0.84)</td>
<td>1.40 (0.84)</td>
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<tr>
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<td>Anxiety.</td>
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<td>10.17 (4.63)</td>
<td>11.00 (5.35)</td>
<td>8.70 (4.62)</td>
<td>8.29 (4.97)</td>
</tr>
<tr>
<td>Depressionc</td>
<td>8.61 (5.62)</td>
<td>9.50 (6.38)</td>
<td>9.50 (6.02)</td>
<td>7.30 (3.97)</td>
<td>8.14 (6.01)</td>
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<tr>
<td>Somaticc</td>
<td>9.17 (5.02)</td>
<td>10.00 (4.92)</td>
<td>10.90 (6.10)</td>
<td>8.30 (3.50)</td>
<td>7.89 (5.22)</td>
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<td>PHQ-SADS imp</td>
<td>0.866</td>
<td>1.02 (0.83)</td>
<td>1.17 (1.03)</td>
<td>1.10 (0.88)</td>
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<td>TMS-Mindfulness</td>
<td>22.09 (8.96)</td>
<td>25.17 (8.07)</td>
<td>21.80 (4.84)</td>
<td>23.00 (9.24)</td>
<td>19.00 (11.31)</td>
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<td>Curios. (0.892)</td>
<td>12.37 (5.65)</td>
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<td>Decent. (0.690)</td>
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<td>Emotion regulation difficulties (0.924)</td>
<td>47.28 (14.39)</td>
<td>51.08 (14.24)</td>
<td>50.70 (13.87)</td>
<td>41.20 (10.94)</td>
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<td>R/S Struggles (0.936)</td>
<td>54.26 (19.32)</td>
<td>59.15 (24.91)</td>
<td>51.72 (16.44)</td>
<td>52.50 (17.32)</td>
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<td>Moralc</td>
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<td>2.75 (1.38)</td>
<td>2.80 (1.25)</td>
<td>2.55 (1.07)</td>
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<td>Meaning (0.939)</td>
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<td>1.98 (0.95)</td>
<td>2.08 (1.11)</td>
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<td>1.50 (0.97)</td>
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<td>0.90 (0.88)</td>
<td>0.60 (0.52)</td>
<td>1.07 (0.83)</td>
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</table>

a. Participants who identified their current faith as other described their affiliation as deism, spiritual but not religious, and spiritualist.
b. Scale ranges from 0 (not at all) to 4 (extremely).
c. Scores 0 to 4 indicate minimal symptoms; 5 to 9, mild; 10 to 14, moderate; 15 and up, severe.
d. Scale ranges from 0 (not at all difficult) to 3 (extremely difficult).
e. RSS subscales are presented as average item score, with a scale ranging from 1 (not at all, or does not apply) to 4 (a great deal).
f. Scale from 0 (no distress) to 4 (a great deal of distress)
g. Scale from 0 (not difficult at all) to 4 (extremely difficult)
Table 2. Treatment characteristics among study completers.

<table>
<thead>
<tr>
<th>Condition (n)</th>
<th>Total (34)</th>
<th>M (10)</th>
<th>MS (10)</th>
<th>PMR (14)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male audio (vs. female)</strong></td>
<td>n (% of Total)</td>
<td>n (% of M)</td>
<td>n (% of MS)</td>
<td>n (% of PMR)</td>
</tr>
<tr>
<td>17 (50.0%)</td>
<td>6 (60.0%)</td>
<td>5 (50.0%)</td>
<td>6 (42.9%)</td>
<td></td>
</tr>
<tr>
<td><strong>Weekly surveys completed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>7 (20.6%)</td>
<td>2 (20.0%)</td>
<td>1 (10.0%)</td>
<td>4 (28.6%)</td>
</tr>
<tr>
<td>4</td>
<td>27 (79.4%)</td>
<td>8 (80.0%)</td>
<td>9 (90.0%)</td>
<td>10 (71.4%)</td>
</tr>
<tr>
<td><strong>Comp. q’s correctly</strong></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>4.53 (1.08)</td>
<td>4.70 (0.67)</td>
<td>4.70 (1.06)</td>
<td>4.29 (1.33)</td>
</tr>
<tr>
<td><strong>Days used audio</strong></td>
<td>13.0 (7.7)</td>
<td>11.5 (5.2)</td>
<td>15.4 (5.2)</td>
<td>12.4 (10.4)</td>
</tr>
<tr>
<td><strong>Min. of practice during intervention</strong></td>
<td>324 (143)</td>
<td>343 (118)</td>
<td>329 (95)</td>
<td>309 (190)</td>
</tr>
<tr>
<td><strong>Scale: 0 to 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quiet environment</td>
<td>2.06 (0.61)</td>
<td>2.19 (0.62)</td>
<td>2.03 (0.73)</td>
<td>1.99 (0.54)</td>
</tr>
<tr>
<td>Stay awake</td>
<td>1.99 (0.49)</td>
<td>1.90 (0.45)</td>
<td>1.92 (0.45)</td>
<td>2.11 (0.55)</td>
</tr>
<tr>
<td>Use technique</td>
<td>2.05 (0.46)</td>
<td>2.01 (0.39)</td>
<td>2.09 (0.54)</td>
<td>2.04 (0.47)</td>
</tr>
<tr>
<td><strong>Scale: 0 to 4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How relaxing</td>
<td>2.68 (1.04)</td>
<td>2.60 (0.84)</td>
<td>3.20 (0.79)</td>
<td>2.36 (1.22)</td>
</tr>
<tr>
<td>How helpful was the technique</td>
<td>2.24 (1.10)</td>
<td>2.40 (1.17)</td>
<td>2.40 (0.84)</td>
<td>2.00 (1.24)</td>
</tr>
<tr>
<td>How helpful was the intervention</td>
<td>2.32 (1.03)</td>
<td>2.30 (1.06)</td>
<td>2.30 (1.06)</td>
<td>2.36 (1.08)</td>
</tr>
<tr>
<td><strong>From post-test to follow-up</strong></td>
<td>N = 32</td>
<td>n = 8</td>
<td>n = 10</td>
<td>n = 14</td>
</tr>
<tr>
<td>Min. of practice</td>
<td>361 (775)</td>
<td>140 (126)</td>
<td>560 (1229)</td>
<td>345 (564)</td>
</tr>
<tr>
<td>Number of times practiced &gt; 5 min.</td>
<td>9.69 (8.27)</td>
<td>9.38 (5.23)</td>
<td>8.30 (8.46)</td>
<td>10.86 (9.78)</td>
</tr>
</tbody>
</table>

a. Quality of practice items ranged from 0 (not at all successful) to 3 (very successful).

b. How relaxing, How helpful—technique, How helpful—intervention, and fit with spirituality ranged from 0 (not at all) to 4 (very much).

c. May not be a valid estimate of the number of minutes participants practiced between post-test and follow-up for reasons described in the text.
Table 3. Process variables among study completers.

<table>
<thead>
<tr>
<th>Condition (n)</th>
<th>Total (34)</th>
<th>M (10)</th>
<th>MS (10)</th>
<th>PMR (14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale: 0 to 4⁴</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Decentering during practice</td>
<td>1.68 (0.98)</td>
<td>2.50 (1.08)</td>
<td>1.50* (0.53)</td>
<td>1.21** (0.80)</td>
</tr>
<tr>
<td>Fit with spirituality</td>
<td>2.21 (1.23)</td>
<td>2.50 (1.43)</td>
<td>2.40 (1.17)</td>
<td>1.86 (1.10)</td>
</tr>
<tr>
<td>Scale: 0 to 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connected to sacred during practice</td>
<td>0.85 (0.74)</td>
<td>1.20 (0.79)</td>
<td>0.90 (0.57)</td>
<td>0.57 (0.76)</td>
</tr>
<tr>
<td>Median</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>0 Never/almost never</td>
<td>11 (32.4%)</td>
<td>1 (10.0%)</td>
<td>2 (20.0%)</td>
<td>8 (57.1%)</td>
</tr>
<tr>
<td>1 Sometimes</td>
<td>18 (52.9%)</td>
<td>7 (70.0%)</td>
<td>7 (70.0%)</td>
<td>4 (28.6%)</td>
</tr>
<tr>
<td>2 Most of the time</td>
<td>4 (11.8%)</td>
<td>1 (10.0%)</td>
<td>1 (10.0%)</td>
<td>2 (14.3%)</td>
</tr>
<tr>
<td>3 Always/nearly all of the time</td>
<td>1 (2.9%)</td>
<td>1 (10.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Thoughts/feelings related to struggle during practice</td>
<td>0.79 (0.54)</td>
<td>1.10 (0.57)</td>
<td>0.60 (0.52)</td>
<td>0.71 (0.47)</td>
</tr>
<tr>
<td>Median</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>0 Never/almost never</td>
<td>9 (26.5%)</td>
<td>1 (10.0%)</td>
<td>4 (40.0%)</td>
<td>4 (28.6%)</td>
</tr>
<tr>
<td>1 Sometimes</td>
<td>23 (67.6%)</td>
<td>7 (70.0%)</td>
<td>6 (60.0%)</td>
<td>10 (71.4%)</td>
</tr>
<tr>
<td>2 Most of the time</td>
<td>2 (5.9%)</td>
<td>2 (20.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>3 Always/nearly all of the time</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

A **bolded variable name** indicates that variation between conditions was significant or approached significance for this variable.

A **bolded mean** indicates that there was a significant or marginally significant pair-wise comparison involving this variable.

a. Decentering during practice ranged from 0 (not at all) to 4 (very much).

* This condition was significantly lower than the M condition at 0.05 level using Tukey-Kramer post-hoc tests.

** This condition was significantly lower than the M condition at the 0.01 level using Tukey-Kramer post-hoc tests.
### Table 4. Change scores from pre-test to post-test by condition

<table>
<thead>
<tr>
<th>Condition (n)</th>
<th>Total (46)</th>
<th>Control (12)</th>
<th>M (10)</th>
<th>MS (10)</th>
<th>PMR (14)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anxiety</strong></td>
<td>Mean (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-3.56 (5.26)</td>
<td>-0.75&lt;sup&gt;M&lt;/sup&gt; (4.84)</td>
<td>-6.80 (4.66)</td>
<td>-3.40 (4.09)</td>
<td>-3.79 (5.83)</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td>-3.72 (5.31)</td>
<td>-0.83 (3.30)</td>
<td>-5.70 (5.72)</td>
<td>-3.70 (2.87)</td>
<td>-4.79 (6.93)</td>
</tr>
<tr>
<td><strong>Somatic symptoms</strong></td>
<td>-2.98 (4.32)</td>
<td>-1.33&lt;sup&gt;M&lt;/sup&gt; (3.63)</td>
<td>-6.50 (5.80)</td>
<td>-2.60 (2.67)</td>
<td>-2.14&lt;sup&gt;m&lt;/sup&gt; (3.51)</td>
</tr>
<tr>
<td><strong>PHQ-SADS Impairment Medians</strong></td>
<td>N = 44</td>
<td>n = 11</td>
<td>n = 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.34 (0.84)</td>
<td>-0.27 (0.79)</td>
<td>-0.20 (0.79)</td>
<td>-0.11 (0.78)</td>
<td>-0.64 (0.84)</td>
</tr>
<tr>
<td><strong>TMS-Curiosity Medians</strong></td>
<td>-0.35 (4.48)</td>
<td>1.6 (4.25)</td>
<td>1.00</td>
<td>-0.7 (4.60)</td>
<td>-0.93 (4.91)</td>
</tr>
<tr>
<td><strong>TMS- Decentering</strong></td>
<td>-0.65 (7.38)</td>
<td>-0.67 (7.82)</td>
<td>2.70 (6.65)</td>
<td>1.50 (5.70)</td>
<td>-4.57&lt;sup&gt;m&lt;/sup&gt; (7.07)</td>
</tr>
<tr>
<td><strong>Emotion reg. difficulties</strong></td>
<td>-6.22 (10.7)</td>
<td>0.07&lt;sup&gt;ny&lt;/sup&gt; (8.02)</td>
<td>-11.5 (12.0)</td>
<td>-5.6 (7.0)</td>
<td>-8.3 (12.1)</td>
</tr>
<tr>
<td><strong>R/S Struggles Medians</strong></td>
<td>-12.2 (12.8)</td>
<td>-7.02 (9.16)</td>
<td>-17.2 (15.5)</td>
<td>-11.3 (11.2)</td>
<td>-13.6 (14.0)</td>
</tr>
<tr>
<td><strong>Morality Meaning</strong></td>
<td>-0.58 (0.82)</td>
<td>-0.04 (0.71)</td>
<td>-0.73 (0.87)</td>
<td>-0.25 (0.54)</td>
<td>-0.68 (0.79)</td>
</tr>
<tr>
<td><strong>RSS Distress</strong></td>
<td>-0.61 (1.00)</td>
<td>-0.17 (1.03)</td>
<td>-1.0 (-1.05)</td>
<td>-0.60 (0.84)</td>
<td>-0.71 (0.99)</td>
</tr>
<tr>
<td><strong>RSS Impairment</strong></td>
<td>-0.37 (0.95)</td>
<td>0.00 (0.74)</td>
<td>-0.70 (1.06)</td>
<td>-0.20 (0.79)</td>
<td>-0.57 (1.10)</td>
</tr>
</tbody>
</table>

**Notes.**
1. A **bolded variable name** indicates that variation between conditions was significant or approached significance for this variable.
2. A **bolded mean** indicates that there was a significant or marginally significant pair-wise comparison involving this variable.
3. Superscripts denote which groups differed significantly in pairwise comparisons. The M condition is never marked with a superscript. Instead the relevant comparison group will be marked with a superscript as follows:
   - m. This condition differed from the M condition with marginal significance (p < 0.1)
   - M. This condition differed significantly from the M condition (p < 0.05).
4. y. Outlier was winsorized.
Table 5. Change scores from pre-test to follow-up, spiritual growth, and spiritual decline by condition.

<table>
<thead>
<tr>
<th>Condition (n)</th>
<th>Total (42)</th>
<th>Control (10)</th>
<th>M (8)</th>
<th>MS (10)</th>
<th>PMR (14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>-3.83 (5.13)</td>
<td>-1.90 (5.57)</td>
<td>-7.50 (4.57)</td>
<td>-3.30 (5.08)</td>
<td>-3.50 (4.57)</td>
</tr>
<tr>
<td>Depression</td>
<td>-3.00 (4.81)</td>
<td>-1.50 (5.54)</td>
<td>-5.63 (5.34)</td>
<td>-2.80 (3.68)</td>
<td>-2.71 (4.56)</td>
</tr>
<tr>
<td>Somatic</td>
<td>-2.59 (4.17)</td>
<td><strong>-0.70</strong>&lt;sup&gt;M&lt;/sup&gt; (3.23)</td>
<td><strong>-7.25</strong>&lt;sup&gt;M&lt;/sup&gt; (2.81)</td>
<td><strong>-1.90</strong>&lt;sup&gt;M&lt;/sup&gt; (3.28)</td>
<td><strong>-1.79</strong>&lt;sup&gt;M&lt;/sup&gt; (4.34)</td>
</tr>
<tr>
<td>symptoms</td>
<td>PHQ-SADS</td>
<td>N = 41</td>
<td></td>
<td></td>
<td>n = 13</td>
</tr>
<tr>
<td>Impairment</td>
<td>-0.29 (0.78)</td>
<td>-0.10&lt;sup&gt;y&lt;/sup&gt; (0.99)</td>
<td>-0.38 (0.52)</td>
<td>-0.30 (0.82)</td>
<td>-0.39 (0.77)</td>
</tr>
<tr>
<td>TMS--</td>
<td>-0.76 (5.50)</td>
<td>-0.02 (4.94)</td>
<td><strong>3.50</strong>&lt;sup&gt;M&lt;/sup&gt; (4.63)</td>
<td><strong>-3.90</strong>&lt;sup&gt;M&lt;/sup&gt; (5.15)</td>
<td>-1.50 (5.37)</td>
</tr>
<tr>
<td>Curiosity</td>
<td>-0.23 (6.64)</td>
<td>0.55 (6.52)</td>
<td><strong>4.13</strong>&lt;sup&gt;M&lt;/sup&gt; (5.79)</td>
<td>0.70 (4.50)</td>
<td><strong>-3.92</strong>&lt;sup&gt;M&lt;/sup&gt; (7.09)</td>
</tr>
<tr>
<td>Decentering</td>
<td>Emotion reg.</td>
<td>-8.21 (12.0)</td>
<td>-3.80 (5.94)</td>
<td>-13.1 (14.9)</td>
<td>-6.70 (9.60)</td>
</tr>
<tr>
<td>difficulties</td>
<td>R/S Struggles</td>
<td>-13.9 (13.9)</td>
<td>-8.40 (11.6)</td>
<td>-18.34 (16.9)</td>
<td>-13.4 (13.1)</td>
</tr>
<tr>
<td>Morality</td>
<td>-0.51 (1.02)</td>
<td><strong>0.25</strong>&lt;sup&gt;M&lt;/sup&gt; (1.10)</td>
<td><strong>-1.17</strong>&lt;sup&gt;M&lt;/sup&gt; (1.10)</td>
<td>-0.70 (0.54)</td>
<td>-15.8 (14.2)</td>
</tr>
<tr>
<td>RSS Distress</td>
<td>-0.62 (1.10)</td>
<td>-0.10 (1.20)</td>
<td>-1.0 (1.07)</td>
<td>-0.60 (0.97)</td>
<td>-0.70 (1.12)</td>
</tr>
<tr>
<td>RSS Impairment</td>
<td>-0.38 (0.96)</td>
<td>0.10 (1.10)</td>
<td>-0.63 (0.74)</td>
<td>-0.20 (0.79)</td>
<td>-0.71 (0.99)</td>
</tr>
<tr>
<td>Spiritual</td>
<td><strong>22.1</strong>&lt;sup&gt;x&lt;/sup&gt; (13.9)</td>
<td>22.7 (17.2)</td>
<td><strong>34.8</strong>&lt;sup&gt;x&lt;/sup&gt; (10.6)</td>
<td><strong>18.1</strong>&lt;sup&gt;M&lt;/sup&gt; (12.9)</td>
<td><strong>17.4</strong>&lt;sup&gt;M&lt;/sup&gt; (10.3)</td>
</tr>
<tr>
<td>growth (.986)&lt;sup&gt;x&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiritual</td>
<td>7.52 (5.36)</td>
<td>9.40 (7.41)</td>
<td>6.25 (3.96)</td>
<td>4.80 (1.32)</td>
<td>8.86 (5.63)</td>
</tr>
<tr>
<td>decline (.907)&lt;sup&gt;y&lt;/sup&gt;</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Notes.
1. A **bolded variable name** indicates that variation between conditions was significant or approached significance for this variable.
2. A **bolded mean** indicates that there was a significant or marginally significant pair-wise comparison involving this variable.
3. Superscripts denote which groups differed significantly in pairwise comparisons. The M condition is never marked with a superscript. Instead the relevant comparison group will be marked with a superscript as follows:
   m. This condition differed from the M condition with marginal significance (p < 0.1)
   M. This condition differed significantly from the M condition (p < 0.05).
   x. Cronbach’s alpha for this scale.
   y. Outlier was winsorized.
Table 6. Spearman correlations between process variables and changes in dependent variables from pre-test to follow-up.

<table>
<thead>
<tr>
<th>Process variable</th>
<th>Anx</th>
<th>Dep.</th>
<th>Som</th>
<th>PHQ imp</th>
<th>TMS cur</th>
<th>TMS dec</th>
<th>Emo. diff.</th>
<th>RSS</th>
<th>RSS dist</th>
<th>RSS imp</th>
<th>Sp grow</th>
<th>Sp dec</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practice/intervention characteristics (N = 32)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decent.</td>
<td>-.40*</td>
<td>-.47**</td>
<td>-.48**</td>
<td>-.14</td>
<td>.28</td>
<td>.27</td>
<td>-.40</td>
<td>-.08</td>
<td>-.20</td>
<td>-.24</td>
<td>.44*</td>
<td>-.26</td>
</tr>
<tr>
<td>Connect to sacr.</td>
<td>-.31†</td>
<td>-.27</td>
<td>-.26</td>
<td>-.24</td>
<td>.09</td>
<td>.10</td>
<td>-.06</td>
<td>.07</td>
<td>.03</td>
<td>-.01</td>
<td>.49**</td>
<td>-.09</td>
</tr>
<tr>
<td>Struggle</td>
<td>-.12</td>
<td>-.22</td>
<td>-.27</td>
<td>.002</td>
<td>.13</td>
<td>.17</td>
<td>-.29</td>
<td>-.27</td>
<td>-.15</td>
<td>-.24</td>
<td>.10</td>
<td>-.02</td>
</tr>
<tr>
<td>Relax.</td>
<td>-.29</td>
<td>-.46**</td>
<td>-.31†</td>
<td>-.33†</td>
<td>.04</td>
<td>.09</td>
<td>-.15</td>
<td>.07</td>
<td>.01</td>
<td>.06</td>
<td>.32†</td>
<td>-.06</td>
</tr>
<tr>
<td>Fit with spirit.</td>
<td>-.24</td>
<td>-.37*</td>
<td>-.39*</td>
<td>-.25</td>
<td>.12</td>
<td>.33†</td>
<td>-.19</td>
<td>.06</td>
<td>-.03</td>
<td>.01</td>
<td>.36*</td>
<td>.03</td>
</tr>
<tr>
<td><strong>Across all conditions (N = 42)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMS curb</td>
<td>-.04</td>
<td>-.06</td>
<td>-.26†</td>
<td>-.04</td>
<td>--</td>
<td>.16</td>
<td>-.03</td>
<td>.23</td>
<td>.07</td>
<td>.18</td>
<td>.25</td>
<td>.002</td>
</tr>
<tr>
<td>TMS decb</td>
<td>-.01</td>
<td>-.18</td>
<td>-.17</td>
<td>.13</td>
<td>--</td>
<td>--</td>
<td>-.08</td>
<td>-.22</td>
<td>-.22</td>
<td>.04</td>
<td>.13</td>
<td>-.009</td>
</tr>
<tr>
<td>RSSb</td>
<td>.27†</td>
<td>.38*</td>
<td>.24</td>
<td>.12</td>
<td>.23</td>
<td>.22</td>
<td>.53**</td>
<td>--</td>
<td>.67**</td>
<td>.59**</td>
<td>-.06</td>
<td>.07</td>
</tr>
</tbody>
</table>

**Notes.**

a. except for correlation with PHQGADS impairment, where N = 31.
b. except for correlation with PHQGADS impairment, where N = 41.
† significant at the 0.10 level.
* significant at the 0.05 level
** significant at the 0.01 level
Table 7. Decentering during practice as a mediator of the effect of condition on somatic symptom changes from pre-test to follow-up.

<table>
<thead>
<tr>
<th>M vs. MS comparison (N = 18)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B'</td>
<td>SE</td>
<td>t</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>a path</td>
<td>1.13</td>
<td>0.38</td>
<td>2.94</td>
<td>0.010</td>
</tr>
<tr>
<td>b path</td>
<td>-1.86</td>
<td>0.87</td>
<td>-2.14</td>
<td>0.049</td>
</tr>
<tr>
<td>c path</td>
<td>-5.35</td>
<td>1.46</td>
<td>-3.65</td>
<td>0.002</td>
</tr>
<tr>
<td>c' path</td>
<td>-3.26</td>
<td>1.64</td>
<td>-1.99</td>
<td>0.066</td>
</tr>
<tr>
<td>Ind. effect</td>
<td>-1.90</td>
<td></td>
<td></td>
<td>95% [-5.15, -0.28]</td>
</tr>
<tr>
<td>CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| M vs. PMR comparison (N = 22) |  |  |  |  |
| B'                           | SE | t  | p  |
| a path                       | 1.41 | 0.40 | 3.53 | 0.002 |
| b path                       | -1.67 | 0.91 | -1.86 | 0.078 |
| c path                       | -5.46 | 1.72 | -3.18 | 0.005 |
| c' path                      | -3.09 | 2.06 | -1.49 | 0.152 |
| Ind. effect                  | -2.45 |  |  | 95% [-7.87, 0.14]; 90% [-6.77, -0.29] |

x. Reference category
y. Estimated with bias correction and 5000 bootstrap samples.
z. 90% CI also provided when 95% CI crossed zero in order to check for marginal significance.
Table 8. Decentering during practice as a mediator of the effect of condition on spiritual growth.

<table>
<thead>
<tr>
<th>M vs MSx comparison (N = 18)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>t</td>
<td>p</td>
</tr>
<tr>
<td>a path</td>
<td>1.13</td>
<td>0.38</td>
<td>2.95</td>
<td>0.010</td>
</tr>
<tr>
<td>b path</td>
<td>4.89</td>
<td>3.41</td>
<td>1.44</td>
<td>0.172</td>
</tr>
<tr>
<td>c path</td>
<td>16.65</td>
<td>5.38</td>
<td>3.10</td>
<td>0.007</td>
</tr>
<tr>
<td>c' path</td>
<td>11.15</td>
<td>6.47</td>
<td>1.72</td>
<td>0.105</td>
</tr>
<tr>
<td>Ind. effecty CIz</td>
<td>5.94</td>
<td>95% [-2.49, 22.16]; 90% [-1.12, 19.51]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M vs PMRx comparison (N = 22)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bx</td>
<td>SE</td>
<td>t</td>
<td>p</td>
</tr>
<tr>
<td>a path</td>
<td>1.41</td>
<td>0.40</td>
<td>3.53</td>
<td>0.002</td>
</tr>
<tr>
<td>b path</td>
<td>2.84</td>
<td>2.57</td>
<td>1.11</td>
<td>0.282</td>
</tr>
<tr>
<td>c path</td>
<td>17.39</td>
<td>4.62</td>
<td>3.77</td>
<td>0.001</td>
</tr>
<tr>
<td>c' path</td>
<td>13.38</td>
<td>5.85</td>
<td>2.29</td>
<td>0.034</td>
</tr>
<tr>
<td>Ind. effecty CIz</td>
<td>4.06</td>
<td>95% [-3.54, 17.70]; 90% [-2.08, 15.75]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

x. Reference category
y. Estimated with bias correction and 5000 bootstrap samples.
z. 90% CI also provided when 95% CI crossed zero in order to check for marginal significance.
Table 9. Spearman correlations between fit with spirituality and religious/spiritual background variables.

<table>
<thead>
<tr>
<th>Pre-test R/S variable</th>
<th>Belief in God without doubt</th>
<th>Pray regularly</th>
<th>Service attendance</th>
<th>Subjective religiousness</th>
<th>Subjective spirituality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit with spirituality</td>
<td>-.27</td>
<td>.23</td>
<td>-.49**</td>
<td>-.30†</td>
<td>.23</td>
</tr>
</tbody>
</table>

*N = 34.
† significant at the 0.10 level.
* significant at the 0.05 level
** significant at the 0.01 level
Table 10. Spearman correlations with service attendance for pre-test to follow-up changes.

<table>
<thead>
<tr>
<th>Dep. Variab.</th>
<th>Anxiety (Anx)</th>
<th>Depression (Dep.)</th>
<th>Somatization (Som)</th>
<th>PHQ Imp</th>
<th>TMS cur</th>
<th>TMS dec</th>
<th>Emo. diff.</th>
<th>RSS</th>
<th>RSS dist</th>
<th>RSS imp</th>
<th>Sp grow</th>
<th>Sp dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test to f/up (^b)</td>
<td>.51</td>
<td>.53</td>
<td>-.32</td>
<td>.38</td>
<td>.11</td>
<td>.27</td>
<td>-.35</td>
<td>.34</td>
<td>-.10</td>
<td>.19</td>
<td>.80**</td>
<td>.07</td>
</tr>
<tr>
<td>Intervention only (M, MS &amp; PMR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test to f/up (^a)</td>
<td>.25</td>
<td>.27</td>
<td>.25</td>
<td>.29</td>
<td>.06</td>
<td>-.25</td>
<td>.19</td>
<td>.09</td>
<td>.23</td>
<td>.17</td>
<td>.14</td>
<td>.12</td>
</tr>
<tr>
<td>M condition only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test to f/up (^c)</td>
<td>.03</td>
<td>-.14</td>
<td>.28</td>
<td>.12</td>
<td>.62</td>
<td>-.11</td>
<td>.22</td>
<td>.01</td>
<td>-.25</td>
<td>-.28</td>
<td>0.55</td>
<td>-.04</td>
</tr>
<tr>
<td>MS condition only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test to f/up (^d)</td>
<td>.18</td>
<td>.56</td>
<td>.49</td>
<td>.34</td>
<td>-.35</td>
<td>-.25</td>
<td>.31</td>
<td>-.03</td>
<td>.23</td>
<td>.61</td>
<td>-.15</td>
<td>.32</td>
</tr>
<tr>
<td>PMR only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test to f/up (^e)</td>
<td>.29</td>
<td>.36</td>
<td>.22</td>
<td>.26</td>
<td>.14</td>
<td>-.35</td>
<td>.17</td>
<td>.15</td>
<td>.40</td>
<td>.26</td>
<td>0.40</td>
<td>.06</td>
</tr>
</tbody>
</table>

\(^a\) N = 32, except for the correlation with PHQGADS impairment, where N = 31.
\(^b\) N = 10.
\(^c\) N = 8.
\(^d\) N = 10.
\(^e\) N = 14.

† significant at the 0.10 level.
* significant at the 0.05 level
** significant at the 0.01 level
Table 11. Service attendance as a moderator of treatment involvement on somatic symptoms.

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$B$</td>
</tr>
<tr>
<td>Condition</td>
<td>-3.406*</td>
<td>-3.464†</td>
</tr>
<tr>
<td>Service Attendance</td>
<td>0.007</td>
<td>0.002</td>
</tr>
<tr>
<td>Condition x Service</td>
<td></td>
<td>0.005</td>
</tr>
<tr>
<td>Attendance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.123†</td>
<td>0.123</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td></td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

$N = 41$
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
Table 12. Service attendance as a moderator of treatment involvement on TMS decentering.

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B</strong></td>
<td>0.148&lt;sup&gt;†&lt;/sup&gt;</td>
<td>0.214*</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>0.148&lt;sup&gt;†&lt;/sup&gt;</td>
<td>0.214*</td>
</tr>
<tr>
<td><strong>ΔR²</strong></td>
<td>0.065&lt;sup&gt;†&lt;/sup&gt;</td>
<td>0.065&lt;sup&gt;†&lt;/sup&gt;</td>
</tr>
<tr>
<td>Condition</td>
<td>-1.647</td>
<td>2.343</td>
</tr>
<tr>
<td>Service Attendance</td>
<td>-0.182&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.285</td>
</tr>
<tr>
<td>Condition x Service</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

N = 39
† p < 0.10
* p < 0.05
** p < 0.01
Table 13. Service attendance as a moderator of treatment involvement on emotion regulation difficulties.

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition</strong></td>
<td>-6.752</td>
<td>-4.757</td>
</tr>
<tr>
<td><strong>Service Attendance</strong></td>
<td>-0.64</td>
<td>-0.019</td>
</tr>
<tr>
<td><strong>Condition x Service Attendance</strong></td>
<td></td>
<td>-0.111</td>
</tr>
<tr>
<td><strong>$R^2$</strong></td>
<td>0.068</td>
<td>0.085</td>
</tr>
<tr>
<td><strong>$\Delta R^2$</strong></td>
<td></td>
<td>0.017</td>
</tr>
</tbody>
</table>

$N = 42$

$\dagger p < 0.10$

$* p < 0.05$

$** p < 0.01$
Table 14. Service attendance as a moderator of treatment involvement on spiritual growth.

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$B$</td>
</tr>
<tr>
<td>Condition</td>
<td>2.265</td>
<td>11.63†</td>
</tr>
<tr>
<td>Service Attendance</td>
<td>0.201†</td>
<td>0.856**</td>
</tr>
<tr>
<td>Condition x Service Attendance</td>
<td>-0.751*</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.094</td>
<td>0.232*</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td></td>
<td>0.138*</td>
</tr>
</tbody>
</table>

$N = 41$

† $p < 0.10$

* $p < 0.05$

** $p < 0.01$
Figure 1. Procedures flow-chart and attrition.

* Number next to each arrow indicates number of participants who completed the step above.
** Participants who completed post-test were considered study-completers.
Note. The M condition decreased significantly more than the NoTx condition from pre-test to post-test. Variation between conditions was not significant for pre-test to follow-up changes. $N = 46$ for pre-test and post-test. $N = 42$ for follow-up.
Figure 3. Change in depression scores by condition

Note. For pre- to post-test changes, variation between conditions approached significance, but there were no significant pair-wise comparisons. For pre-test to follow-up changes, variation between conditions was not significant. $N = 46$ for pre-test and post-test. $N = 42$ for follow-up.
Figure 4. Change in somatic symptoms by condition

Note. For pre- to post-test changes, the M condition decreased significantly more than the control condition and marginally significantly more than PMR condition. For pre-test to follow-up changes, the M condition decreased significantly more than the NoTx, PMR and MS conditions. N = 46 for pre-test and post-test. N = 42 for follow-up.
Figure 5. Change in TMS curiosity by condition

Note. For pre- to post-test changes, variation between conditions was not significant, and there were outliers in all but the M condition. For pre-test to follow-up changes, the M condition was significantly different from the MS condition. \( N = 46 \) for pre-test and post-test. \( N = 42 \) for follow-up.
Figure 6. Change in TMS decentering by condition

TMS Decentering

Note. For pre- to post-test changes, the comparison between the M and PMR condition approached significance. For changes from pre-test to follow-up, the difference between the M and PMR conditions was significant. \( N = 46 \) for pre-test and post-test. \( N = 42 \) for follow-up.
Note. For pre- to post-test changes, the M condition decreased significantly more than the control condition. For pre-test to follow-up changes, variation between conditions was not significant. $N = 46$ for pre-test and post-test. $N = 42$ for follow-up.
Figure 8. Change in RSS meaning struggles by condition

Note. For pre- to post-test changes, variation between conditions approached significance, but no pair-wise comparisons were significant. For pre-test to follow-up changes, variation between conditions was not significant. N = 46 for pre-test and post-test. N = 42 for follow-up.
Figure 9. Change in RSS moral struggles scores by condition

Note. For pre- to post-test changes, the comparison between the M and control condition approached significance. For pre-test to follow-up changes, the comparison between the M and the control condition was significant. $N = 46$ for pre-test and post-test. $N = 42$ for follow-up.
Figure 10. Bar graph of spiritual growth means

**Spiritual Growth**

Note. Error bars reflect standard deviations. The comparison between M and MS was significant, as was the comparison between M and PMR.
Figure 11. Bar graph of spiritual decline means

Note. Error bars reflect standard deviations. No Games-Howell post-hoc tests were significant or approached significance.
Figure 12. Model for decentering during practice as a mediator of the effect of condition

*Dependent variables tested were changes in somatic symptoms pre-test to follow-up and spiritual growth at follow-up.
Figure 13. Service attendance as a moderator of the effect of treatment involvement on TMS decentering
Figure 14. Service attendance as a moderator of the effect of intervention conditions on spiritual growth compared to the control condition.
APPENDIX A. SCREENER

(Desai, 2009)

Please circle the response that best fits you, using the following scale:

1. Not at all
2. A little bit
3. Moderately
4. Quite a bit
5. Extremely

1. Currently, to what extent are you experiencing personal conflict regarding your religious or spiritual beliefs and behavior, doubts about religion or spirituality, or questions about God?
2. Currently, to what extent are you experiencing any tension in your relationship with God, such as feelings of confusion, anxiety, loneliness, frustration, anger, abandonment, or guilt?
3. Currently, to what extent are you experiencing conflict, strain, or alienation in your relationship with friends, family, and/or members of your religious or spiritual community because of religious or spiritual issues?
4. Which of the following best describes your experience with meditation and relaxation strategies, including meditative practices involved in yoga and tai chi?
   A. I have never received instruction in meditation or relaxation.
   B. I have received instruction, but I rarely practice relaxation or meditation.
   C. I have received instruction, and I sometimes practice relaxation or meditation.
   D. I have received instruction, and I regularly practice relaxation or meditation.
APPENDIX B. PARTICIPANT ID

To link your responses at each time point, please create your unique Study ID consisting of the following: the two digit month of your birth, the last two letters of your last name, and the last three digits of your telephone number. For instance John Smith, who was born in March, and whose phone number is 419-123-4567 would create his Study ID as: 03the567. You will be asked to enter this number each time you fill out questionnaires or record your daily practice.

2 digit birth month ____
Last 2 letters of last name ____
Last 3 digits of phone # ______
Welcome to Session 1 of the Mindfulness Meditation Intervention! The purpose of this intervention is to teach you how to use mindfulness to cope with your spiritual struggles. Mindfulness is a kind of gentle, patient attention, the kind of attention you might bring to a delicate and strange object you’re seeing for the first time.

Mindfulness meditation training involves bringing this gentle attention to different parts of your experience—your body sensations, your breath, your thoughts and feelings. Just noticing what is there, without trying to judge it or change it.

Research has shown that mindfulness can help with depression, anxiety, and chronic illness, and we expect that mindfulness will likewise be helpful for spiritual struggles. But it’s important to remember that mindfulness cannot fix your pain or make it go away. Instead, it is a way to help you stay open-minded and curious about your experiences. It is a way of reminding yourself that you do not need to let your distress define you, and neither do you need to push it away or pretend it isn’t there.

The gentle attention you cultivate in mindfulness training can you help you learn to skillfully carry your struggles with you as you pursue what is most important to you in life.

To get the most benefit from mindfulness techniques it is important that you practice them regularly. Like learning any sport or skill, your mindfulness skills grow stronger the more you use them. Once you have learned mindfulness, you can use it more easily outside formal meditation time. However, in the beginning, it is important to practice the exercises regularly. We recommend that you practice the exercises every day, or almost every day. Practicing at about the same time every day makes it more likely that you will do the exercises regularly. You may choose any time that works for you, but many people find that practicing just after waking up or before going to bed is convenient.

It may be helpful to know that people have been turning to awareness practices like mindfulness for centuries to help them in their struggles. And now individuals all across the country from a broad range of backgrounds are learning mindfulness meditation. So, as you begin this program, remember that you have plenty of good company in your journey to cultivate mindfulness.

Here are your instructions for this week. After finishing this video, you’ll return to the survey and complete the comprehension questions. Then you’ll listen to the audio file attached to this week’s email to learn and practice this week’s exercise. We recommend that you do this exercise 20 minutes daily until the second session a week from now. You do not have to listen to the audio each time you do the exercise, but it will be helpful to do so the first few days.

Be sure to record your practice on the study calendar, also attached to this week’s email. When you record your practice, be as accurate as you can. There is no need to exaggerate or impress.

Email Margaret if you have any questions. See you next week in session 2!

Session 1 Audio File Condition M: Body Scan
Welcome to session two of the mindfulness intervention! Today we are going to review your experience over the past week and learn a new skill called mindfulness of breathing.

Ask yourself how you are feeling about the program so far. Maybe you are feeling very hopeful that mindfulness will help you, or maybe you are doubtful or frustrated with the program. Know that these thoughts and feelings don’t mean you are doing anything right or wrong, good or bad.

Of course at some point you will need to decide whether you want to continue practicing the skills you learn in this intervention, but one week of practice is usually too early to tell whether it will be helpful to you. So hold off on making the decision for now. Try to just observe your thoughts and feelings about the program, as you observed the changing sensations in your body during last week’s exercise.

Something that people commonly find frustrating about mindfulness practice is that their mind wanders a lot. When this happens to you, there is no need to get discouraged. Each time your mind wanders is a chance to practice gently returning to your chosen focus of attention.

Likewise, if you experience boredom, frustration, sleepiness, or negative emotions during the exercises, know that you’re not alone. If you experience positive feelings, such as calm, relaxation, or bliss, simply notice those too. These are normal parts of learning mindfulness skills. Again, these reactions don’t mean you’re doing anything “right” or “wrong.” They just show that you’re paying attention to your experience.

Remember, you will get the most out of this program if you persist in your practice even if it is sometimes difficult. Take a minute to appreciate the effort you have put into the program thus far, in spite of any difficulties you may have already been experiencing.

As you encounter new challenges in the program this week, remind yourself of why you are doing this—to help you learn to skillfully carry your painful thoughts and feelings with you as you pursue your highest values.

The new skill you’ll be learning this week is called mindfulness of breathing. You’ll be building on the skills you practiced last week, including close observation, noticing when your mind wanders, and being curious about your experience.

The focus on the breath in this exercise is significant. Karen Ryder, an American mindfulness teacher, described the breath like this: “Breath is life. You can think of the breath as being like a thread or a chain that links and connects all of the events of your life from birth, the beginning, to death, the end. The breath is always there every moment, moving by itself like a river.” Keep this in mind as you learn to become mindful of your breathing.

Here are your instructions for this week. After finishing this video, you’ll return to the survey and complete the comprehension question. Then you’ll listen to the audio file attached to this week’s email to learn and practice this week’s exercise. We recommend that you do this exercise 20 minutes daily until the third session a week from now. Again, you do not have to listen to the audio each time you do the exercise, but it will be helpful to do so for the first few days.

As before, record your practice on the study calendar, being as accurate as you can. Email Margaret if you have any questions. See you next week in session 3!

Session 2 Audio File Condition M: Mindfulness of breathing

Session 3 Intro Video Condition M
Welcome to session three. So far in the program you’ve learned two mindfulness exercises and had two weeks to practice them. Maybe things are going well and you have stood by your commitment to practice regularly.

If not, maybe you can see your commitment and re-commitment to this program each week as a way to practice patience and persistence, to keep gently returning to the path again and again each time you stray, just as you have learned to keep gently returning your attention back to the breath in last week’s exercise.

For some, these words about committing to the program may trigger disappointment or frustration. If that is the case for you, just notice this discomfort for a moment. It’s okay to feel these feelings, and it’s also okay to not want these feelings.

Actually, this is what this week’s exercise is about—becoming mindful of discomfort and unpleasant emotions, being curious about them and examining them closely.

What have you noticed about difficult thoughts and feelings so far in this program? Maybe they sometimes fade from your awareness and you don’t think much about them. At other times they may become very overwhelming and intense. Know that these experiences are normal and okay. Allow these feelings and your experience of them to teach you more about yourself and your mind.

You might picture the mind as a vast, clear sky. All our feelings, thoughts, and sensations are like the weather that passes through, without affecting the nature of the sky itself. The clouds, winds, snow and rainbows come and go, but the sky is always simply itself, a “container” for these passing phenomena. We practice mindfulness to let our mind be that sky, and to let thoughts and feelings arise and vanish like the changing weather. In this way, our mind can remain balanced, without getting swept away in the drama of every passing storm.

The technique you are going to learn today and practice this week has the following format: you’ll begin with bringing your awareness to your breath for a few minutes, and then transition to awareness of physical sensations throughout the whole body. Next you’ll turn your attention to an uncomfortable emotion or sensation for several minutes. You’ll close by bringing your awareness back to the breath.

Here are your instructions for this week. As in previous weeks, after finishing this video, you’ll return and complete the comprehension question, and then download and listen to this week’s audio file. Just like before, do this exercise for twenty minutes once each day until the fourth and final session, using the audio file to guide you as needed. Be sure to record your practice using the study calendar.

See you next week in session 4! Remember to contact Margaret with any questions.

Session 3 Audio File Condition M: Mindfulness of discomfort and unpleasant emotions.

Session 4 Intro Video Condition M
Welcome to the fourth and final session. Congratulations for making it this far! Meditating on a regular basis can be very challenging, and it is likewise challenging to handle confusion or disappointment if you don’t practice as often as you hoped to.

Thank yourself for continuing with our program in spite of these difficulties.

Remember that the challenges of this program—slowing down, self-discipline, patience with discomfort, patience with yourself—these challenges are a part of so many worthy endeavors in life. These challenges are never mastered completely, but you can certainly become more skillful in facing and handling them.
Recall that we described the goal of the program as helping you learn to gently carry your difficulties with you as you pursue your highest values.

We have not talked about how to choose your values or how to live out those values. However, the calm attention of mindfulness should help you be more thoughtful and skillful in these choices, as you persist in your chosen spiritual path or try out new paths.

Today you will learn a fourth mindfulness exercise. As previously, you will have one week to practice what you have learned. At the end of this week, you will be asked to complete post-test questionnaires, along with the final weekly check-in.

We would also like to take this time to remind you that you will be asked to complete follow-up measures four weeks after the post-test measures. You’ll be provided with a $15 gift certificate upon completion of the follow-up measures to thank you for your help with the study. It will be entirely up to you if you would like to continue a regular mindfulness practice during the month between post-test and follow-up.

Let’s talk a little about the exercise you will practice this week – mindfulness of sounds and thoughts. In this exercise you’ll learn how to let sounds, and then thoughts come to the center of your awareness.

Recall the image from last week, that your mind is like a vast clear sky. Feelings, sensations, thoughts and sounds are like the changing weather. And who are you, then? Some would say that you are the observer, watching the weather change in the sky. This week’s exercise is meant to help you strengthen that observer self, the part of you that watches your thoughts and your experiences. Keep this in mind as you practice this week.

This week’s technique has the following format: you’ll begin with bringing your awareness to your breath for a few minutes and then shift your awareness to physical sensations throughout the whole body. Next you’ll turn your attention to the sounds around you, and finally you will turn your attention to the stream of thoughts going through your mind.

Here are your instructions for this week. As in previous weeks, after finishing this video, you’ll return and complete the comprehension question, and then download and listen to the audio file. Just like before, do this exercise for twenty minutes once each day for a week, using the audio file to guide you as needed. Be sure to record your practice using the study calendar.

Lastly, here are some important sources we’d like to credit in the developments of these intervention materials, including Segal, Williams and Teasdale’s book on Mindfulness based cognitive therapy and sound files obtained free online at the websites listed.

Remember, keep an eye out for post-test and follow-up surveys. Email Margaret with questions. Thank you, and warm regards from the Spiritual Struggles Research team.

Session 4 Audio File Condition M: Mindfulness of sounds and thoughts
Welcome to Session 1 of the Mindfulness Meditation Intervention! In this video we’ll give you some background on spiritual struggles and mindfulness to help you get started with learning mindfulness meditation.

First, what are spiritual struggles? Spiritual struggles are a common experience, though often people don’t talk about it. They may involve feeling very guilty for your mistakes, doubt about spiritual teachings, anger at God, feeling punished by God, or disagreements with others about spirituality.

There are a range of thoughts, emotions, and behaviors that may accompany spiritual struggles, including believing you’re unforgiveable; praying about struggles or giving up prayer for a time; seeking support from your spiritual community or withdrawing and seeking time alone. These are normal for people with spiritual struggles.

So what can you do to cope?

One thing you can do is to cultivate mindfulness. Mindfulness is a kind of gentle, patient attention, the kind of attention you might bring to a delicate and strange object you are seeing for the first time.

Mindfulness meditation training involves bringing this gentle attention to different parts of your experience—your body sensations, your breath, your thoughts and feelings. Just noticing what is there, without trying to judge it or change it.

Research has shown that mindfulness can help with depression, anxiety, and chronic illness, and we expect that mindfulness will likewise be helpful for spiritual struggles.

But it’s important to remember that mindfulness cannot fix your struggles or make them go away.

Instead, it is a way to help you stay open-minded and curious about your experiences. It is a way of reminding yourself that you do not need to let your struggles define you, and neither do you need to push them away or pretend they aren’t there.

The gentle attention you cultivate in mindfulness training can help you learn to skillfully and gently carry your struggles with you as you pursue what is most important to you in life.

To get the most benefit from mindfulness techniques, it is important that you practice them regularly. Like learning any sport or skill, your mindfulness skills grow stronger the more you use them. Once you have learned mindfulness, you can use it more easily outside formal meditation time. However, in the beginning, it is important to practice the exercises regularly.

We recommend that you practice the exercises every day, or almost every day. Practicing at about the same time every day makes it more likely that you will do the exercises regularly.
You may choose any time that works for you, but many people find that practicing just after waking up or before going to bed is convenient.

*It may be helpful to know that people have been turning to attention and awareness practices for centuries to help them grow spiritually. For instance, ancient Buddhist texts encourage individuals to patiently attend to doubt and despair in meditation in order to gain insight. As another example, an anonymous 14th century work called the Cloud of Unknowing encourages individuals to gently focus their attention on their yearning for God, believing that God is often encountered through confusion and darkness rather than certainty. Keep these things in mind as you begin practicing mindfulness this week.

It may also help to know that, even at this very moment, individuals all across the country from a broad range of backgrounds are learning mindfulness meditation. So, as you begin this program, remember that you have plenty of good company in your journey to cultivate mindfulness.

Here are your instructions for this week. After finishing this video, you’ll return to the survey and complete the comprehension questions. Then you’ll listen to the audio file attached to this week’s email to learn and practice this week’s exercise. We recommend that you do this exercise 20 minutes daily until the second session a week from now. You do not have to listen to the audio each time you do the exercise, but it will be helpful to do so the first few days.

Be sure to record your practice on the study calendar, also attached to this week’s email. When you record your practice, be as accurate as you can. There is no need to exaggerate or impress.

Email Margaret if you have any questions. See you next week in session 2!

**Session 1 Audio File Condition MS: Body scan**
*Identical to M condition materials*

**Session 2 Intro Video Condition MS**

Welcome to session two of the mindfulness intervention! Today we are going to review your experience over the past week and learn a new skill called mindfulness of breathing.

Ask yourself how you are feeling about the program so far. Maybe you are feeling very hopeful that mindfulness will help you with your spiritual struggles, or maybe you are doubtful or frustrated with the program. Know that these thoughts and feelings don’t mean you are doing anything right or wrong, good or bad.

Of course at some point you will need to decide whether you want to continue practicing the skills you learn in this intervention, but one week of practice is usually too early to tell whether it will be helpful to you. So hold off on making the decision for now. Try to just observe your thoughts and feelings about the program, as you observed the changing sensations in your body during last week’s exercise.

Something that people commonly find frustrating about mindfulness practice is that their mind wanders a lot. When this happens to you, there is no need to get discouraged. Each time your mind wanders is a chance to practice gently returning to your chosen focus of attention.

Likewise, if you experience boredom, irritation, sleepiness, doubt, or other negative emotions, you’re not alone. If you experience positive feelings, such as calm, relaxation, or bliss, simply notice those too. These are normal parts of learning mindfulness skills. Again, these reactions don’t mean you’re doing anything “right” or “wrong.” They just show that you’re paying attention to your experience.
Remember, you will get the most out of this program if you persist in your practice even if it is sometimes difficult. Take a minute to appreciate the effort you have put into the program thus far, in spite of any difficulties you may have already been experiencing.

As you encounter new challenges this week, remind yourself of why you are doing this—to help you learn to gently carry your struggles with you as you pursue your highest values.

The new skill you’ll be learning this week is called mindfulness of breathing. You’ll be building on the skills you practiced last week, including close observation, noticing when your mind wanders, and being curious about your experience. *The focus on the breath in this exercise is significant. Karen Ryder, an American mindfulness teacher, described the breath like this: “Breath is life. You can think of the breath as being like a thread or a chain that links and connects all of the events of your life from birth, the beginning, to death, the end. The breath is always there every moment, moving by itself like a river.”

Perhaps for this reason, human beings for a long time have talked about the breath as sacred or even divine. In some schools of Buddhism, mindfulness of breathing is seen as the key to enlightenment. In the book of Genesis, God creates human beings by filling them with the breath of life, and in some Christian texts, the Holy Spirit is called the Breath of God. In fact, many languages use the same or similar word for breath, spirit and life, including English: the English words spirit and spiritual are derived from the Latin word spiritus, which means breath, as well as life and soul. Keep these things in mind as you learn to become mindful of your breathing.

Here are your instructions for this week. After finishing this video, you’ll return to the survey and complete the comprehension question. Then you’ll listen to the audio file attached to this week’s email to learn and practice this week’s exercise. We recommend that you do this exercise 20 minutes daily until the third session a week from now. Again, you do not have to listen to the audio each time you do the exercise, but it will be helpful to do so for the first few days.

As before, record your practice on the study calendar, being as accurate as you can.

Email Margaret if you have any questions. See you next week in session 3!

Session 2 Audio File Condition MS: Mindfulness of breathing

Session 3 Intro Video Condition MS

Welcome to session three. So far in the program you’ve learned two mindfulness exercises and had two weeks to practice them. Maybe things are going well and you have stood by your commitment to practice regularly.

If not, maybe you can see your commitment and re-commitment to this program each week as a way to practice patience and persistence, to keep gently returning to the path again and again each time you stray, just as you have learned to keep gently returning your attention back to the breath in last week’s exercise.

For some, these words about committing to the program may trigger guilt or frustration. If that is the case for you just notice this discomfort for a moment. It’s okay to feel these feelings, and it’s also okay to not want these feelings.

Actually, this is what this week’s exercise is about—becoming mindful of discomfort and unpleasant emotions, being curious about them and examining them closely.
What have you noticed about your unpleasant emotions and spiritual struggles over the past few weeks? Maybe they sometimes fade from your awareness and you don’t think much about them. Maybe at other times they become very overwhelming and intense.

Perhaps you are experiencing renewed interest in your own religious tradition or in other faith traditions, or maybe you’ve noticed you are losing interest in religion and spirituality. Know that all these experiences are normal and okay…. Recall that last week we asked you to reflect on your experience of the program so far, holding off for the time being on making a decision about whether mindfulness is something you want to continue doing once your involvement in this study is over.

Similarly, you will eventually need to make important choices about your religion and spirituality—for instance, how and whether you engage in religious or spiritual practices, how and whether you might go about seeking help for your spiritual concerns from others. However, you do not need to make those decisions at this exact moment. So again, hold off on making a decision for now, and just notice your thoughts and feelings about religion and spirituality. Allow these feelings and your experience of them to teach you more about yourself and your mind. You might picture the mind as a vast, clear sky. All our feelings, thoughts, and sensations are like the weather that passes through, without affecting the nature of the sky itself. The clouds, winds, snow and rainbows come and go, but the sky is always simply itself, a “container” for these passing phenomena. We practice mindfulness to let our mind be that sky, and to let thoughts and feelings arise and vanish like the changing weather. In this way, our mind can remain balanced, without getting swept away in the drama of every passing storm.

The technique you are going to learn today and practice this week has the following format: you’ll begin with bringing your awareness to your breath for a few minutes, and then transition to awareness of physical sensations throughout the whole body. Next you’ll turn your attention to an uncomfortable emotion or sensation for several minutes. You’ll close by bringing your awareness back to the breath.

Here are your instructions for this week. As in previous weeks, after finishing this video, you’ll return and complete the comprehension question, and then download and listen to this week’s audio file. Just like before, do this exercise for twenty minutes once each day until the fourth and final session, using the audio file to guide you as needed. Be sure to record your practice using the study calendar, as before.

See you next week in session 4! Remember to contact Margaret with any questions.

Session 3 Audio File Condition MS: Mindfulness of discomfort and unpleasant emotions

Session 4 Intro Video Condition MS

Welcome to the fourth and final session. Congratulations for making it this far! Meditating on a regular basis can be very challenging, and it is likewise challenging to handle confusion or disappointment if you don’t practice as often as you hoped to.

Thank yourself for continuing with our program in spite of these difficulties. Remember that the challenges of this program—slowing down, self-discipline, patience with discomfort, patience with yourself—these challenges are a part of so many worthy endeavors in life. These challenges are never mastered completely, but you can certainly become more skillful in facing and handling them.

Recall that we described the goal of the program as helping you learn to gently carry your struggles with you as you pursue your highest values.
We have not talked about how to choose your values or how to live out those values. However, the calm attention of mindfulness should help you be more thoughtful and skillful in these choices, as you persist in your chosen spiritual path or try out new paths.

Today you will learn a fourth mindfulness exercise – mindfulness of sounds and thoughts. As previously, you will have one week to practice what you have learned. At the end of this week, you will be asked to complete post-test questionnaires, along with the final weekly check-in.

We would also like to take this time to remind you that you will be asked to complete follow-up measures four weeks after the post-test measures. You’ll be provided with a $15 gift certificate upon completion of the follow-up measures to thank you for your help with the study. It will be entirely up to you if you would like to continue a regular mindfulness practice during the month between post-test and follow-up.

Let’s talk a little about the exercise you will practice this week – mindfulness of sounds and thoughts. In this exercise you’ll learn how to let sounds, and then thoughts come to the center of your awareness.

*Recall the image from last week, that your mind is like a vast clear sky. Feelings, sensations, thoughts and sounds are like the changing weather. And who are you, then? Some would say that you are the observer, watching the weather change in the sky. This week’s exercise is meant to help you strengthen that observer self, the part of you that watches your thoughts and your experiences, the part of you that some traditions might call your soul or your true self. Keep this in mind as you practice this week.

This week’s technique has the following format: you’ll begin with bringing your awareness to your breath for a few minutes and then shift your awareness to physical sensations throughout the whole body. Next you’ll turn your attention to the sounds around you, and finally you will turn your attention to the stream of thoughts going through your mind.

Here are your instructions for this week. As in previous weeks, after finishing this video, you’ll return and complete the comprehension question, and then download and listen to the audio file. Just like before, do this exercise for twenty minutes once each day for a week, using the audio file to guide you as needed. Be sure to record your practice using the study calendar.

Lastly, here are some important sources we’d like to credit in the development of these intervention materials, including Segal, Williams and Teasdale’s book on Mindfulness based cognitive therapy and sound files obtained free online at the websites listed.

Keep an eye out for post-test and follow-up surveys. Email Margaret with questions. Thank you, and warm regards from the Spiritual Struggles Research team.

Session 4 Audio File Condition MS: Mindfulness of sounds and thoughts
APPENDIX E. PMR CONDITION MATERIALS

Adapted from Bernstein, Carlson, & Schmidt (2007)
Audio file materials are not included here for copyright reasons.

Session 1 Intro Video Condition PMR
Welcome to Session 1 of the Relaxation Training Intervention! The purpose of this study is to teach you how to use physiological relaxation to cope with your spiritual struggles.

Relaxation training is just what it sounds like – it teaches you to relax your body and mind.

Relaxation training has been studied for many decades, and research has shown that it can help lessen anxiety, stress, and mood fluctuations. We expect that this training will likewise be helpful for spiritual struggles.

The key to the effectiveness of relaxation training is this: body and mind are so closely linked that relaxing the body actually relaxes the mind too. Learning to relax your body helps you to let go of worries and struggles.

The techniques you are about to learn are collectively called progressive muscle relaxation, or PMR for short. Essentially, PMR teaches people to first tense and then relax the different muscles in their body and to pay close attention to the sensations of both tension and relaxation. Although it may seem counterintuitive to tense your muscles, this part of the practice is important because it helps you learn to produce large and noticeable reductions in tension. You might think of it like a pendulum – the more you pull it back, the further the pendulum will swing when you release it. The contrast between tension and release makes it easier for you to compare the two states and to appreciate what each one feels like.

The control of your body and mind that you cultivate through relaxation training will not only help you feel better, it will make you better able to pursue what it is most important to you in life.

To get the most benefit from relaxation training, it is important that you practice the techniques regularly. Like learning any sport or skill, your skills in relaxation will grow stronger the more you use them. Once you have learned relaxation skills, you can use them more easily outside formal practice time. However, in the beginning, it is important to practice the technique regularly.

We recommend that you practice the exercises every day, or almost every day. Practicing at approximately the same time every day makes it more likely that you will do the exercises regularly. You may choose any time that works with your schedule, but many people find that practicing after waking up or before going to bed is convenient.

It may be helpful to know that people all across the country, from a broad range of backgrounds and with many different kinds of problems, have been learning relaxation techniques to help them with worry and stress. So, as you begin this program, remember this -- you have plenty of good company in your journey to master relaxation techniques.

Here are your instructions for this week. After finishing this video, you’ll return to the survey and complete the comprehension question for this video. Then you’ll listen to the audio file attached to this week’s email to learn and practice this week’s exercise. We recommend that you do this exercise 20 minutes daily until the second session a week from now. You do not have to listen to the audio each time you do the exercise, but it will be helpful to do so at least first few days.
Be sure to record your practice on the study calendar, also attached to this week’s email. When you record your practice, be as accurate as you can. There is no need to exaggerate or impress.

Email Margaret if you have any questions. See you next week in session 2!

Session 1 Audio File Condition PMR: Eleven muscle groups

Session 2 Intro Video Condition PMR
Welcome to session two of the relaxation intervention. Today we are going to review your experience over the past week and learn another relaxation exercise.

Ask yourself how you are feeling about the program so far. Maybe you are feeling very hopeful that relaxation will help you with your pain and distress, or maybe you are doubtful or frustrated with the program. Both of these reactions are normal. Neither reaction determines whether you will find the program useful as a whole.

Over the past week, you may have encountered one or more difficulties with the PMR technique. Perhaps, you felt like you simply could not relax. Even if you did not relax, this does not mean you cannot relax. Similarly, you may have had trouble tensing only one part of your body without tensing other parts.

Don’t worry – many people have trouble with these things at first. With practice it will get easier.

Another difficulty people encounter is that many thoughts and feelings distract them as they try to relax. If this is the case for you, know that it’s normal and, just continue doing the technique daily.

If you experience boredom, frustration, or sleepiness, again, you’re not alone. Many people find that they take two steps forward, and then one step back, which can be discouraging. Nonetheless, you’ll slowly make progress.

Remember, you will get the most out of this program if you persist in your practice even if it is sometimes difficult. Take a minute to appreciate the effort you have put into the program thus far, in spite of any difficulties you may have already been experiencing.

As you encounter new challenges in the program this week, remind yourself of why you are doing this—to gain greater control over your body and mind, making you better able to pursue your highest values.

The exercise you’ll be practicing this week is a modified PMR technique. It uses fewer muscles groups than before by combining some of the areas of your body, but the basic procedure is the same.

Remember, tensing your muscles is as important as relaxing them when you do the exercise. In a sense, tensing your muscles provides you with a “running start” toward very deep relaxation.

Here are your instructions for this week. After finishing this video, you’ll return to the survey and complete the comprehension question. Then you’ll listen to the audio file attached to this week’s email to learn and practice this week’s exercise. We recommend that you do this exercise 20 minutes daily until the third session a week from now. Again, you do not have to listen to the audio each time you do the exercise, but it will be helpful to do so for the first few days.

As before, record your practice on the study calendar, being as accurate as you can. Email Margaret if you have any questions. See you next week in session 3!
Session 2 Audio File Condition PMR: Seven muscle groups

Session 3 Intro Video Condition PMR

Welcome to session three. So far in the program you’ve learned two relaxation techniques and had two weeks to practice them. Maybe things are going well and you have stood by your commitment to practice regularly.

If not, maybe you can see this program as a way to take care of yourself, a way to do something positive for yourself each day. As we mentioned previously, relaxation can help you reduce your negative emotions, manage painful thoughts and feelings, and develop a greater sense of mastery over yourself.

It’s only by giving the program a fair shot that you’ll know if it can work for you.

We’re halfway through the program and there are still two exercises to learn. Today you’ll learn another modified PMR technique similar to the exercises you’ve already learned, but using even fewer muscle groups. The exercise will start with tensing and relaxing arms and hands at the same time; then your face and neck; then your chest, shoulders, back and abdomen; and finally, your feet and legs.

As before, with each muscle group, you’ll want to focus your awareness on what tension feels like and how it contrasts with relaxation, and then spend time enjoying that feeling of relaxation.

Here are your instructions for this week. As in previous weeks, after finishing this video, you’ll return and complete the survey, and then download and listen to this week’s audio file. Just like before, do this exercise for twenty minutes once each day until the fourth and final session, using the audio file to guide you as needed. Be sure to record your practice using the study calendar, as before.

See you next week in session 4! Remember to contact Margaret with any questions.

Session 3 Audio File Condition PMR: Four muscle groups

Session 4 Intro Video Condition PMR

Welcome to the fourth and final session. Congratulations for making it this far! Practicing relaxation on a regular basis can be very challenging, and it is likewise challenging to handle confusion or disappointment if you don’t practice as often as you hoped to.

Thank yourself for continuing with our program in spite of these difficulties.

Remember that the relaxation skills you learn in this program should help you more effectively handle stress in a range of different settings. Stress cannot be eliminated completely, but you can certainly become more skillful in facing and handling it.

Recall that we described the goal of the program as helping you gain greater control over your body and mind, making you better able to pursue your highest values.

We have not talked about how to choose your values or how to live out those values. However, the relaxation you’ve been practicing should help you become more resilient as you persist in your chosen path or try out new paths.

Today you will learn a fourth PMR exercise. As previously, you will have one week to practice. At the end of this week, you will be asked to complete post-test questionnaires, along with the final weekly check-in.
We would also like to take this time to remind you that you will be asked to complete follow-up measures four weeks after the post-test measures. You’ll be provided with a $15 gift certificate upon completion of the follow-up measures to thank you for your help with the study. It will be entirely up to you if you would like to continue a regular relaxation practice during the month between post-test and follow-up.

Let’s talk a little about the exercise you will practice this week. Now that you have a good sense of what deep relaxation feels like, you will learn to relax your muscles without the tension phase of the exercise. Instead, you will practice relaxing by simply recalling the sensations related to releasing tension.

This will help you to control your tension when it occurs in daily situations without having to stop, find a quiet place, and go through the entire relaxation procedure.

The ultimate goal is for you to learn to minimize tension in difficult or stressful situations as they occur.

Here are your instructions for this week. As in previous weeks, after finishing this video, you’ll return and complete the survey, and then download and listen to the audio file. Just like before, do this exercise for twenty minutes once each day for a week, using the audio file to guide you as needed. Be sure to record your practice using the study calendar.

If you find that you cannot achieve relaxation without using the tensing-releasing procedure, you may continue listening to the audio file from last week instead of this one.

Lastly, here are some important sources we’d like to credit in the development of these intervention materials, including Bernstein, Carlson & Schmidt’s chapter on Progressive Muscle Relaxation and sound files obtained free online at the websites listed.

Keep an eye out for post-test and follow-up surveys. Email Margaret with questions. Thank you, and warm regards from the Spiritual Struggles Research team.

Session 4 Audio File Condition PMR: Relaxation only
APPENDIX F. DEMOGRAPHICS

Please tell us a little bit about yourself. This will help us understand the relationship between personal characteristics and how individuals deal with the stresses of a break-up.

1) How old are you? ______ years

2) What is your gender? ______ Male ______ Female ______ Transgender

3) What is your current year in college? ______ Freshman ______ Sophomore ______ Junior ______ Senior ______ Other (specify)

4) How would you describe your racial/ethnic identity?
   ______ White/Caucasian ______ Asian ______ Black/African American ______ Native American ______ Hispanic ______ Middle Eastern ______ Pacific Islander ______ Multi-Racial/Other (specify)

5) What is your sexual orientation?
   ______ Heterosexual/straight ______ Lesbian/gay ______ Bisexual ______ Questioning ______ Asexual ______ Other
## APPENDIX G. RELIGIOUS DEMOGRAPHICS

1) What is your current religious or spiritual faith preference?
   - Christian (Protestant)
   - Christian (Catholic)
   - Muslim
   - Christian (other, specify)
   - Buddhist
   - Hindu
   - Athiest/Agnostic
   - Other (specify)
   - None

2) What is the religious or spiritual faith preference you were raised in?
   - Christian (Protestant)
   - Christian (Catholic)
   - Muslim
   - Christian (other, specify)
   - Buddhist
   - Hindu
   - Athiest/Agnostic
   - Other (specify)
   - None

3) What do you believe about God? (check one) [drawn from Winding Road materials; Pargament, Desai, Faigin, Gear, Gibbel, et al (2008)]
   - I don’t believe in God. (A)
   - I don’t know whether there is a God and there probably is not a way to find out. (B)
   - I feel that I do believe in God even though I am not able to explain fully who or what God is. (C)
   - I know God really exists and I have no doubts about it. (D)

4) Which of the following best describes your practice of prayer? (circle a letter)
   - A. Prayer is a regular part of my daily life.
   - B. I usually pray in times of stress or need but rarely at any other time.
   - C. I pray only for formal ceremonies.
   - D. I never pray.

5) How many times have you attended religious services during the past year? (give your best estimate):
   - _______ times.

6) How religious do you consider yourself to be?
   - _______ not at all religious (0)
   - _______ a little religious (1)
   - _______ moderately religious (2)
   - _______ quite religious (3)
   - _______ extremely religious (4)

7) How spiritual do you consider yourself to be?
   - _______ not at all spiritual (0)
   - _______ a little spiritual
   - _______ moderately spiritual
   - _______ quite spiritual
   - _______ extremely spiritual
APPENDIX H. PRE-TEST ASSESSMENT OF SPIRITUAL STRUGGLES

Assessment of Spiritual Struggle
In a few sentences, please describe the struggles you're having related to your religious beliefs and/or your spirituality.
APPENDIX I. PHQSADS MEASURES

Kroenke, Spitzer, Williams & Lowe, 2010

(Note that panic questions were not included in the study and are not provided here.)

**PHQ-15**
During the **past 4 weeks**, how much have you been bothered by any of the following problems?

<table>
<thead>
<tr>
<th>Problem</th>
<th>Not bothered at all</th>
<th>Bothered a little</th>
<th>Bothered a lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stomach pain</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. Back pain</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. Pain in your arms, legs, or joints (knees, hip etc.)</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. Menstrual cramps or other problems</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. Headaches</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. Chest pain</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. Dizziness</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8. Fainting spells</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. Feeling your heart pound or race</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10. Shortness of breath</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11. Pain or problems during intercourse</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12. Constipations, loose bowels, or diarrhea</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>13. Nausea, gas, or indigestion</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14. Feeling tired or having low energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15. Trouble sleeping</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**GAD-7**
Over the **last 2 weeks**, how often have you been bothered by the following problems?
<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling nervous, anxious, or on edge</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Not being able to stop or control worrying</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Worrying too much about different things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Trouble relaxing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Being so restless that it is hard to sit still</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Becoming easily annoyed or irritable</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling afraid as if something awful might happen</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**PHQ-9**

Over the *last 2 weeks*, how often have you been bothered by any of the following problems?

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little interest or pleasure in doing things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Trouble falling or staying asleep, or sleeping too much</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling tired or having little energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Poor appetite or overeating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling bad about yourself – or that you are a failure or have let yourself or your family down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Trouble concentrating on things, such as reading the newspaper or watching television</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Moving or speaking so slowly that other people have noticed? Or the opposite – being so fidgety or restless that you have been</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Thoughts you would be better off dead or of hurting yourself in some way
*If you have thoughts of harming yourself or others, call "911" or go to the nearest hospital emergency room immediately for an evaluation.*

<table>
<thead>
<tr>
<th>Moving around a lot more than usual</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>thoughts of hurting yourself or others, call &quot;911&quot; or go to the nearest hospital emergency room immediately for an evaluation.*</td>
<td>Not at all difficult</td>
<td>Somewhat difficult</td>
<td>Very difficult</td>
<td>Extremely difficult</td>
</tr>
</tbody>
</table>

If you checked of any problems above, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people

<table>
<thead>
<tr>
<th>If you checked of any problems above, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all difficult</td>
<td>Somewhat difficult</td>
<td>Very difficult</td>
<td>Extremely difficult</td>
</tr>
</tbody>
</table>
APPENDIX J. DIFFICULTIES IN EMOTION REGULATION SCALE

(Note this measure was abbreviated to 18 items from the total of 36 included in the full scale.)

Gratz & Roemer, 2004

Please indicate how often the items apply to you:

1  2  3  4  5
almost never  sometimes  about half the time  most of time  almost always

1. When I’m upset, I have difficulty concentrating.
2. When I’m upset, I have difficulty focusing on other things.
3. When I’m upset, I have difficulty getting work done.
4. When I’m upset, I have difficulty thinking about anything else.
5. When I’m upset, I can still get things done.*

6. When I’m upset, I lose control over my behaviors.
7. When I’m upset, I have difficulty controlling my behaviors.
8. When I’m upset, I become out of control.
9. When I’m upset, I feel out of control.
10. I experience my emotions as overwhelming and out of control
11. When I’m upset, I feel like I can remain in control of my behaviors*

12. When I’m upset, I believe that I’ll end up feeling very depressed.
13. When I’m upset, I believe I will remain that way for a long time.
14. When I’m upset, I believe that wallowing in it is all I can do.
15. When I’m upset, I believe that there is nothing I can do to make myself feel better.
16. When I’m upset, I know that I can find a way to eventually feel better. *
17. When I’m upset, my emotions feel overwhelming.
18. When I’m upset, I start to feel very bad about myself.

* reverse scored
APPENDIX K. TORONTO MINDFULNESS SCALE--TRAIT

Davis, Lau & Cairns, 2009

We are interested in your day-to-day experiences. Below is a list of things that people sometimes experience. Please read each statement and indicate the extent to which you agree with it. In other words, how well does the statement describe your experience? There are no “right” or “wrong” answers, so please answer in a way that reflects your own experiences.

0 Not at all
1 A little
2 Moderately
3 Quite a bit
4 Very much

1) I experience myself as separate from my changing thoughts and feelings
2) I am more concerned with being open to my experiences than controlling them or changing them
3) I am curious about what I might learn about myself by taking notice of how I react to certain thoughts, feelings or sensations.
4) I experience my thoughts more as events in my mind than as a necessarily accurate reflection of the way things ‘really’ are.
5) I am curious to see what my mind is up to from moment to moment.
6) I am curious about each of my thoughts and feelings as they occur
7) I am receptive to observing unpleasant thoughts and feelings without interfering with them.
8) I am more invested in just watching my experiences as they arise, than in figuring out what they could mean.
9) I approach each experience by trying to accept it, no matter whether it is pleasant or unpleasant.
10) I remain curious about the nature of each experience as it arises.
11) I am aware of my thoughts and feelings without overidentifying with them.
12) I am curious about my reactions to things.
13) I am curious about what I might learn about myself just by taking notice of what my attention gets drawn to.

Curiosity: 3, 5, 6, 10, 12, 13
Decentering: 1, 2, 4, 7, 8, 9, 11
APPENDIX L. RELIGIOUS AND SPIRITUAL STRUGGLES SCALE, RSS DISTRESS, & RSS IMPAIRMENT

Exline, Pargament, Grubbs & Yali, 2013

Q11. Within the past month, to what extent have you struggled with each of the following?

<table>
<thead>
<tr>
<th></th>
<th>Does not apply (N/A)</th>
<th>Not At All</th>
<th>A Little Bit</th>
<th>Somewhat</th>
<th>Quite a Bit</th>
<th>A Great Deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. felt guilty for not living up to my moral standards (Mo1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. felt angry at God (Di1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. had concerns about whether there is any ultimate purpose to life or existence (Me1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. felt hurt, mistreated, or offended by religious/spiritual people (I5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. struggled to figure out what I really believe about religion/spirituality (Do1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. felt attacked by the devil or by evil spirits (De1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. questioned whether life really matters (Me3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. felt torn between what I wanted and what I knew was morally right (Mo4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I. questioned God’s love for me (Di2)

J. had conflicts with other people about religious/spiritual matters (I1)

K. felt as though the devil (or an evil spirit) was trying to turn me away from what was good (De2)

L. felt as though my life had no deeper meaning (Me2)

M. felt angry at organized religion (I4)

N. worried that my actions were morally or spiritually wrong (Mo2)

O. felt confused about my religious/spiritual beliefs (Do3)

P. felt as though God was punishing me (Di4)

Q. felt rejected or misunderstood by religious/spiritual people (I2)

R. worried that the problems I was facing were the work of the devil or evil spirits (De3)
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S. felt as though God had abandoned me (Di3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T. worried about whether my beliefs about religion/spirituality were correct (Do4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U. wrestled with attempts to follow my moral principles (Mo3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V. questioned whether my life will really make any difference in the world (Me4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W. felt as though God had let me down (Di5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X. felt troubled by doubts or questions about religion or spirituality (Do2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y. felt tormented by the devil or evil spirits (De4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z. felt as though others were looking down on me because of my religious/spiritual beliefs (I3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Does not apply/Not at all coded as 1. A little bit coded as 2, etc. The below questions were added to assess RSS related distress and RSS-related impairment:

**RSS DISTRESS:**
If you’ve struggled with any of the above, how much distress have these struggles caused you over the past month?
Does not apply (NA_CNTS) (or Choose not to say)
no distress (0)
a little distress (1)
some distress (2)
quite a bit of distress (3)
a great deal of distress (4)

**RSS IMPAIRMENT:**
If you’ve struggled with any of the above, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people.

Does not apply (or choose not to say) (NA_CNTS)
Not difficult at all (0)
A little bit difficult (1)
Somewhat difficult (2)
Quite difficult (3)
Extremely difficult (4)
APPENDIX M. SPIRITUAL TRANSFORMATION SCALE


Whether you are or are not spiritual or religious, please indicate the extent to which these statements are true for you since **beginning your involvement with the study eight weeks ago**. Think about how you were before you took the pre-test assessment and how you are now. Circle the number that best describes any changes that have occurred using the following scale:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is not at all true for you</td>
<td>It is very true for you.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Spirituality has become more important to me.
2. My way of looking at life has changed to be more spiritual.
3. I spend more time taking care of my spiritual needs.
4. I have a stronger spiritual connection to other people.
5. I have grown spiritually.
6. My spirituality is now more deeply imbedded in my whole being.
7. I more often look for a spiritual purpose for my life.
8. My faith has been shaken and I am not sure what I believe.
9. In some ways I have shut down spiritually
10. In some ways I think I am spiritually lost.
11. I am more spiritually wounded

**Spiritual growth items: 1-7**
**Spiritual decline items: 8-11**
# APPENDIX N. STUDY CALENDAR

## WEEK 1

<table>
<thead>
<tr>
<th>DAY #</th>
<th>DAY OF THE WEEK</th>
<th>MINUTES OF PRACTICE</th>
<th>USED MP3? (y/n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day #1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  *Watched instructional video and answered comprehension question(s)? ______

| Day #2 |                 |                     |                 |
| Day #3 |                 |                     |                 |
| Day #4 |                 |                     |                 |
| Day #5 |                 |                     |                 |
| Day #6 |                 |                     |                 |
| Day #7 |                 |                     |                 |

## WEEK 2

<table>
<thead>
<tr>
<th>DAY #</th>
<th>DAY OF THE WEEK</th>
<th>MINUTES OF PRACTICE</th>
<th>USED MP3? (y/n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day #1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  *Watched instructional video and completed weekly check-in? ______

| Day #2 |                 |                     |                 |
| Day #3 |                 |                     |                 |
| Day #4 |                 |                     |                 |
| Day #5 |                 |                     |                 |
| Day #6 |                 |                     |                 |
| Day #7 |                 |                     |                 |

## WEEK 3

<table>
<thead>
<tr>
<th>DAY #</th>
<th>DAY OF THE WEEK</th>
<th>MINUTES OF PRACTICE</th>
<th>USED MP3? (y/n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day #1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  *Watched instructional video and completed weekly check-in? ______

| Day #2 |                 |                     |                 |
| Day #3 |                 |                     |                 |
| Day #4 |                 |                     |                 |
### WEEK 4

<table>
<thead>
<tr>
<th>Day #</th>
<th>DAY OF THE WEEK</th>
<th>MINUTES OF PRACTICE</th>
<th>USED MP3? (y/n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Watched instructional video and completed weekly check-in? ______*

### WEEK 5

<table>
<thead>
<tr>
<th>Day #</th>
<th>DAY OF THE WEEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td></td>
</tr>
</tbody>
</table>

*Completed weekly check-in and post-test?*

Days 1 to 7  *optional practice*

### WEEK 6 through 8  *optional practice*

### WEEK 9  complete follow-up
APPENDIX O. WEEKLY CHECK-IN

Welcome to the weekly check-in!

Please tell us what your practice was like over the previous week. Please use the study calendar to help you. Be as accurate as you can. If you cannot remember exactly, give your best guess.

(Regarding Sona credits: It is crucial that you complete the weekly check-in in order to receive Sona credit. However, to encourage accurate reporting, the content of those answers will not affect credit. For instance, skipping a day of practice, or even several days of practice, will not affect the number of Sona credits you receive.)

1) How many minutes did you practice your technique on each day of the past week? (Remember, please be accurate. See note regarding Sona credits above.)
   Day #1 ____ (should be the day you watched this instructional video for this past week)
   Day #2 ____
   Day #3 ____
   Day #4 ____
   Day #5 ____
   Day #6 ____
   Day #7 ____ (should be yesterday)

2) On which days did you use the audio file to help you in your practice? (etc, y/n) check one:
   Day #1 ____ (should be the day you watched this week’s instructional video)
   Day #2 ____
   Day #3 ____
   Day #4 ____
   Day #5 ____
   Day #6 ____
   Day #7 ____ (should be yesterday)

3) To what extent were you able to practice your technique in a relatively quiet and private environment, uninterrupted by distractions such as conversation with someone, texting, or watching T.V.? (please do not count occasional noise from outside or inside, e.g., hearing the tick of a clock, hearing your phone ring, hearing people talking outside)

   Not successful (0)
   A little successful (1)
   Moderately successful (2)
   Very successful (3)

3) To what extent were you able to maintain wakefulness—that is, not drift off to sleep for extended periods of time—while you were practicing your technique this week?

   Not successful
4) Please help us understand the degree to which you were able to implement the instructions of your assigned technique during your practice this week: While practicing your technique over the past week, to what extent would you say you were able to…

Week 1 mindfulness: … attend to sensations in different parts of your body?
Week 2 mindfulness: … notice when your mind drifts and repeatedly return your attention to the breath?
Week 3 mindfulness: … direct your attention to uncomfortable sensations and/or emotions?
Week 4 mindfulness: … a) Attend to sounds, noticing when your mind drifts and repeatedly returning your attention to sounds? … b) Attend to the flow of your own thoughts?

Week 1 relaxation: … repeatedly tense and relax specific muscle groups?
Week 2 relaxation: … repeatedly tense and relax specific muscle groups?
Week 3 relaxation: … repeatedly tense and relax specific muscle groups?
Week 4 relaxation: … release tension from specific muscle groups?

Thank you for checking in! Now you are ready for the [session number] session of the mindfulness intervention.

Click the link to watch this week’s video (or paste it into your browser in a new tab). [link]

Return to this page once you watch the video.

Assess your learning. Thoughtfully answering these questions will help you understand and retain the information you just learned in the video.

Thinking about the video you just watched, indicate if the below statement(s) is (are) true or false.

Week 1 mindfulness:
Mindfulness involves becoming curious about your experience, including pain and worries.
If true: You answered TRUE. This answer is CORRECT. Mindfulness is about bringing gentle, patient attention to your experience, including pain and worries.
If false: You answered FALSE. This answer is INCORRECT. Remember—mindfulness is about bringing gentle, patient attention to your experience, including pain and worries.

Mindfulness can make your pain and worries go away. T/F
If true: You answered TRUE. This answer is INCORRECT. Remember—mindfulness is about gently carrying your struggles with you, rather than making them go away.
If false: You answered FALSE. This answer is CORRECT. Mindfulness is about gently carrying your struggles with you, rather than making them go away.

Week 2 mindfulness:
Boredom or irritation during meditation means you are doing something wrong.
If true: You answered TRUE. This answer is INCORRECT. Remember, boredom and irritation don’t necessarily mean you are doing anything right or wrong. Occasional boredom and irritation are normal experiences during meditation.
If false: You answered FALSE. This answer is CORRECT. Boredom and irritation don’t mean you are doing anything right or wrong. Occasional boredom and irritation are normal experiences during meditation.

Week 3 mindfulness:
In mindfulness, we practice letting our thoughts and feelings be like clouds passing through the sky.
If true: You answered TRUE. This answer is CORRECT. In mindfulness we learn to let our mind be like the sky, and our thoughts and feelings like the changing weather.
If false: You answered FALSE. This answer is INCORRECT. In mindfulness we learn to let our mind be like the sky, and our thoughts and feelings like the changing weather.

Which of the below is a good metaphor and description of a mindful approach to uncomfortable thoughts and feelings, as presented in the video?

a) Your mind is like a garden, and your uncomfortable thoughts and feelings are the weeds in the garden. Learn to identify and remove the weeds in order to allow equanimity and wisdom to grow and blossom.

b) Your mind is like a swimmer, and your discomfort is the river. Learn to dive in and immerse yourself in discomfort in order to bring richness and vitality into your life.
c) Your mind is like a river, and your thoughts and feelings are the leaves floating in it. **Watching the flow** of uncomfortable thoughts and feelings through your mind will help you learn from your discomfort without becoming lost in it.

**d) Your mind is like a garden, and your thoughts and feelings are like the weather. Learn to enjoy both sunshine and rain in order to bring richness and vitality into your life.**

If answer a: You answered a) [quote above from answer a]. This answer is incorrect, because mindfulness is not about removing unpleasant thoughts and feelings from your mind. **Accept, tolerate, or learn from** would be better words.

The correct answer is c) Your mind is like a river, and your thoughts and feelings are the leaves floating in it. **Watching the flow** of uncomfortable thoughts and feelings through your mind will help you learn from your discomfort without becoming lost in it.

Note the similarity between this metaphor and the metaphor from the video. Recall that the video compared your mind to a vast, clear sky, while thoughts and feelings are like the weather. The weather changes, but the sky is always itself, a container for the weather. Learning to watch the flow of our thoughts and feelings in this way can help us learn to stay balanced and not become caught up in every passing storm.

If answer b: Format is the same as above except the sentence “This answer is incorrect” ends with “because mindfulness is about attending to and learning from your unpleasant thoughts and feelings without becoming lost in them.”

If answer d: Format is the same as for answering option a, except the sentence “This answer is incorrect” ends with “because mindfulness is not about learning to enjoy uncomfortable thoughts and feelings. **Accept, tolerate, or learn from** would be better words.”

If answer c: You answered c) [quote option c above]. This answer is correct. A river may be filled with various different kinds of leaves, but the river is always just itself, a container for the leaves. Similarly, while you mind at any moment may contain pleasant or unpleasant thoughts and feelings, your mind is not defined by or fundamentally changed by those thoughts and feelings.

The posture of mindfulness is this: discomfort is an inescapable part of life. Rather than losing ourselves in discomfort or trying to push it away, we may observe it, accept it, and learn from it.
Week 4 mindfulness:
In mindfulness, we strengthen the observer self, the “self” that focuses on the positive instead of the negative.
If true: You answered TRUE. This answer is INCORRECT. In mindfulness training, the “observer self” refers to the idea that some part of us is watching our internal and external experiences, like someone might watch the changing weather in the sky. The “observer self” observes both positive and negative experiences.
If false: You answered FALSE. This answer is CORRECT. In mindfulness, the “observer self” refers to the idea that a part of us is like an observer watching our internal and external experiences, as someone might watch the changing weather in the sky. The “observer self” observes both positive and negative experiences.

Week 1 relaxation:
Tensing your muscles is an important part of PMR training.
If true: You answered FALSE. This answer is INCORRECT. Actually, tensing your muscles IS an important part of progressive muscle relaxation. Tensing first before relaxing helps you learn to produce large and noticeable reductions in tension.
If false: You answered TRUE. This answer is CORRECT. Progressive muscle relaxation, or PMR, involves first tensing and then relaxing different muscles in the body. Tensing first before relaxing helps you learn to produce large and noticeable reductions in tension.
PMR teaches you to focus on the positive so that your muscles can relax more easily.
If true: You answered TRUE. This answer is INCORRECT. PMR does not involve training in focusing on the positive. Instead, it involves tensing and relaxing your muscles, which helps you gain control over bodily tension, as well as stress and worry.
If false: You answered FALSE. This answer is CORRECT. PMR does not involve training in focusing on the positive. Instead, it involves tensing and relaxing your muscles, which helps you gain control over bodily tension, as well as stress and worry.

Week 2 relaxation:
Occasional boredom or irritation during PMR are probably signs you are doing something wrong. T/F
If true: You answered TRUE. This answer is INCORRECT. Actually, occasional boredom and irritation are normal experiences when you first start practicing PMR.
If false: You answered FALSE. This answer is CORRECT. Occasional boredom and irritation are normal experiences when you first start practicing PMR.
Week 3 relaxation:  
Progressive muscle relaxation is meant to help you cultivate mastery over your thoughts and feelings.

If true: You answered TRUE. This answer is CORRECT. Relaxation is about learning to better control your body and mind, helping you to feel better and in turn making you better able to pursue what is most important to you in life.

If false: You answered FALSE. This answer is INCORRECT. Relaxation is about learning to better control your body and mind, helping you to feel better and in turn making you better able to pursue what is most important to you in life.

Which of the following accurately describes the PMR technique as presented in the videos you’ve seen so far?

a) In PMR, you practice tensing and relaxing more and more finely divided groups of muscles, until you are tensing just a single muscle at a time.

b) In PMR, tensing your muscles is meant to help you “burn off” excess tension and worry.

c) PMR helps you gain control of your thoughts and feelings, which in turn reduces worry and sadness.

d) PMR helps you gain control of your thoughts and feelings, which in turn makes you better able to build and maintain a regular exercise routine.

If answer a: You answered a) [quote option a above]. This answer is incorrect. Instead the opposite is true: in this program, you’ve been practicing tensing and relaxing larger and larger groups of muscles, until you are tensing many muscles at a time. The correct answer is c) [quote option c above].

If answer b: You answered b) [quote option b above]. This answer is incorrect. In PMR, the tensing phase of the exercise is meant to help you feel the contrast between tension and relaxation and to practice deliberately controlling bodily tension and relaxation. The correct answer is c) [quote option c above].

If answer d: You answered d) [quote option d above]. This answer is incorrect. Building a regular exercise routine is not a key goal of PMR. It is possible that the mastery of body and mind you cultivate in PMR can help you pursue valued goals, which may include regular exercise. However, d) is still not the best answer. The correct answer is c) [quote option c above].
If answer c: You chose c) [quote option c above]. This answer is correct.

Week 4 relaxation:
The ultimate goal of relaxation training is to relax easily when you are alone and in a quiet environment.
If true. You answered TRUE. This answer is INCORRECT. The ultimate goal is to learn to bring relaxation skills into daily life, to learn to minimize tension in difficult or stressful situations as they occur.
If false: You answered FALSE. This answer is CORRECT. The ultimate goal is to learn to bring relaxation skills into daily life, to learn to minimize tension in difficult or stressful situations as they occur.
APPENDIX P. POST-TEST ONLY QUESTIONS

Please answer the following questions with respect to the techniques you were taught to practice as a part of this study.

1. How relaxing did you find your assigned techniques to be?
   
   0  Not at all  1  A little  2  Moderately  3  Quite a bit  4  Very Much

2. How helpful did you find your assigned techniques to be?

3. How helpful was the intervention as a whole?
   
   0  Not at all  1  A little  2  Moderately  3  Quite a bit  4  Very Much

4. How well did the intervention as a whole fit with your spiritual background?
   
   0  Not at all  1  A little  2  Moderately  3  Quite a bit  4  Very Much

5. Thinking about your experience **during your daily practice**, to what extent did you experience yourself as separate from your changing thoughts and feelings?
   
   0  Not at all  1  A little  2  Moderately  3  Quite a bit  4  Very Much

4. Thinking about your experience **during your daily practice**, how often did you feel connected to something transcendent, ultimate, or sacred?

   0  Never or almost never
   1  Sometimes
   2  Most of the time
   3  Always or nearly all the time

5. Thinking about your experience **during your daily practice**, how often did thoughts or feelings related to your spiritual struggles come up?

   0  Never or almost never
   1  Sometimes
   2  Most of the time
   3  Always or nearly all the time

6. Finally, please reflect for a minute on what you found most helpful about the program. What do you want to remember and take with you?

7. Please provide us with any other comments or feedback you have at this time.
APPENDIX Q. FOLLOW-UP ONLY QUESTIONS

During the past month how many times did you practice your technique for five consecutive minutes or more? Please give your best guess.

Please estimate the average amount of time (in minutes) that you spent practicing your technique on each occasion that you practiced. (Write NA if not applicable to you.)

Please provide any feedback or general impressions you would like to share about the study at this time..

[The Spiritual Transformation Scale will also be administered at follow-up only, but is not listed here because it is considered a dependent variable.]
Recruitment email for psychology students

Subject line: Study on spiritual concerns – 4.5 SONA credits and $15 gift card

Hello students!

Do you have concerns or worries related to religion or spirituality? Are you experiencing conflict within yourself or with others about religious or spiritual matters?

These concerns are not uncommon among college students and can be challenging to deal with. This study is an opportunity to learn strategies that have proven helpful in other groups of people and that will likely be helpful for spiritual/religious concerns as well.

The study takes place entirely online and requires access to a computer with audio capability. Participants will be asked to watch four brief videos about relaxation or mindfulness over the course of four weeks, as well listening to guided relaxation/meditation audio files. Those who complete the study will receive up to 4.5 SONA credits and a $15 amazon gift card. See below for details about the study.

Note that this study is designed to be appropriate for students with a range of religious/spiritual views and affiliations—including those who do not identify as religious.

Want to participate? Sign up on Sona under the “Struggles Study Screening Survey” (bgsu.sonasystems.com). You’ll receive 0.25 SONA credits for completing this screener. Those whose responses on the screener make them eligible for participation in the intervention will be given further information how to sign up for the intervention portion of the study.

Concerns or questions? Don’t hesitate to email me (Margaret, mfeuill@bgsu.edu).
Thank you!
Margaret

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Additional Study Information
The study will take place entirely online. At the start of the study, participants will fill out a 30 to 45-minute online questionnaire and will be assigned to either an intervention condition or a control condition. Over the next four weeks, intervention participants will complete four sessions of online instructions in meditation/relaxation and fill out four brief (5-minute) online “weekly check-in” surveys. Intervention participants will also be asked to listen to provided audio files and practice meditation/relaxation on their own. Control participants will not be involved in the intervention or be asked to complete “weekly check-ins.” At the end of the fourth week of the study, all participants will be asked to complete post-test assessments, at which time intervention participants will receive up to 4.5 SONA credits and control participants will receive up to 1.5 SONA credits. (For more details regarding SONA credits, see below).
Four weeks after post-test, all participants who completed the post-test will be asked to complete follow-up assessments, at which point they will be provided with a $15 gift certificate. Upon request, control participants will be provided with intervention materials after follow-up.

Regarding SONA credits:
One SONA credit will be given for each hour of your involvement in generating usable research data, resulting in up to 4.5 SONA credits total:
- Pre-test: 45 minutes (0.75 credits)
- Session 1 video, check-in, and audio file: 45 min (0.75 credits)
- Session 2 video, check-in, and audio file: 45 min (0.75 credits)
- Session 3 video, check-in, and audio file: 45 min (0.75 credits)
- Session 4 video, check-in, and audio file: 45 min (0.75 credits)
- Post-test: 45 minutes (0.75 credits)
- Follow-up: 30 minutes ($15 gift certificate)

SONA credits will be granted upon completion of post-test. Note that, with few exceptions, failing to stay at least minimally involved in the study from pre-test to post-test will likely result in your receiving just 0.75 SONA credits (as well as being ineligible for the $15 gift certificate. See more details about compliance below.

Note also that, by default, those assigned to the control condition will be eligible for up to only 1.5 SONA credits because of their reduced time commitment.

Finally, note that your receipt of SONA credits is not contingent on the daily practice of your technique between sessions.

Details about compliance:
1. Only those who complete post-test will be eligible to receive additional credits for their weekly “check-ins.” This is because failing to complete post-test makes your check-in data unusable for my research purposes. (So, for instance, if you complete pre-test, all four weekly “check-ins”, but not post-test, you will still only receive a total of 0.75 SONA credits.)

2. Only those who have completed at least two weekly “check-ins” will be eligible to complete post-test. This is because failing to complete at least two “check-ins” makes your remaining check-in data and your post-test data unusable for my research purposes. If, by the time you receive the post-test survey, you have only completed pre-test and one weekly check-in, you should not invest time in completing the post-test, and you will only receive 0.75 credits for your involvement in the study. I will remind you in the post-test email that it may not be in your interest to complete post-test if you have not completed at least two weekly check-ins.
Are you experiencing . . .

GUILT, CONFUSION, or WORRIES related to

religion or spirituality?

Research suggests that religious and spiritual concerns are common among college students. Learn tools to help you manage distress stemming from these concerns.

Earn up to 4.5 SONA credits and a $15 amazon gift card in return for your participation!

Last week to sign up is March 2-6. For students in psych classes only. Email Margaret (mfeuill@bgsu.edu) for details or sign onto Sona and look for the “Struggles Study screening survey.” Thank you!
APPENDIX S. DEBRIEFING

Thank you for your participation in this study! This study was designed to examine mindfulness and relaxation techniques as potentially helpful for individuals experiencing spiritual struggles.

There were four different groups that participants were assigned to—a mindfulness intervention; a mindfulness intervention with added content regarding spirituality and spiritual struggles; a relaxation intervention; and a control condition that received no treatment. If you were assigned to the control group and are interested in receiving one of the interventions tested in this study, please contact Margaret Feuille (mfeuill@bgsu.edu; 818-439-4874).

Pre-test and post-test measures were designed to assess how the intervention affected you psychologically and spiritually.

If you have further questions or concerns, or you would like to be kept informed of the results of the study, please email Margaret Feuille (mfeuill@bgsu.edu; 818-439-4874).

If you would like further support or treatment, please call the student Counseling Center at 419-372-2081 or the Psychology Services Center at 419-372-2540.
APPENDIX T. INFORMED CONSENT

Informed Consent

Introduction: I am Margaret Feuille, a clinical psychology graduate student at Bowling Green State University, and my advisor is Dr. Pargament. I am conducting a study of the effects of meditation/relaxation techniques for individuals experiencing religious or spiritual struggles, which refers to distress and discord stemming from religion and/or spirituality.

Purpose: Research shows that spiritual struggles are not uncommon among college students, and researchers and clinicians like myself are becoming interested in ways to help. This study will examine relaxation and meditation strategies as potentially effective tools for managing distress related to religion and spirituality. These tools have been helpful to other groups of people, and we believe they will likewise be helpful to individuals with spiritual struggles. Also, your participation in this study will contribute to a growing literature on behavioral strategies for mitigating distress related to spiritual struggles.

Procedure: The study will take place entirely online and requires that you have access to a computer with audio capability—having either speakers or a head phone jack with head phones. Should you decide to participate, your involvement in the study would start today with completing a 30 to 45-minute online questionnaire which contains questions about demographics, sexual orientation, anxiety, depression, somatic symptoms, and religion and spirituality. Then you would be assigned to either an intervention condition or a control condition.

Intervention participants will watch a brief (<5 minutes) video each week over the course of the next four weeks. Each of the four videos provides an introduction and rationale for the technique to be practiced that week. After watching each video, intervention participants will be asked to listen to an audio file with relaxation/meditation instructions and to practice meditation/relaxation on their own with the help of the audio file—ideally 20 minutes a day during course of the four-week intervention. Intervention participants will also fill out four brief (5-minute) online “weekly check-in” surveys, asking about the quantity and quality of meditation/relaxation practice during the prior week and their comprehension of the video they just watched for the current week.

Control participants will not be involved in the intervention or be asked to complete “weekly check-ins.”

At the end of the fourth week of the study, all participants will be asked to complete post-test assessments, at which time intervention participants will receive up to 4.5 SONA credits and control participants will receive up to 1.5 SONA credits. (See more details regarding SONA credits below).

Four weeks after post-test, all participants who completed the post-test will be asked to complete follow-up assessments, at which point they will be provided with a $15 gift certificate. Upon request, control participants will be provided with intervention materials after follow-up.

Note that this study has been designed to be appropriate for individuals with a range of spiritual
backgrounds and beliefs, or lack thereof. We will not be seeking to change your current religious or spiritual beliefs or orientation. Many different kinds of people practice meditation and relaxation techniques, and these techniques have been offered in medical centers as a part of multidisciplinary treatment for nearly three decades.

Regarding SONA credits: One SONA credit will be given for each hour of your involvement in generating usable research data, resulting in up to 4.5 SONA credits total for intervention participants, and 1.5 SONA credits total for control participants. Intervention participants should note that they may not receive all 4.5 SONA credits if they do not demonstrate a minimal level of compliance with the intervention. Minimal compliance involves completing pre-test, post-test, and all weekly check-ins. Also, note that only those who complete post-test will be eligible to receive additional credits for their weekly “check-ins”; and only those who have completed at least two weekly “check-ins” will be eligible to complete post-test. This is meant to discourage those who intend at the outset to terminate participation early (in an effort to obtain only 2 or 3 SONA credits) from beginning the study at all.

Voluntary nature: Your participation is completely voluntary. You are free to withdraw at any time. You may decide to skip questions (or not do a particular task) or discontinue participation at any time. However, please note that terminating your participation early may result in your receiving a reduced number of SONA credits—see section regarding SONA credits above—and will disqualify you from receiving the $15 gift certificate at follow-up.

Deciding to participate or not will not affect your academic standing or your relationship with Bowling Green State University.

Confidentiality protection: Participants will be assigned codes that will be used to identify online forms as belonging to the same participant. Any information that could link up a person’s code or data with their name or email address will be kept in a locked file drawer or a password encrypted spreadsheet. Only members of the research team will have access to these data. Emails to or from participants that provide the participant ID code will be deleted from the researchers’ email account promptly after this information is entered into the spreadsheet.

Regarding protection of email addresses, email addresses will also be kept in a password encrypted spreadsheet, accessible only to the research team. The researcher will use the BCC function when emails are sent to multiple participants at a time, to avoid unnecessarily informing participants of the emails of other participants also involved in the study.

Risks: Risks include potential breach of confidentiality. Precautions will be taken to protect against this risk—see previous section. Also, if you are using a public computer to complete any part of the study, it is good practice to clear your internet browser and page history. Brief daily relaxation and meditation are considered quite safe and have been used with many different populations, including young children.

Contact information: Please contact Margaret Feuille (mfeuill@bgsu.edu; 818-439-4874) or Dr. Pargament (kpargam@bgsu.edu; 419-372-8037) if you have any questions about the research or your participation in the research. You may also contact the Chair of the Human Subjects Review Board at 419-372-7716 or hsrb@bgsu.edu, if you have any questions about your rights
as a participant in this research. Thank you for your time.

Please note that only those 18 or older may consent to participate.

By clicking “next” you acknowledge you have been informed of the above material and that you consent to participate.
APPENDIX U. HSRB APPROVAL DOCUMENTS

DATE: April 21, 2014

TO: Margaret Feuille, M.A.
FROM: Bowling Green State University Human Subjects Review Board

PROJECT TITLE: [563550-3] Mindfulness meditation training for spiritual struggles: A randomized controlled trial

SUBMISSION TYPE: Revision

ACTION: APPROVED

APPROVAL DATE: April 20, 2014

EXPIRATION DATE: February 20, 2015

REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # 7

Thank you for your submission of Revision materials for this project. The Bowling Green State University Human Subjects Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

The final approved version of the consent document(s) is available as a published Board Document in the Review Details page. You must use the approved version of the consent document when obtaining consent from participants. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please add the text equivalent of the HSRB IRBNet approval/expiration date stamp to the "footer" area of the electronic consent document.

Please note that you are responsible to conduct the study as approved by the HSRB. If you seek to make any changes in your project activities or procedures, those modifications must be approved by this committee prior to initiation. Please use the modification request form for this procedure.

You have been approved to enroll 120 participants. If you wish to enroll additional participants you must seek approval from the HSRB.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. All NON-COMPLIANCE issues or COMPLAINTS regarding this project must also be reported promptly to this office.

This approval expires on February 20, 2015. You will receive a continuing review notice before your project expires. If you wish to continue your work after the expiration date, your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date.
Good luck with your work. If you have any questions, please contact the Office of Research Compliance at 419-372-7716 or hsrb@bgsu.edu. Please include your project title and reference number in all correspondence regarding this project.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Bowling Green State University Human Subjects Review Board's records.
DATE: January 5, 2015
TO: Margaret Feuille, M.A.
FROM: Bowling Green State University Human Subjects Review Board
PROJECT TITLE: [563550-5] Mindfulness meditation training for spiritual struggles: A randomized controlled trial
SUBMISSION TYPE: Continuing Review/Progress Report
ACTION: APPROVED
APPROVAL DATE: December 30, 2014
EXPIRATION DATE: December 29, 2015
REVIEW TYPE: Expedited Review
REVIEW CATEGORY: Expedited review category # 7

Thank you for your submission of Continuing Review/Progress Report materials for this project. The Bowling Green State University Human Subjects Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

The final approved version of the consent document(s) is available as a published Board Document in the Review Details page. You must use the approved version of the consent document when obtaining consent from participants. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that you are responsible to conduct the study as approved by the HSRB. If you seek to make any changes in your project activities or procedures, those modifications must be approved by this committee prior to initiation. Please use the modification request form for this procedure.

You have been approved to enroll 120 participants. If you wish to enroll additional participants you must seek approval from the HSRB.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. All NON-COMPLIANCE issues or COMPLAINTS regarding this project must also be reported promptly to this office.

This approval expires on December 29, 2015. You will receive a continuing review notice before your project expires. If you wish to continue your work after the expiration date, your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date.

Good luck with your work. If you have any questions, please contact the Office of Research Compliance at 419-372-7716 or hsrb@bgsu.edu. Please include your project title and reference number in all correspondence regarding this project.
This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Bowling Green State University Human Subjects Review Board’s records.