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# An Examination of a Mindfulness-Based Intervention for Older Adults

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**AN EXAMINATION OF A MINDFULNESS-BASED INTERVENTION FOR  
OLDER ADULTS**

**by**

**Morgan Levy, M.S.**

A Dissertation Presented to the College of Psychology  
of Nova Southeastern University  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

NOVA SOUTHEASTERN UNIVERSITY

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This Dissertation was submitted by Morgan Levy under the direction of the Chairperson of the Dissertation committee listed below. It was submitted to the College of Psychology and approved in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Clinical Psychology at Nova Southeastern University.

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### Statement of Original Work

I declare the following:

I have read the Code of Student Conduct and Academic Responsibility as described in the *Student Handbook* of Nova Southeastern University. This dissertation represents my original work, except where I have acknowledged the ideas, words, or material of other authors.

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Morgan Levy

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Name

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**ABSTRACT**

Mindfulness-based interventions use meditation and other learning exercises to help individuals become more aware of their current physiological and emotional experiences. Benefits of practicing mindfulness include an increase in positive psychological outcomes (e.g., psychological well-being, emotion regulation) and a decrease in negative psychological outcomes (e.g., anxiety, depression). The vast majority of studies focus on younger rather than older adults—setting the stage for the current study, which involved delivering a five-session mindfulness-based intervention to older adults (i.e., 60 and older). The smaller literature focused on older adults is promising but generally lacks methodological rigor (e.g., lack of no-treatment control groups). The current study added to the existing literature by conducting a longitudinal quasi-experimental delayed treatment trial in a sample of older adults. First, it was hypothesized that there would be an intervention effect on several variables. Specifically, it was hypothesized that participants would experience decreases in depression, anxiety, and stress, as well as increases in the five facets of mindfulness, psychological well-being, and emotional regulation. Second, it was hypothesized that the mindfulness-based

intervention would be feasible and acceptable, as indicated by low levels of intervention noncompliance and participant attrition as well as high scores in satisfaction and practice log completion rates. Participants were 19 older adults from a local retirement community. Participants were assigned to either an immediate treatment ( $n = 11$ ) or delayed treatment ( $n = 8$ ) group. All participants were assessed at the universal baseline, week 5 (i.e. intervention completion of immediate treatment group), week 10 (i.e. intervention completion of delayed treatment group), and at week 15. The 5-week mindfulness-based intervention included psychoeducation (e.g., mindfulness, stress, aging, values), discussion of all concepts, and mindfulness practice. A series of two (group) by four (time of assessment) analysis of covariance models were estimated to evaluate primary outcomes. Results indicated that there was no significant treatment effect on primary outcomes. However, the mindfulness-based intervention was feasible and acceptable. Gaining additional knowledge of how mindfulness-based interventions influence coping strategies in older adults will allow clinicians and researchers to influence interventions for older adults and facilitate older adults receiving adequate psychological treatment while managing common stressors associated with aging.

*Keywords:* mindfulness; older adults; meditation; mindfulness-based interventions; aging

## Chapter I: Statement of the Problem

Despite significant growth in the older adult population in the United States, there has not been similar growth in psychological research involving this segment of our society (Mody et al., 2008). This is unfortunate because the typical aging process is associated with dramatic changes in physical (e.g., mobility) and psychological (e.g., memory) functioning that place increasing demands on individuals' (and families') coping resources (American Psychological Association, 1998). In older adults, mindfulness has been associated with increases in psychological well-being and quality of life, and with decreases in depressive symptoms and stress (Fiocco & Mallya, 2015). Furthermore, higher levels of mindfulness have been shown to buffer against the negative effects of life stressors on mental health in older adults (de Frias & Whyne, 2015).

Mindfulness is a common term used to refer to the ability to think in the present moment. Jon Kabat-Zinn (1990), a leading figure in the training of mindfulness, states that "mindfulness is moment-to-moment awareness. It is cultivated by purposefully paying attention to things we never ordinarily give a moment's thought to. It is a systematic approach to developing new kinds of control and wisdom in our lives, based on our inner capacities for relaxation, paying attention, awareness, and insight" (p. 2). Mindfulness involves becoming objectively aware of what one is currently experiencing (e.g., emotionally, physically) without judgment (Khong, 2011). Kabat-Zinn (1990) describes several characteristics that encompass mindfulness: non-judgment (i.e. being an unbiased observer of one's experience), patience, beginner's mind (i.e. viewing everything as if it's new), trust of one's experience, non-striving, acceptance (i.e. living in the present moment), and letting go (i.e. nonattachment). In other words, a mindful

stance is one in which people attend to their experience with non-judgment and acceptance.

Currently, the literature examining the impact and benefits of mindfulness-based interventions for older adults is limited and lacking in methodological quality (Geiger et al., 2015). The results of a recent meta-analysis that examined data from 12 unique samples of older adults led the authors to conclude that after undergoing mindfulness-based interventions, older adults experience significant declines in anxiety, depression, stress, and pain acceptance (Geiger et al., 2015). Despite the limited research, the authors concluded that mindfulness-based interventions are feasible, acceptable, and beneficial for older adults (Geiger et al., 2015). The current study will add to the literature by further examining the effects of a mindfulness-based intervention for older adults. Both a wait-list control group and the assessment of mindfulness will be implemented.

## Chapter II: Review of the General Literature on Mindfulness

### History of Mindfulness

Although mindfulness has become well known in Western culture, its roots are in Eastern philosophies. The word “mindfulness” comes from the Pali word “sati,” which means remembering and having awareness and attention (Davis & Hayes, 2011). In Hinduism, the Yoga Sutras are scriptures that emphasize the importance of both breathing exercises and focusing one’s attention inward (Sedlmeier et al., 2012). These are common strategies that are implemented in the modern practice of mindfulness. In addition, practitioners of Buddhism follow the Eightfold Path. A component of this path consists of right mindfulness (e.g., awareness of the present moment) and right concentration (e.g., awareness of thoughts without letting them control actions) (Sedlmeier et al., 2012). Mindfulness can be achieved through the practice of meditation. People meditate to overcome emotional or psychological problems and to achieve a better understanding of their life and gain wisdom (Sedlmeier et al., 2012). Through mindfulness meditation one attempts to shift one’s attention to the present moment.

### Common Mindfulness-Based Interventions

**Mindfulness-based stress reduction.** Although there are many approaches to cultivating mindfulness, a method that has received considerable attention in the empirical literature is mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990). Through the use of meditations and psychoeducation, MBSR encourages participants to become more aware of their thoughts, feelings, and body sensations (Shapiro, Schwartz, & Bonner, 1998). A goal of MBSR is for participants to develop a non-judgmental and accepting attitude towards themselves in the current moment. MBSR is an 8-week

intervention that consists of (1) deep breathing, which involves focusing on one's breath; (2) sitting meditation, which involves being aware of one's thoughts, emotions, breath, and body; (3) body-scan technique, or being aware of every part of the body; (4) yoga; and (5) walking meditation while practicing awareness (Shapiro et al., 1998). Over the 8-week period, individuals are supposed to learn and practice these techniques while learning about the conceptualization of mindfulness. Each session typically lasts around 2.5 hours and participants are expected to complete 45 minutes of practice daily. Furthermore, participants participate in a retreat where they practice all of the techniques.

**Mindfulness-based cognitive therapy.** Another less common approach to increasing mindfulness is mindfulness-based cognitive therapy (MBCT; Teasdale et al., 2000). The goal of MBCT is to teach individuals to become more aware of their thoughts and feelings in an objective manner (Teasdale et al., 2000). Instead of changing thoughts, its purpose is to teach individuals to become more aware of and present with their thoughts and feelings. Similar to MBSR, MBCT is delivered over the course of 8 weeks in a group setting. In addition to the 2-hour sessions, participants are given daily homework exercises to increase their levels of mindfulness. MBCT was originally created to help individuals who have a history of depression. The exercises and meditations are similar to those in MBSR.

### **Empirical Literature**

In general, mindfulness based therapy is moderately effective and exhibits effects similar to other cognitive-behavioral therapies (Khoury et al., 2013). Benefits from mindfulness interventions such as decreased stress, have been shown to stay with participants three years after completing the intervention (Miller, Fletcher, & Kabat-Zinn,

1995). Previous research has shown that mindfulness-based interventions can significantly reduce negative outcomes (e.g., chronic pain, depression, anxiety, and distress) and significantly increase positive outcomes (e.g., quality of life) in both children and adults (Baer, 2003; Khoury, Sharma, Rush, & Fournier, 2015). For example, a recent meta-analytic review examined the impact of mindfulness-based therapy on anxiety and depression and found significant reductions in anxiety and depressive symptoms for individuals with clinical depression, social anxiety disorder, attention deficit hyperactivity disorder, traumatic brain injury, breast cancer, fibromyalgia, stroke, arthritis, diabetes, chronic pain, and heart disease (Hofmann, Sawyer, Witt, & Oh, 2010). Effect sizes (Hedge's  $g$ ) ranged from 0.12 to 2.13 for reductions in anxiety and 0.13 to 1.52 for reductions in depressive symptoms. Mindfulness-based interventions have also improved positive emotions, self-realization, mindfulness, emotional regulation, and psychological well-being in healthy adults with no prior meditation experience (Eberth & Sedlmeier, 2012). Mindfulness-based interventions have also been implemented in school settings. Results indicate that after participating in an intervention, both children and adolescents experience significant decreases in anxiety and significant improvements in well-being and cognitive performance (Zellner Keller, Singh, & Winton, 2014).

**Mechanisms of action.** Although these findings are promising, the current literature on mindfulness has minimal evidence to support the conclusion that clinical gains are a direct result of increased mindfulness (Khoury et al., 2013). Baer (2003) suggested that mindfulness might work through exposure (e.g., getting used to experiencing pain without reactivity), cognitive change (e.g., practicing acceptance and non-judgment), and through promotion of coping skills. Similarly, Shapiro, Carlson,

Astin, and Freedman (2006) suggested that mindfulness might also work through the re-perceiving (e.g., a shift in perspective) that results from attending with both openness and non-judgmentalness. In addition, this re-perceiving may also lead to self-regulation, clarification of values, flexibility (e.g., cognitive, emotional, behavior), and exposure (Shapiro et al., 2006). Research has shown that these factors do increase over the course of mindfulness treatment, but the evidence suggesting mediation is weak (Carmody, Baer, Lykins, & Olendzki, 2009).

A recent meta-analysis examined 20 studies that looked at MBSR and MBCT in order to understand the underlying mechanisms of mindfulness based interventions on psychological outcomes (Gu, Strauss, Bond, & Cavanagh, 2015). These authors found that increases in mindfulness and decreases in repetitive negative thinking significantly mediated the effects of mindfulness based interventions on anxiety, depression, stress, negative affect, and global psychopathological symptoms (Gu et al., 2015). Another meta-analysis examined 23 studies that evaluated the impact that MBCT has on recurrent depressive disorder (van der Velden et al., 2015). The results indicated that mindfulness, rumination, worry, compassion, and awareness mediated the effects of MBCT on depressive symptoms. Overall, these results are similar to what Baer and Shapiro suggested; cognitive changes (i.e. decreased repetitive thinking, shift in perspective) result in the clinical benefits that are exhibited in mindfulness-based interventions.

**Limitations of the literature.** Although the literature shows a clear benefit of practicing mindfulness, there are limitations and weaknesses that could potentially devalue the results. In particular, the majority of mindfulness intervention studies did not include a control group (Baer, 2003). The lack of a control group implies that the results

could be due to the passage of time, placebo effects, and/or demand characteristics (Kazdin, 2003). Furthermore, studies generally did not include active comparison groups. The implementation of an active comparison group helps reduce threats to both internal and construct validity. Even if participants in a mindfulness-based intervention group experience significant gains compared to a no-treatment control group, client gains might be driven by the nonspecific factors of psychotherapy (e.g., therapeutic attention) rather than the intervention's putative mediators (e.g., mindfulness, changes in perception; Kazdin, 2003). Inclusion of an attention comparison group or conducting mediation analyses can help illuminate whether client gains can be attributed to the putative mediators of the mindfulness intervention and such design/analysis features should be incorporated into future work. Baer (2003) observed that treatment fidelity was not commonly measured and that most of the studies do not evaluate how the mindfulness treatment was delivered (Baer, 2003). If the interventions are administered in an unstandardized manner, it is likely that the effects from a set of studies would be more variable. For example, results suggesting the positive benefits of mindfulness might be more compelling (i.e., larger effect sizes) in studies in which the intervention was delivered with higher fidelity.

### **Summary**

Overall, although mindfulness-based interventions have been shown to be beneficial in reducing negative mental health symptomology, further research is needed to understand the mechanisms of action. In addition, the implementation of control groups and the evaluation of treatment delivery should be considered in future research. Furthermore, most of the mindfulness research involves children, adolescents, young

adults, and clinical populations. The following section examines more closely the literature on mindfulness-based interventions for older adults because older adults represent the population of primary interest in the current study.

### Chapter III: Mindfulness and Older Adults

According to the most recent meta-analysis (i.e. Geiger et al., 2015), five studies have examined the effects of mindfulness-based interventions (e.g., MBSR, MBCT) on a number of physical outcomes (e.g., pain acceptance, engagement in activities, and blood pressure). Ten studies have examined the effects of mindfulness-based interventions on psychological outcomes including depression, anxiety, and others. Of these 15 studies, only six examined the effects of these interventions on levels of mindfulness. Since this meta-analysis, additional work has been published. Five studies further examined the psychological outcomes of the mindfulness-based interventions and three of these five studies evaluated levels of mindfulness. These studies are included in the psychological outcomes section.

The following sections contain a description of each study. Each description contains the type and length of the intervention, sample characteristics, randomization procedures, group facilitator information, adaptations to the standard protocol, and the assessment schedule. “Meaningful” differences between the groups at baseline will be discussed when effect sizes exceed a Cohen’s  $d$  of  $|.35|$ . Because many studies include smaller samples (and thus are underpowered to detect effects in the small to moderate range), a focus on effect sizes is imperative when interpreting results. Finally, attrition (from the mindfulness group), assessment completion rates, results and effects, and the feasibility and acceptability of the intervention will be discussed. If these aforementioned characteristics are not explicitly discussed, this omission implies that the information was missing or could not be derived easily from the published study. A general summary will follow each section as well as an integrated summary and recommendations for future

research.

### **Review of the Empirical Literature on Physical Outcomes**

A modified 8-week MBSR intervention was implemented in a sample of 37 community dwelling older adults with chronic back pain (Morone, Greco, & Weiner, 2008). Participants ranged in age from 65 to 84 ( $M = 74.9$ ), and the majority was Caucasian (89%) and female (57%). Participants were randomized to either the intervention group ( $n = 19$ ) or a wait-list control group ( $n = 18$ ). Two facilitators with prior experience in mindfulness conducted the intervention. The modifications consisted of shortening the intervention to consist of 45 minutes of meditation and 45 minutes of discussion a week. The intervention did not include yoga or the full-day retreat typically implemented in MBSR. The participants were measured at baseline, at the completion of the intervention, and 3 months later.

There were no meaningful differences at baseline between the two groups ( $|d|$ 's below .35). In the immediate treatment group, 13 of 19 participants completed the MBSR program and were assessed at the post-intervention. Twelve were assessed 3 months later. Seventeen of 18 participants in the control group were assessed at 8 weeks, 14 completed the MBSR program, and 13 completed the follow up assessments. Primary results indicated that at the completion of the intervention (i.e. post-intervention measurement) participants in the intervention group exhibited more acceptance of pain ( $d = .83$ ) while the control group worsened; the intervention group also exhibited higher engagement in activities ( $d = .95$ ) and better physical functioning ( $d = .46$ ). The effect size values are the  $d$ 's for the between-group comparison at the post-intervention assessment. At the 3-month follow-up, the two groups were not significantly differentiated ( $|d|$ 's below .20) on

any outcomes.

This intervention was considered feasible, as there was only a 19% attrition rate. Eighty-one percent of the sample completed the assessments at 8 weeks and the average attendance of the interventions was 6.7 sessions (range 5-8). Furthermore, participants reported meditating for an average of 4.3 days a week and 31.6 minutes a day. Although there were no significant differences on any outcomes measures at the three-month follow up, 76% of participants reported continued meditation practice. This suggests that older adults found some benefit of practicing mindfulness and continued to incorporate mindfulness into their daily lives.

In order to address the issue of construct validity, the researchers from the above study implemented the same modified 8-week MBSR protocol along with an active comparison group (Morone, Rollman, Moore, Li, & Weiner, 2009) in a subsequent study. The sample consisted of community dwelling older adults with chronic lower back pain ( $N = 40$ ). Participants were randomized into the intervention group ( $n = 20$ ) or the comparison group ( $n = 20$ ). The mean age of the participants was 75 years old and the majority was Caucasian (86%) and female (63%). The comparison group matched both attendance (8 sessions) and therapeutic attention of the intervention group and consisted of 45-60 minutes of lecture (e.g., psychoeducation on back pain) and involved 30-45 minutes of exercises and class activities. Two facilitators with prior experience in mindfulness conducted the MBSR intervention and one of those facilitators conducted the comparison intervention. The participants were measured at baseline, post-intervention, and at a 4-month follow-up.

Groups were significantly different on age at baseline. The meditation group ( $M =$

78) was significantly older than the comparison group ( $M = 73, d = .75$ ). This difference was controlled for in further analyses, however. Sixteen of 20 participants completed the MBSR intervention (80% completion) and 19 of 20 participants completed the comparison intervention (95% completion). The authors reported that dropouts were significantly older. Primary results indicated a main effect of time, but there was an absence of the group by time interaction. More specifically, both groups experienced significant improvements in self-efficacy and pain. Furthermore, the intervention group did not report significant increases in mindfulness throughout the intervention.

The entire sample had high levels of mindfulness at baseline, which might explain why intervention participants did not experience significant increases in mindfulness following the intervention. This intervention was considered generally feasible, as there was a 20% attrition rate in the MBSR group. Although this rate is much larger than the rate in the comparison group, this attrition rate is similar to mindfulness studies with other populations (Geiger et al., 2015). The average attendance was 7.5 sessions (range 6-8) in the intervention group and 7.1 sessions (range 3-8) in the comparison group. Despite the lack of significant between-group differences, 88% of the participants from the MBSR group reported practicing meditation at follow-up. It is possible that all participants benefited from just participating in a form of intervention.

An 8-week MBSR intervention with supplemental material on breathing components was implemented in a sample of male older adults with chronic obstructive lung disease (COPD) (Mularski et al., 2009). The sample consisted of 86 participants. Participants were randomly assigned to the intervention group ( $n = 44$ ) or a support group matched in both time and attention ( $n = 42$ ). The mean age of the participants was 67.4

and half were Caucasian. Three facilitators experienced in mindfulness conducted the groups. In order to maintain treatment fidelity, they used scripts and recordings to ensure the sessions were standardized. Participants were measured pre and post intervention.

There was a significant age difference between the groups ( $d = .67$ ). The treatment group ( $M = 70.6$ ) was significantly older than the comparison group ( $M = 64$ ). Twenty of 44 participants from the treatment group completed the post-assessment and 29 of 42 participants from the comparison group completed the post-assessment. Of those who attended the first MBSR group, there was a 19% dropout rate. The majority of the participants ( $n = 24$ ) dropped out before attending a group session. The authors analyzed only the sample ( $n = 49$ ) that contributed to the post-intervention data. Primary results indicated that there were no significant improvements on health related quality of life measures, stress measures, and mindfulness measures. Neither group experienced significant improvements on these outcomes. Although the authors failed to present attendance rates, they indicated that participants reported meditating for an average of 49 minutes per day. Initially, the authors hypothesized that these participants would experience reductions in COPD symptom burden and improvements in quality of life due to the relaxation and cognitive benefits of mindfulness. Despite the lack of significant results, the participants likely found the intervention feasible and acceptable as indicated by their reported daily practice.

An at-home 4-week mindfulness intervention was implemented in 20 older adults with diabetic neuropathy (Teixeira, 2010). Participants ranged in age from 50 to 94 ( $M = 74.6$ ) and the majority were Caucasian (90%) and female (75%). Half of the participants were assigned to the meditation group which consisted of listening to a mindfulness CD

at home for 5 days per week and attending a single mindfulness education session; the other half of the participants were assigned to an attention-placebo comparison group which consisted of the participants attending a single nutrition education session and maintaining a food diary. One facilitator conducted all of the education sessions. Participants were measured at baseline and at post-intervention on measures of quality of life and pain.

The authors failed to report baseline information by group, so data could not be used to compute relevant effect size estimates. Sixteen of 20 participants (20% dropout rate) completed measures post-intervention. Primary results indicated that there were small (and nonsignificant) differences between groups on measures of quality of life ( $d = .07$ ) and pain ( $d = .16$ ). The mindfulness intervention may not have provided participants with enough education and guidance on what mindfulness is or how to incorporate it into their daily lives. This could have resulted in the absence of an intervention effect. The participants only met with a facilitator for one session and did not receive further guidance or group instruction. Even though they reported listening to the CD for the required amount of time, there is no way to know if the participants were actively listening or just had it playing in the background. As a result, they may not have received a therapeutic dose of the intervention.

ELDERSHINE, a mindfulness-based intervention that focuses on promoting mindfulness attitudes (e.g., non-judgment, patience, mindful communication) was implemented in an older adult African-American sample (Palta et al., 2012). The mean age of the participants was 72.3 years old and the majority was female (95%). The purpose of this study was to decrease blood pressure in an older adult, low-income,

minority sample in their residence community. Participants were randomized to the intervention group ( $n = 12$ ) or a social support group ( $n = 8$ ). One facilitator trained in mindfulness led the intervention group and two research assistants led the social support group. The intervention group was a modified MBSR group that met for 90 minutes once a week over 8 weeks. The social support group was matched in time and attention. The participants were measured at both pre and post intervention.

There was a meaningful difference between the groups at baseline on diastolic blood pressure ( $d = .96$ ). The intervention group had higher levels of diastolic blood pressure ( $M = 78.0$ ) compared to the social support group ( $M = 67.3$ ). All of the participants completed all of the assessments. Attendance in both groups was greater than 80%. Results indicated that although systolic blood pressure decreased for both groups, the intervention group experienced a significantly larger decrease ( $d = .61$ ). This indicates a large effect. Furthermore, the difference could be a function of statistical regression. This study provides some support for the application of a mindfulness-based intervention to decrease blood pressure in African-American older adults.

**Summary of the physical health outcomes literature.** In general, (1) there is an insufficient amount of evidence to make a determination of the effects of mindfulness-based interventions on physical health outcomes; (2) there is minimal evidence to suggest that mindfulness-based interventions influence mindfulness; and (3) implementing mindfulness-based interventions in an older adult population is both feasible and acceptable.

On their surface, the results of the studies indicate mixed support for the benefits of mindfulness-based interventions on physical health outcomes in an older adult

population. Upon further analysis, there does not seem to be enough evidence to draw a firm conclusion. Due to small sample sizes (range 20-86 participants), it was crucial to assess the magnitude of the effects rather than relying on the statistical significance levels. Effects were generally small when comparing MBSR participants to an active-treatment comparison group ( $|d|$ 's ranged from .07 to .22); however, one study found moderate and large effects when comparing MBSR participants to a wait-list control group ( $|d|$ 's ranged from .46 to .95). This suggests that mindfulness-based interventions may be just as successful as other interventions (e.g., PMR), but still better than no intervention at all. They may be just as successful because they share the similar element of social support.

Each of the studies examined a very specific group of older adults (e.g., individuals with COPD, African Americans with high blood pressure, individuals with chronic lower back pain, individuals with diabetes). The variability in outcomes could be due to differences between the types of groups that each study assessed. For example, individuals with COPD may not have reacted well to the group due to the supplemental breathing exercises that were required. They may have an aversion to activities that are similar to their own COPD treatment. Other groups may respond more positively to the intervention. The samples were generally Caucasian and female; therefore, the results exhibited may not generalize to other ethnicities or males. The interventions were different in terms of dose (e.g., one hour session versus two hours over the course of eight weeks). Also, the supplemental activities varied across the interventions. The intervention dosage may not have been enough in certain studies and the supplemental activities could have influenced how individuals perceived the intervention. Generally, the variability of the studies in both the population examined and the intervention

delivered (e.g., supplemental activities, dosage) suggests that there is a lack of support implying that mindfulness-based interventions are beneficial for older adults hoping to experience improvements in physical health outcomes (e.g., pain acceptance).

Furthermore, of the studies that measured mindfulness (e.g., Morone et al., 2009; Mularski, 2009) there were no reported changes in the mindfulness scores. This could suggest that older adults were not experiencing improvements in physical health outcomes because they failed to show change on the primary putative mediator of the intervention's effects (i.e. mindfulness). However, there is evidence that older adults had high levels of mindfulness at baseline and were not able to improve on this construct any further (Morone et al., 2009). Since only two studies in this section implemented a mindfulness measure, further analysis is needed to determine if high levels of mindfulness at baseline resulted in the lack of gains in mindfulness at post-assessment. When compared to studies that used similar measures of mindfulness, older adults typically have lower levels of baseline mindfulness in the studies where treatment gains are illustrated (Cash, Ekouevi, Kilbourn, & Lageman, 2015; Moss et al., 2015; Splevins, Smith, & Simpson, 2009). For a description of these studies, see the psychological outcomes section below. See the general conclusions section below for a summary of all of the studies that measured mindfulness.

Finally, these studies provide evidence that a mindfulness-based intervention is both feasible and acceptable for older adults with physical health concerns (e.g., high blood pressure, chronic pain). Participants attended the majority of the sessions and they reported practicing meditation fairly often even after the completion of the intervention (Morone et al., 2008; Morone et al., 2009; Mularski, 2009; Palta et al., 2012). Dropout

rates ranged from 0 to 20 percent. The average dropout rate was 15.6% and the median was 19%. As described above, this is similar to the rates that other populations exhibit in mindfulness-based intervention studies. This demonstrates that the older adults find some value from the sessions, as they incorporate mindfulness and meditation into their lives even after completing the study. It is possible that long-term practice could lead to positive outcomes that the authors were not able to assess due to the shorter-term nature of the studies. Due to the feasibility and low attrition rates, future research could incorporate longer follow-up periods.

### **Review of the Empirical Literature on Psychological Outcomes**

In general, the studies in this section are organized according to design characteristics (e.g., studies that featured two-group randomized controlled trials are clustered together).

**Single group designs.** An 8-week MBCT intervention was implemented in a sample of 43 older adults from northwest England who self-reported symptoms of depression, anxiety, or stress (Splevins et al., 2009). Participants ranged in age from 49 to 79 ( $M = 65$ ), and the majority was female (68%). All participants completed the MBCT intervention and there was no comparison group. One group facilitator conducted all sessions. The participants were assessed pre and post intervention on measures of depression, anxiety, stress, and mindfulness.

The authors only included analyses on intervention completers, but reported that they initially had 43 participants signed up for the study and 21 of them dropped out before the study officially began (49% dropout rate). The results indicated that participants experienced significant decreases in depression ( $d = .54$ ), anxiety ( $d = .31$ ),

and stress ( $d = .56$ ). Furthermore, there was a significant increase in mindfulness ( $d = .96$ ). Of the twenty-two participants who completed all of the assessments, the average attendance rate was 7 sessions (range 5-8). Furthermore, 11 participants (50%) attended all eight sessions.

This study did not include a comparison group; therefore, it is unknown if the improvements were due to the passage of time or the intervention. The authors reported that the participants experienced moderate levels of depression, anxiety and stress at pretest and mild levels of depression and anxiety and normal levels of stress at posttest. Additionally, the high attrition rate in this study suggests that only people who were motivated and/or interested in the mindfulness intervention completed this study. High levels of motivation could have impacted their scores because they may have been more willing to practice the techniques and become actively involved in the sessions (as shown in the high attendance rate).

An 8-week MBSR intervention was implemented in 202 community dwelling older adults (Young & Baime, 2010). The mean age of the sample was 65 years old. The majority was Caucasian (82%) and slightly more than half was male (58%). Similar to the previous study, there was no comparison group. The participants completed measures of emotional distress and total mood at baseline and at the completion of the intervention.

The results of this study only examined the MBSR completers. The study started with 202 participants, but only 141 (70%) completed all of the assessments. The authors reported that the intervention completers did not differ significantly from the participants who did not complete the assessments. The results illustrated that the participants experienced a significant increase in their total mood ( $d = .86$ ), indicating a large effect.

They also experienced significant decreases in anxiety ( $d = .91$ ) and depression ( $d = .57$ ).

Despite these large effects, without a comparison group it cannot be determined whether these outcomes were due to the passing of time or just from participation in an intervention. Similar to the above study, attrition could have impacted the results. By only examining treatment completers, it is likely that the participants were highly motivated and interested in the group content. Consequently, it is not surprising that they experienced large treatment gains because they probably went into the study expecting that they would experience benefits.

A modified 8-week MBCT intervention was implemented in a sample of 50 older adults with clinical levels of depression and anxiety (Fouk, Ingersoll-Dayton, Kavanagh, Robinson, & Kales, 2014). Participants ranged in age from 61 to 89 ( $M = 72.9$ ), and the majority was female (64%). There was no comparison group in this study. One trained clinician facilitated each group (7-12 participants). Modifications consisted of a shorter retreat (e.g., 5 hours versus 6 hours) and shorter meditations (e.g., 20-30 minutes versus 40 minutes). Participants were assessed at baseline and post intervention on measures of anxiety, ruminative thoughts, and sleep difficulties. Overall, 37 participants (74%) completed all 8 of the intervention sessions. Results indicated that participants experienced significant decreases in anxiety, ruminative thoughts, and sleep difficulties. The authors did not provide the data to calculate effect size estimates.

The impact that MBSR has on positive affect in a sample of 100 community dwelling older adults was examined as part of a larger study (Gallegos et al., 2013a). The mean age of the participants was 72.1. The vast majority was Caucasian (97%) and slightly more than half was female (62%). There was no comparison group in this study.

No description of group leaders was provided; however, each group consisted of 15-20 members. The groups were conducted over a period of 3 years. The participants were measured pre and post assessment on positive affect. Furthermore, they assessed which specific components of the intervention led to the change in outcome (e.g., yoga, sitting meditation, body scan, informal meditation, nonspecific therapeutic components). Study authors failed to report a dropout rate or measure completion rate. Furthermore, primary results indicated no significant increase in positive affect and the authors did not provide data to calculate effect size estimates.

More recently, the impact that an 8-week MBSR intervention had on patients with progressive cognitive decline and their caregivers was examined (Paller et al., 2015). Participants were 17 patients ( $M$  age = 72, range 55-81 years) and 20 caregivers ( $M$  age = 62.5, range 31-98 years). The vast majority of the sample was Caucasian (92%) and about half was female (56.8%). There was no comparison group in this study. The intervention consisted of a modified MBSR protocol that consisted of 1.5 hour long weekly sessions, shorter homework assignments, and no retreat. There was no description of the group facilitator(s). Participants were assessed pre and post intervention on measures of quality of life, anxiety, depression, and subjective sleep quality.

Study authors did not report attrition rates; however, all of the participants completed the depression and sleep measures, 36 of 37 completed the anxiety measure, and 35 completed the quality of life measure. Results indicated that all participants experienced significant improvements in quality of life and depression, but no significant differences in sleep quality and anxiety. The authors did not provide the data to calculate effect size estimates. Furthermore, at post intervention, 71% of the participants agreed

that they used mindfulness regularly. This suggests that the older adults likely found the mindfulness techniques acceptable, useful, and still incorporated them into their lives.

An 8-week MBSR intervention for a sample of individuals with Parkinson's disease (PD) and their caregivers was examined (Cash et al., 2015). The aim of the intervention was to address and decrease the mood related symptoms of PD (e.g., depression, apathy, anxiety). Participants ranged in age from 50 to 82 ( $M = 65.64$ ), and the vast majority was Caucasian (89.7%) and around half was female (53.8%). There was no comparison group in this study. Intervention modifications consisted of shortening the intervention sessions to 1.5 hours, reducing the length of the meditations, shortening the retreat to 4 hours, and incorporating psychoeducation on both PD and caregiving. One facilitator led the groups, which consisted of 7-10 members. Participants were assessed pre-intervention and post-intervention on mood related symptoms and mindfulness.

Fifty-two participants signed up for the study and there was a 25% attrition rate, leaving 29 patients and 10 caregivers as participants. Both the patients and caregivers combined experienced a significant increase in mindfulness ( $\eta^2 = .26$ ), indicating a large effect. Although patients experienced a significant decrease in depression ( $\eta^2 = .21$ ), the caregivers did not ( $\eta^2 = .11$ ). No other significant effects were observed for patients or caregivers. The intervention was considered feasible and acceptable as the attrition rate was 25%. Furthermore, participants attended an average of 6.46 classes (range 4 to 8); however, only 38.5% of participants attended the retreat, suggesting that the retreat may not be an imperative piece of the intervention. Similarly, the participants reported an average of 2 hours a week of at-home practice. This provides further evidence that older adults find mindfulness techniques acceptable and useful, as they incorporate them into

their daily lives.

A sample of older adults with recurrent and/or chronic depression was exposed to a standard 8-week MBCT intervention (Meeten, Whiting, & Williams, 2014). Participant age ranged from 65 to 78 ( $M = 71.25$ ) and the majority was female (75%). Race was not reported. There was no comparison group in this study. Group leader credentials were not discussed. Participants were assessed at baseline, post-intervention, and 6-month follow-up on measures of depression, anxiety, stress, and psychological well-being.

Thirteen participants signed up for the study, but one dropped out and one was considered an outlier (due to extreme depression). Results indicated a significant improvement in purpose in life ( $r^2 = .59$ ) and a significant decrease in depression ( $r^2 = .46$ )—both effects are large in magnitude. There were no other significant results. At follow-up, no participant reported a relapse of a depressive episode. Of the 13 participants, 11 completed the course (dropout rate of 15%). Nine completed all 8 sessions and two completed 7 sessions. This suggests a high attendance rate and acceptability of the intervention by the older adults.

**Two-group quasi-experimental designs.** A modified MBCT intervention was implemented in a sample of 30 bereaved older adults in Denmark (O'Connor, Piet, & Hougaard, 2014). The mean age of participants was 77 years old and the majority was female (69%). Authors did not provide demographics for race. Based on convenience (e.g., living near the intervention facility), 12 participants were assigned to the intervention group and 18 participants were assigned to the wait-list control group. Two facilitators with prior training in MBCT conducted the group. The modifications consisted of shortening the intervention sessions (e.g., 2 hours versus 2.5 hours) and the

psychoeducation focused on general negative affect rather than depressive symptoms. Participants also completed two booster sessions: one at 3 months and one at 6 months. Participants completed assessments pre intervention, post intervention, and at 5 months follow up.

There were no meaningful differences between the groups at baseline. Six participants in the MBCT group dropped out before the 4<sup>th</sup> session (50% dropout rate). The authors looked at treatment completers and they also conducted an intent-to-treat analysis. Results from treatment completers indicated that participants in the intervention group experienced significant and meaningful decreases in depression at follow-up compared to the wait-list control group (Hedge's  $g = .88$ ). Results from the intent-to-treat analysis indicated a more conservative estimate of the effect (Hedge's  $g = .49$ ). Furthermore, participants who were more depressed experienced a larger reduction in depressive scores compared to less depressed participants.

Another study compared the effects that an 8-week and 12-week MBSR intervention would have on mindfulness and worry symptoms in a sample of 34 older adults (Lenze et al., 2014). The mean age of the participants was 71 and the majority was female (74%) and Caucasian (81%). Participants were assigned to the 8-week MBSR group ( $n = 16$ ) and the 12-week MBSR group ( $n = 18$ ), although the authors did not describe the assignment mechanism. Three instructors with formal training led all groups. Treatment fidelity was maintained by weekly supervision phone calls that involved the instructor discussing the sessions with a supervisor and by having another clinician review the intervention sessions. The 8-week group did not have any accommodations. The 12-week group shortened the retreat to 2.5 hours, and repeated all material in at least

3 sessions. Participants were assessed at baseline, post intervention, 3 months follow up, and 6 months follow up on measures of mindfulness and worry severity.

There were no meaningful differences at baseline between the groups. Two of 30 participants dropped out (6% attrition) and 4 did not complete the 3 month and 6 month follow up assessments. Although both groups experienced reductions in worry severity, the 8-week group exhibited a larger effect ( $d = 1.47$ ) than the 12-week group ( $d = .48$ ) from pre to post assessments. Overall, participants in both groups exhibited significant increases in mindfulness ( $d = .76$ ) and significant decreases in worry severity ( $d = .86$ ). Furthermore, both groups exhibited high attendance rates. Participants in the 8-week group attended 79% of the sessions and participants in the 12-week group attended 87% of the sessions. This suggests that older adults are likely to attend MBSR interventions lasting two or three months.

An 8-week modified MBSR intervention was implemented in a sample of nursing home residents in Berlin, Germany (Ernst et al., 2008). Participants ranged in age from 72 to 98 ( $M = 83.5$ ) and the majority was female (63%). Study authors did not report demographics or race. Participants that were interested in the intervention were assigned to the intervention group ( $n = 15$ ) and those who were not interested, but were still willing to complete questionnaires were assigned to the no-treatment control group ( $n = 7$ ). Two trained instructors facilitated the course. Modifications included reducing the sessions to 90 minutes, reducing the amount of homework, and eliminating the retreat from the protocol. The participants were assessed pre and post intervention on measures of quality of life, depressive symptoms, and life satisfaction.

At baseline, the control group (median age = 89) was significantly older than the

treatment group (median age = 80). This study had a high attrition rate, as only 9 out of 15 participants completed the intervention (60%). Specifically, 3 participants dropped out due to health conditions, 2 dropped out due to a lack of interest, and 1 dropped out due to scheduling conflicts. All participants from the control group completed the post assessments. Compared to the control group, participants in the intervention group reported a significant decrease in depressive symptoms and a significant increase in quality of life and life satisfaction. Of the nine participants who completed the intervention, there was an 87.5% attendance rate and each of the nine participants attended at least 75% of the intervention sessions. It is undetermined whether participants benefited from the mindfulness elements of the intervention or from the non-specific therapeutic elements. Furthermore, since the groups were formed as a function of interest, it is possible that the participants exposed to treatment were more motivated and engaged in other helpful activities. This could impact the internal validity of the study. Nonetheless, this study provides further evidence that older adults have high attendance rates in mindfulness-based interventions.

**Two-group randomized controlled trials.** A standard 8-week MBSR intervention was implemented in a sample of 40 healthy older adults in order to evaluate the impact of MBSR on loneliness (Creswell et al., 2012). Participants ranged in age from 55 to 85 ( $M = 65$ ), and the majority was Caucasian (64%) and female (82.5%). Half of the participants were randomized to the intervention group and half were randomized to a wait-list control group. Two clinicians with experience in mindfulness co-facilitated the groups. The participants were assessed at baseline and at the completion of the intervention on measures of mindfulness and loneliness.

There were no meaningful differences at baseline between the groups. In the MBSR group, 15 participants completed the group and assessments (dropout rate of 25%). In the wait-list control group, 19 participants completed the post-test assessments (dropout rate of 5%). According to the authors, although males were more likely to dropout, they did not differ on any other demographics.

Preliminary results suggest that participants in the MBSR group exhibited significant decreases in loneliness from baseline to post-treatment and participants in the wait-list control group exhibited small increases in loneliness from baseline to post-treatment. Results based on the full sample of treated individuals indicated that after controlling for baseline levels of loneliness, participants in the intervention condition experienced a significant decrease in loneliness ( $\eta^2 = .17$ ), suggesting a large effect (posttest  $d$  based on unadjusted means was 2.08). Furthermore, participants from both groups also experienced a significant increase in mindfulness ( $d = 1.44$ ), suggesting a large effect.

This intervention was also considered feasible as 85% of the participants completed the MBSR intervention (i.e., 15 of 20 in immediate treatment and 19 of 20 in waitlist condition). The average attendance of the intervention was 7.2 sessions and every participant who completed MBSR and post-assessment measures completed the retreat. In addition, the average amount of home practice was 737 minutes (12.28 hours) over the course of 8 weeks. This suggests that in addition to attending a majority of the sessions, older adults also practiced outside of the group. It is likely that these participants were motivated and interested in the mindfulness aspects of the intervention.

Another study evaluated the standard 8-week MBSR protocol on a sample of 228

healthy, community-dwelling older adults (Moynihan et al., 2013). The mean age of the participants was 73.3 and the vast majority was white (98%) and slightly more than half was female (62%). Twenty participants withdrew from the study prior to the first set of post assessments. Participants ( $N = 208$ ) were randomized into the intervention group ( $n = 105$ ) or a wait-list control group ( $n = 103$ ). One clinician trained in MBSR facilitated all the intervention sessions and each group consisted of 15-20 members. In order to maintain treatment fidelity, another researcher examined 25% of the tapes of sessions. Participants were assessed at four different time points (pre, post, 3 weeks follow up, 21 weeks follow up) on measures of depression, perceived stress, and mindfulness.

At baseline, the MBSR group had higher levels of stress ( $d = .31$ ), and mindfulness ( $d = .27$ ) compared to the wait-list control group, although effects were generally small in magnitude. Furthermore, the authors included these variables as covariates in later analyses. Results indicated that there were no significant or meaningful differences in depression and stress between the two groups at any of the time points. Nonetheless, the intervention group did experience significant increases in mindfulness after treatment ( $d = .26$ ) and at follow up ( $d = .33$ ), effects that are relatively small in magnitude. At the final post-assessment (i.e. 21 weeks follow up), the MBSR group had higher levels of mindfulness ( $d = .25$ ) compared to the wait-list control group, suggesting a small effect.

Despite the small effects, this intervention was considered feasible, as there was only a 9.7% dropout rate. Furthermore, only 2 participants attended fewer than 5 sessions. Although the participants did not experience significant decreases on the outcome measures, they did experience changes on the construct the intervention attempted to

address (i.e. mindfulness) and they attended the majority of the sessions.

As a follow up to their prior study (mentioned above), 200 community dwelling older adults were randomly assigned to an 8-week MBSR group or a wait-list control group (Gallegos, Hoerger, Talbot, Moynihan, & Duberstein, 2013b). Participant mean age was 72.8 and the majority was female (62%). The authors did not provide demographics on race. One hundred participants were randomly assigned to each group. Each group consisted of 15-20 members. Participants were measured pre and post assessment on positive affect.

There was a meaningful difference between the groups at baseline on levels of depression. Specifically, the MBSR group exhibited higher levels of depression compared to the control group ( $d = .43$ ), suggesting a moderate effect. However, the authors controlled for this difference in the final analyses. The dropout rate was not reported. Although the MBSR group had increases in positive affect, these effects ( $d = .12$ ) are minimal and suggest that there was no meaningful change. Based on the lack of meaningful effects, this study suggests that positive affect may not be an outcome that mindfulness based interventions should target.

An additional study assessed the impact of a modified 8-week MBSR protocol on older adults living in a continuing care community (Moss et al., 2015). Participant age ranged from 63 to 95 ( $M = 82$ ). The majority was female (82%) and all (100%) were Caucasian. Participants were randomized to the MBSR group ( $n = 20$ ) or a wait-list control group ( $n = 19$ ). One facilitator with experience in mindfulness led the interventions. Accommodations included shorter sessions (e.g., 2 hours each), shorter homework assignments, and no retreat. The participants were assessed pre and post

intervention on health-related quality of life, acceptance, psychological flexibility, mindfulness, self-compassion, and psychological distress.

There was a meaningful difference at baseline between the two groups on age ( $d = .37$ ), with the MBSR group ( $M = 83.3$ ) being older than the control group ( $M = 80.6$ ). Four participants dropped out of the study. Sixteen of 20 participants (80%) completed the MBSR group; 12 attended all 8 sessions, and 4 attended 7 sessions. Results indicated that there was a significant group by time interaction where participants in the MBSR group exhibited significant improvements in psychological flexibility ( $d = .42$ ). Although there were no significant increases in mindfulness, there were small to moderate effects ( $|d|$ 's ranged from .09 to .41), depending on the subscale. This study illustrates both the acceptability and feasibility of mindfulness-based interventions for older adults and that the mindfulness-based intervention has some impact on mindfulness levels.

An additional study examined a modified 8-week MBSR protocol in healthy older adults (Mallya & Fiocco, 2015). Participant mean age was 69.26 and the majority was female (74%). Race was not reported. Fifty-seven participants were randomly assigned to the MBSR group and 40 participants were randomly assigned to an active comparison group. All facilitators were trained in mindfulness, but there was no mention of how many facilitators were used. The MBSR group consisted of the standard protocol with shortened daily practice time and no retreat. In addition to being matched in attention and time, the active comparison group consisted of discussing a short story and practicing standard relaxation techniques (e.g., progressive muscle relaxation). Participants were assessed at pre and post intervention on mindfulness and several psychological outcomes such as quality of life, depression, stress, and self-esteem.

In general, there were no meaningful differences at baseline between the groups ( $|d|$ 's below .35). However, the MBSR group had moderately higher levels of depression ( $d = .47$ ), but this was used as a covariate in further analyses. Fifty-two of 57 participants (91%) from the MBSR group and 28 of 40 participants (70%) from the comparison group completed the follow-up assessments. Results indicated significant increases in quality of life ( $\eta^2 = .06$ ), and mindfulness ( $\eta^2 = .05$ ), in the MBSR group compared to the comparison group at posttest. These increases suggest small effects. There were no significant effects on stress, depression, or self-esteem. This is not surprising due to the comparison group containing active intervention strategies (e.g., PMR). In general, there was a significant group by time interaction where the MBSR group experienced significant increases on quality of life and mindfulness.

Despite the nonsignificant results, this study shows high feasibility of a mindfulness-based intervention for older adults. In the MBSR group, 91% completed at least 6 sessions. Furthermore, only 70% completed the comparison group intervention. Even though both groups experienced increases, the higher attendance rates in the MBSR group suggest that older adults may be more interested in the mindfulness concepts than the other standard relaxation techniques.

**Summary of the psychological outcomes literature.** In general, (1) there is insufficient evidence indicating that mindfulness-based interventions have positive effects on psychological outcomes; (2) there is moderate evidence to suggest that mindfulness-based interventions significantly increase mindfulness levels; and (3) implementing mindfulness-based interventions in an older adult population is both feasible and acceptable.

Overall, the results of the studies indicate mixed results on the benefits of mindfulness-based interventions for psychological outcomes in an older adult population. The samples sizes ranged from 13 to 228 participants. The majority of the samples included fewer than 50 participants, which suggested that it was essential to assess effect size estimates. The effects ranged from small to large ( $|d|$ 's ranged from .12 to 1.47). In general, the studies that contained high levels of attrition or only examined treatment completers exhibited larger effects than the studies that had lower levels of attrition and examined all participants. As such, some caution is warranted in interpreting results from the former studies.

Furthermore, both the single group and two-group quasi-experimental studies exhibited larger treatment effects than the two-group randomized controlled trials. In the single group studies, the mindfulness-based intervention seemed to be effective, but it could be argued that the participants only experienced these positive outcomes due to the passage of time. In addition, participants from the two-group quasi-experimental studies chose to be in the primary intervention group based on motivation and convenience. Based on these characteristics, participants may have exhibited higher levels of engagement and actively sought out other helpful activities that could have led to the larger effects. High levels of motivation could also result in participants making life changes in other domains (e.g., increased exercise, reading self-help books) that could lead to positive outcomes that are unrelated to the mindfulness intervention. In single group studies, such alternative explanations are harder to rule out, unfortunately.

Likewise, very small effects were also exhibited in studies that had wait-list control groups. This suggests that in these studies, the intervention may not have

provided much more benefit than receiving no treatment. When compared to an active treatment, mindfulness-based intervention shows minimal benefit above and beyond the active treatment. This suggests that there may be no added benefit of incorporating mindfulness into already well-established evidence-based interventions.

Furthermore, there were significant increases and large effects of the mindfulness-based interventions on mindfulness levels ( $|d|$ 's ranged from .26 to 1.44). Although effects were generally larger in single group designs, they were still moderate to large in the two-group randomized controlled trials and two-group quasi-experimental designs. Seven studies evaluated mindfulness levels. Only one study did not find improvements in mindfulness, but upon further analyses (due to a small sample) there were small to moderate increases in mindfulness subscales. This helps to address issues related to construct validity and provides some evidence that the interventions were successful in increasing mindfulness levels. Out of the six studies that found improvements in mindfulness, five of them also found meaningful effects on the outcome variables. This is promising due to the underlying theory that improvements in mindfulness lead to the beneficial psychological outcomes.

In addition, of the studies that reported attrition, dropout rates ranged from 6% to 50%. The mean dropout rate was 25.4% and the median dropout rate was 25%. These rates are similar to other populations in mindfulness-based intervention studies. These studies provide evidence that a mindfulness-based intervention is feasible and acceptable for older adults; specifically, participants attended a majority of the sessions and dropout rates were fairly low.

## Summary and Recommendations

See Tables 1, 2, and 3 for a summary of select study characteristics.

Table 1  
*Characteristics of Studies with Physical Health Outcomes*

First Author (Year)	Sample Size	Mean Age	Comparison group	Primary Outcomes	Mindfulness Measured	Attrition	Effects
Morone (2008)	37	74.7	Wait-list	(1) Pain acceptance (2) Physical functioning (3) Engagement in activities	No	19%	(1) $d = .83$ (2) $d = .46$ (3) $d = .95$
Morone (2009)	40	75.0	Active	(1) Pain intensity (2) Self-efficacy (3) Quality of life	Yes	20%	Both groups improved*
Mularski (2009)	86	67.4	Active	(1) Stress (2) Quality of life	Yes	19%	No effects
Palta (2012)	20	72.3	Active	(1) Diastolic blood pressure (2) Systolic blood pressure	No	0%	(1) No effect (2) $d = .61$
Teixeira (2010)	20	74.6	Active	(1) Pain (2) Quality of life	No	20%	No effects

*Note.* Of the studies that measured mindfulness, there were no meaningful effects.

\* Data was not available to calculate effect size estimates.

Table 2  
*Characteristics of Single-Group Studies with Psychological Outcomes*

First Author (Year)	Sample Size	Mean Age	Primary Outcomes	Mindfulness Measured	Attrition	Effects
Splevins (2009)	43	65.0	(1) Depression (2) Anxiety (3) Stress	Yes ( $d = .96$ )	49%	(1) $d = .54$ (2) $d = .31$ (3) $d = .56$
Young (2010)	202	65.0	(1) Total mood (2) Depression (3) Anxiety	No	30%	(1) $d = .86$ (2) $d = .57$ (3) $d = .91$
Fouk (2014)	50	72.9	(1) Anxiety (2) Rumination (3) Sleep difficulties	No	26%	Improvement on all*
Gallegos (2013a)	100	72.1	(1) Positive affect	No	Not reported	No effect
Paller (2015)	37	72.0	(1) Quality of life (2) Depression (3) Anxiety (4) Sleep quality	No	Not reported	Improvement on (1) and (2) only*
Cash (2015)	52	65.6	(1) Depression	Yes ( $\eta^2 = .26$ )	25%	(1) $\eta^2 = .11$
Meeten (2014)	13	71.3	(1) Depression (2) Stress (3) Anxiety (4) Purpose in life	No	15%	(1) $r^2 = .46$ (2) No effect (3) No effect (4) $r^2 = .59$

Note. \* Data was not available to calculate effect size estimates.

Table 3  
*Characteristics of Two-Group Studies with Psychological Outcomes*

First Author (Year)	Sample Size	Mean Age	Comparison group	Primary Outcomes	Mindfulness Measured	Attrition	Effects
O'Connor (2014)	30	77.0	Wait-list**	(1) Depression	No	50%	(1) $g = .49$
Lenze (2014)	34	71.0	Two MBSR types (8 and 12 weeks)**	(1) Worry severity	Yes ( $d = .76$ )	6%	(1) $d = .86$
Ernst (2008)	22	83.5	No treatment**	(1) Quality of life (2) Depression (3) Life satisfaction	No	40%	Improvement on all*
Creswell (2012)	40	65.0	Wait-list	(1) Loneliness	Yes ( $d = 1.44$ )	25%	(1) $d = 2.08$
Moynihan (2013)	228	73.3	Wait-list	(1) Depression (2) Perceived stress	Yes ( $d = .26$ )	9.7%	No effects
Gallegos (2013b)	200	72.8	Wait-list	(1) Positive affect	No	Not reported	No effect
Moss (2015)	39	82.0	Wait-list	(1) Quality of life (2) Psychological flexibility (3) Psychological distress	Yes ( $d$ 's ranged .09 to .41)	20%	(1) No effect (2) $d = .42$ (3) No effect
Mallya (2015)	97	69.3	Active	(1) Quality of life (2) Depression (3) Stress (4) Self-esteem	Yes ( $\eta^2 = .05$ )	9%	(1) ( $\eta^2 = .06$ ) (2) No effect (3) No effect (4) No effect

*Note.* Of the studies that measured mindfulness, there were no meaningful effects.

\* Data was not available to calculate effect size estimates.

\*\* Groups were not based on randomization of participants.

Overall, the evidence suggesting that these interventions improve physical health outcomes (e.g., chronic pain, high blood pressure) and psychological outcomes (e.g., depression, anxiety, stress, well-being) is lacking. On the surface, the treatment gains for

psychological outcomes may seem more hopeful, but the results could be due to the characteristics of the participants that were measured and the research design of the study. Typically, larger treatment effects were found in studies where individuals had lower levels of mindfulness at baseline. In addition, the research examining psychological outcomes contains more studies that lack comparison groups and have high levels of attrition, which could impact the seemingly larger effects. Moreover, the studies that lacked comparison groups and assessment of the mediators were more difficult to interpret. Future research should examine all participants at baseline on constructs such as motivation for treatment and beliefs regarding treatment credibility. Such constructs could impact attrition, the distal outcomes, or both.

The most common comparison group was the wait-list control group. The wait-list control group helps control for the passage of time and history threats to internal validity. Wait-list control groups are practical and allow for all participants to potentially benefit from the intervention. The majority of the studies did not compare the mindfulness-based intervention to a comparison group and they did not measure putative mechanisms of therapeutic action. Without a comparison group, it is more difficult to determine if the same improvements would have occurred in the absence of the intervention.

Similarly, by not measuring mindfulness, the improvements made could have been due to the non-specific treatment elements of the intervention that were not related to mindfulness (e.g., therapeutic attention, social support). This is a threat to construct validity. Only nine studies (45%) attempted to measure mindfulness and not all of them used the same form of measurement. Furthermore, none of them measured mindfulness

levels throughout the intervention. Weekly, or biweekly assessments of mindfulness would allow for examining if mindfulness is steadily increasing over the course of the intervention. If mindfulness levels increased over the course of the intervention and a no-treatment control group was in place, then we know that the intervention is possibly causing this increase.

Although the current research casts doubt on the benefits of mindfulness for older adults, there are relatively few studies examining these benefits compared to the research in other populations (e.g., healthy young adults). This is an important finding in itself as it suggests that the growth of the current empirical literature does not match the growth of the older adult population in the United States. Furthermore, the American Psychological Association reported that there is not an adequate amount of psychological care devoted to older adults (2014). In fact, many psychologists do not feel comfortable working with older adults because they do not believe that they have the qualifications (American Psychological Association, 2014). However, mindfulness-based interventions for older adults are almost identical to the mindfulness-based interventions for younger adults; therefore, more psychologists may be comfortable implementing these interventions in older adult populations because they do not deviate too far from the already established protocol.

Overall, the research suggests that mindfulness-based interventions are both feasible and acceptable for older adults. For many of the studies, older adults had very low attrition rates and attended the majority of the sessions offered. They also reported having a positive experience following the intervention and continuing their practice of mindfulness. A mindfulness-based intervention has the potential to help older adults

augment their current coping practices with skills that have been associated with improvements in health across a variety of outcomes. Since only a few modifications are necessary in the older adult population (e.g., shorter meditations, physical adaptations for meditations) and older adults are less likely to receive mental health services compared to younger adults, the dissemination of mindfulness-based interventions may provide an opportunity for older adults to receive more services and develop stronger resilience when facing the hurdles of aging.

## Chapter IV: Methods

All study materials and procedures were approved by Nova Southeastern University's Institutional Review Board. Recruitment occurred in March 2017. Participation in the intervention and completion of the assessments occurred between March 2017 and August 2017. Two advanced clinical psychology doctoral students functioned as co-facilitators for the project and functioned under the supervision of two clinical psychology faculty members (one of whom is a licensed psychologist).

### Recruitment

A brief informational session was held at a retirement community in Broward County, Florida in March 2017. The session informed interested participants about the intervention, the time commitment, and the research-related procedures that would involve measure completion. Participants were given the option to sign up for the study at this point. See Appendix A for a copy of the handout given to interested volunteers at this meeting.

### Participants

Selection criteria for the study included being age 60 or older and passing a brief cognitive screener (see Measures). Of the initial 21 individuals who expressed interest, one did not respond to follow-up phone calls and one dropped out before completing measures due to being unable to commit to attending the intervention sessions. As such, 19 participants participated in and completed the study.

### Measures

**Cognitive screener.** The *Montreal Cognitive Assessment (MoCA*; Nasreddine et al., 2005) was used as a rapid screening instrument to identify participants who showed

scores of cognitive dysfunction. This assessment measures domains such as attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation. The total possible score is 30 points and a cut-off score of 20 points was implemented. A cut-off score of 20 has been validated to detect cognitive impairment in older adults (Waldron-Perrine & Axelrod, 2012). It is worth noting that this initial sample consisted of Veterans and was very different from the participants in the current study.

**Demographics.** A number of demographic questions (e.g., sex, age, ethnic identity, employment status, marital/romantic involvement) were asked.

**Intervention Expectations.** Participants were asked to rate their level of motivation for participation in the mindfulness groups, how beneficial they thought the groups would be in teaching mindfulness, and how helpful they thought participating would be in improving their general well-being. Item responses were based on a 10-point Likert scale ranging from “not at all motivated/beneficial/helpful” to “extremely motivated/beneficial/helpful.”

**Cognitive Emotion Regulation.** Cognitive emotional regulation was evaluated by administering three subscales from the *Cognitive Emotion Regulation Questionnaire (CERQ)*; Garnefski, Kraaij, & Spinhoven, 2001). The self-report measure consists of a 5-point Likert Scale ranging from “almost never” to “almost always.” These three subscales each contain four items. Subscales include positive reappraisal (e.g., I think I can learn something from the situation, coefficient alpha,  $\alpha = .90$ ), putting into perspective (e.g., I tell myself that there are worse things in life,  $\alpha = .80$ ), and refocus on planning (e.g., I think about how I can best cope with the situation,  $\alpha = .83$ ).

**Mindfulness.** Mindfulness was evaluated by administering the *Five Facet Mindfulness Questionnaire (FFMQ)*; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). This self-report measure consists of 39 items assessed on a 5-point Likert scale ranging from “never or rarely true” to “very often or always true.” Subscales include observing (e.g., When I'm walking, I deliberately notice my body moving,  $\alpha = .77$ ), describing (e.g., I'm good at finding words to describe my feelings,  $\alpha = .80$ ), acting with awareness (e.g., When I do things, my mind wanders off and I'm easily distracted – reverse scored,  $\alpha = .89$ ), non-judgment (e.g., I criticize myself for having irrational or inappropriate emotions – reverse scored,  $\alpha = .79$ ), and non-reactivity (e.g., I perceive my feelings and emotions without having to react to them,  $\alpha = .70$ ).

**Psychological Well-being.** Psychological well-being was measured by using *Ryff Scales of Psychological Well-Being* (Ryff, 1995). This scale contains 54-items measured on a 6-point Likert scale ranging from “strongly disagree” to “strongly agree.” This scale measures six dimensions such as self-acceptance (e.g., I like most aspects of my personality,  $\alpha = .79$ ), positive relations with others (e.g., I enjoy personal and mutual conversations with family members or friends,  $\alpha = .88$ ), autonomy (e.g., I have confidence in my opinions,  $\alpha = .76$ ), environmental mastery (e.g., I do not fit very well with the people in the community around me – reverse scored,  $\alpha = .86$ ), purpose in life (e.g., I enjoy making plans for the future and working to make them a reality,  $\alpha = .78$ ), and personal growth (e.g., I have a sense that I have developed a lot as a person over time,  $\alpha = .88$ ).

**Negative outcomes.** The *Depression Anxiety Stress Scale-21 (DASS-21)*; Henry & Crawford, 2005) was used to assess three aspects of mood over the past week. The self-

report measure consists of a 4-point Likert scale ranging from “did not apply to me at all” to “applied to me very much, or most of the time.” These three subscales each contain seven items. This measure has been validated for use with older adults in primary care (Gloster et al., 2008). The three subscales are depression (e.g., I couldn't seem to experience any positive feelings at all,  $\alpha = .90$ ), anxiety (e.g., I was aware of dryness in my mouth,  $\alpha = .78$ ), and stress (e.g., I found it hard to wind down,  $\alpha = .97$ ).

**Mindfulness Practice.** Participants were asked to report if they had a prior history of meditation or mindfulness experience. Participants were asked to report how many days in the previous week they practiced mindfulness techniques.

**Satisfaction.** All participants were asked to rate their level of satisfaction with the intervention on several characteristics: overall experience, meditations, informal mindfulness techniques, and co-facilitators. Participants rated their response on a 4-point Likert scale ranging from “extremely unsatisfied” to “extremely satisfied.” Participants also reported how likely they were to practice what they learned from the group in the future. Participants rated their response on a 4-point Likert scale from “extremely unlikely” to “extremely likely.”

**Mindfulness Narratives.** All participants were asked two open-ended questions prior to the start of the intervention: 1) “What do you hope to get out of the group?” and 2) “What would success from this group look like?”. Participants were asked two open-ended questions after completion of the intervention: 1) “How is life the same or different after completing the group?” and 2) “What did you get out of the group?”.

## **Intervention**

The mindfulness-based intervention consisted of five weekly sessions

(approximately 75-90 minutes each). In general, sessions included a mixture of psychoeducation (e.g., mindfulness, stress cycle, coping and aging, values), meditation (e.g., mindful breathing, body scan, loving-kindness), informal mindfulness practices (e.g., mindful eating), and the opportunity for reflection and discussion. Session 1 focused heavily on establishing rapport with group members and on introducing the participants to mindfulness and basic mindful meditations. Session 2 focused on mindfulness and coping (e.g., stress and aging). Session 3 focused more on stress and on using mindfulness techniques to raise awareness of emotions and cognitions in the absence of judgment or attempts at modification. Session 4 introduced participants to exploring their values and self-compassion. Session 5 was a review and practice session. Each session was built on the prior sessions in terms of meditations practiced. In general, meditations were brief (a maximum of 15 minutes). Intervention groups were co-facilitated by two advanced doctoral students in clinical psychology. See Appendix B for the intervention manual. See Appendix C for the handouts given to all participants during the groups. Intervention materials were compiled and adapted from a variety of sources such as original work by Kabat-Zinn (1990), a mindfulness workbook (Stahl & Goldstein, 2010), and a popular meditation app (Headspace Inc., 2018). One to three graduate students were present at each intervention session in order to take notes and assess fidelity of the intervention. All note takers endorsed that the session content was delivered during all sessions.

### **Procedure**

All study activities occurred at the retirement community. After consenting to the study, participants were administered a brief cognitive screener (i.e., the *MoCA*) in order

to become aware of participants with significant cognitive decline and impairment. One participant scored below a 20 and was referred to speak with their doctor. Due to their interest in completing the study, a capacity to consent assessment was conducted and the participant demonstrated adequate cognitive capacity to consent to participate in the study (Palmer et al., 2005). The participant was able to verbalize the purpose of the study, the risks of the study, and the benefits of the study in a manner that suggested understanding of what participation would entail.

Following the screener, participants completed a brief demographics questionnaire. All participants then completed the universal baseline assessment (i.e., before anyone has received any intervention). At that point, participants were randomly assigned to two groups: (1) immediate treatment and (2) delayed treatment. However, a large majority of participants self-selected into their treatment group based on convenience and scheduling. As such, the immediate treatment group had five participants who were assigned and six who self-selected and the delayed treatment group had seven participants who were assigned and one who self-selected. Given this randomization “breakdown,” the study is considered a quasi-experiment – lacking random assignment to condition.

Following group allocation, the immediate treatment group was reminded of the dates and times of the intervention sessions. The delayed treatment group was reminded that they would be contacted in approximately five weeks to complete their second set of assessments. After completion of the universal baseline assessment, the study unfolded in two, five-week time segments, which is the length of time it took the immediate treatment (first five weeks) and the delayed treatment (second five weeks) groups to complete the

intervention. In addition to the universal baseline, all participants completed assessments at the end of each five-week time segment. The immediate treatment group completed a second follow-up assessment (third five weeks) and the delayed treatment group completed a first follow-up assessment (third five weeks). See Appendix D for the assessment timeline. In order to improve response rates, participants had the opportunity to complete the assessments in person using paper and pencil measures ( $n = 9$ ) or through unassisted online completion (accessing the survey through a Survey Monkey weblink,  $n = 10$ ). All surveys were completed within the week that they were assigned. Participants received a \$20 Target gift card upon completion of each assessment (maximum \$80 in gift cards).

### **Hypotheses**

The present study had two hypotheses. First, it was hypothesized that there would be an intervention effect on several variables. Specifically, that participants would experience decreases in depression, anxiety, and stress, as well as increases in the five facets of mindfulness, psychological well-being and emotional regulation. Second, it was hypothesized that the mindfulness-based intervention would be feasible and acceptable, as indicated by low levels of intervention noncompliance and participant attrition as well as high scores in satisfaction and practice log completion rates.

## Chapter V: Results

### Overview

The analyses progressed in the following stages. First, the groups were compared on all primary outcome variables at the pretest assessment using independent sample *t*-tests and Cohen's *d* as an effect size estimate. Next, a series of two (treatment group) by four (time of assessment) mixed-model analysis of variance models were estimated including the variables with the largest pretest differences as covariates. Finally, the feasibility and acceptability of the intervention was examined using expectations for treatment, attendance rates, mindfulness practice reports, and satisfaction ratings. For all analyses, it was determined a priori that statistical significance would be evaluated at the .05 level. Furthermore, due to the study's small sample, effect size estimates were presented to describe the magnitude of effects.

### Descriptive Characteristics

The sample was predominantly female ( $n = 16$ ) and Caucasian ( $n = 17$ ). Two individuals identified as African American. More than half of the participants ( $n = 11$ ) identified as widowed, with five other participants identifying as married and three as single. Two married couples participated in the study (one in immediate and one in delayed intervention). Age was heterogeneous as five participants were between the ages of 85 and 89 (26.32%), five between 80 and 84 (26.32%), five between 74 to 79 (26.32%), one between 70 and 74 (5.26%), one between 65 and 69 (5.26%), and one between 60 and 64 (5.26%). A broad range of educational levels was represented. Nine of the participants reported having a four-year college degree (50%), four reported having a graduate degree other than doctoral (21.05%), two had a two-year college degree

(10.53%), one had a technical school degree (5.26%), and three had a high school diploma (15.79%). The majority of the participants reported not having previous mindfulness ( $n = 17$ ; 89.47%) or meditation ( $n = 12$ ; 63.16%) experience. See Table 4 below for a breakdown of participant characteristics between groups.

Table 4  
*Demographic Characteristics Between Conditions*

Characteristic	Immediate Treatment ( $n = 11$ )		Delayed Treatment ( $n = 8$ )	
	$n$	% of group	$n$	% of group
<b>Sex</b>				
Male	1	9.1	2	25
Female	10	90.9	6	75
<b>Age</b>				
60 – 64	0	0	1	12.5
65 – 69	1	9.1	0	0
70 – 74	1	9.1	1	12.5
75 – 79	2	18.2	3	37.5
80 – 84	2	18.2	3	37.5
85 – 89	5	45.5	0	0
<b>Ethnicity</b>				
Black/African American	0	0	2	25
Caucasian	11	100	6	75
<b>Marital Status</b>				
Single	0	0	3	37.5
Married	2	18.2	3	37.5
Widowed	9	81.8	2	25
<b>Education</b>				
High School graduate	3	27.3	0	0
Technical school	1	9.1	0	0
Two-year college	2	18.2	5	62.5
Four-year college	4	36.4	3	37.5
Graduate degree	1	9.1	0	0
<b>Prior Experience</b>				
Meditation	3	27.3	4	50
Mindfulness	2	18.2	0	0

The immediate treatment group was older ( $M = 81.73$ ,  $SD = 6.70$ ) than the delayed treatment group ( $M = 76.13$ ,  $SD = 7.59$ ), and the difference was large in magnitude,  $d = .79$ .

In general, participants in both groups had high levels of motivation to participate in the intervention, high expectations that the group would teach them mindfulness, and high expectations that the group would be beneficial for their overall well-being. There was no significant difference between the immediate treatment group ( $M = 7.45$ ,  $SD = 2.21$ ) and the delayed treatment group ( $M = 7.75$ ,  $SD = 1.91$ ) on levels of motivation,  $d = .14$ . There was no significant difference between the immediate treatment group ( $M = 7.55$ ,  $SD = 2.11$ ) and the delayed treatment group ( $M = 8.00$ ,  $SD = 1.85$ ) on expectation of benefit,  $d = .23$ . Finally, there was no significant difference between the immediate treatment group ( $M = 7.55$ ,  $SD = 2.11$ ) and the delayed treatment group ( $M = 7.88$ ,  $SD = 1.81$ ) on how helpful they believed the intervention would be for their overall well-being,  $d = .12$ . In addition, there was no significant difference between the immediate treatment group ( $M = 24.36$ ,  $SD = 5.16$ ) and the delayed treatment group ( $M = 25.13$ ,  $SD = 2.23$ ) on *MoCA* scores,  $d = .18$ .

### **Treatment Compliance and Retention in Study**

All participants who completed the first pretest ( $N = 19$ ) completed the remaining three assessments (i.e., response rate = 100%). Overall, participants in the immediate treatment group attended 85% of the sessions and participants in the delayed treatment group attended 88% of the sessions. Participants reported missing sessions due to family visiting, illness, or forgetting the session. These attendance rates are similar to the trend of high attendance rates in mindfulness intervention studies for older adults.

### **Pretest Differences**

Examination of Table 5, which presents pretest condition differences on the primary outcomes of interest, suggested that there were no significant differences at  $\alpha$

= .05. However, there were several variables that exhibited moderate to large between-group differences.

There was a large difference between cognitive emotion regulation scores at pretest,  $d = .76$ , suggesting that participants in the immediate treatment group had lower cognitive emotion regulation skills (e.g., positive reappraisal, putting into perspective, refocus on planning) compared to participants in the delayed treatment group. The immediate treatment group reported moderately lower levels of psychological well-being,  $d = .57$ . Furthermore, participants in the delayed treatment exhibited moderately higher levels of anxiety ( $d = .58$ ) and stress ( $d = .65$ ) compared to participants in the immediate treatment group. Of note, mean pretest differences on five facets of mindfulness were not significantly different across conditions and effects were small in magnitude ( $d$ 's ranged from .07 to .16).

Table 5  
Pretest Differences as a Function of Treatment Group

	Immediate ( $n = 11$ )		Delayed ( $n = 8$ )		Statistics		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Observing	3.45	0.47	3.52	0.62	0.24	0.810	0.11
Describing	3.48	0.74	3.44	0.31	-0.14	0.888	-0.07
Awareness	3.39	0.88	3.50	0.48	0.33	0.745	0.15
Non-judgment	3.78	0.72	3.89	0.52	0.35	0.727	0.16
Non-reactivity	3.50	0.50	3.55	0.71	0.19	0.851	0.09
Emotional Regulation	3.17	0.64	3.73	0.83	1.64	0.119	0.76 <sup>a</sup>
Well-being	4.60	0.61	4.93	0.50	1.24	0.234	0.57 <sup>a</sup>
Depression	0.34	0.55	0.29	0.26	-0.26	0.801	-0.12
Anxiety	0.14	0.14	0.29	0.32	1.20	0.248	0.58 <sup>a</sup>
Stress	0.19	0.28	0.52	0.68	1.38	0.187	0.65 <sup>a</sup>

<sup>a</sup> $d$  above .3

Note. In the immediate treatment group, depression, anxiety, and stress measures had  $n$ 's of 10,9,10, respectively.

### Tests of Intervention Effects

A series of two (treatment group) by four (time of assessment) mixed-model

analysis of covariance (ANCOVA) models were estimated to evaluate the hypothesis that the intervention produced higher levels of mindfulness. Since the primary outcomes of cognitive emotional regulation, psychological well-being, anxiety, and stress had moderate to large effects (Cohen's  $d = .3$  and above), they were included as covariates in the model. The outcomes of primary interest were observing, describing, acting with awareness, non-judgment, and non-reactivity. The Greenhouse-Geisser adjustment was used in all models in order to account for violations of the sphericity assumption. Due to large pretest differences and small sample size, the hypotheses examining changes in psychological well-being, cognitive emotional regulation, anxiety, and stress were not examined further.

It was expected that there would be an immediate intervention effect that would be replicated across both groups. This would be illustrated by the immediate treatment group exhibiting a change from time 1 (T1) to time 2 (T2) and the delayed treatment group exhibiting a change from time 2 (T2) to time 3 (T3). An absence of such a pattern would indicate that it is unlikely that an intervention effect occurred.

For each of the outcomes, an ANOVA summary table is presented. In order to further illuminate the primary effects, the model-implied means (adjusted for covariates) for observing, describing, acting with awareness, non-judgment, and non-reactivity are graphed in Figures 1 through 5, respectively. In addition, the figures include Cohen's  $d$ s derived from relevant paired  $t$ -tests. The absolute value of  $d$  is presented. From left to right the first  $d$  quantifies the within-group change from T1 to T2. The second  $d$  quantifies the within-group change from T2 to T3. The third  $d$  quantifies the within-group change from T1 to T4 (or the total change observed in each of the groups over the

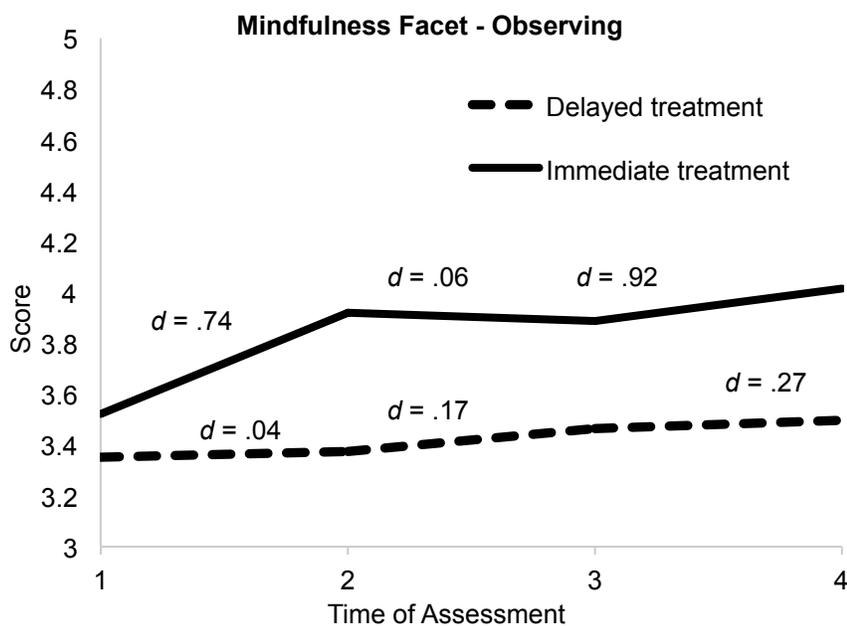
assessment waves).

**Observing.** As displayed in Table 6 below, none of the effects were statistically significant and  $\eta_p^2$  ranged from .03 to .17.

Table 6  
*ANOVA Summary Table for Mindfulness Facet – Observing*

	<i>df</i>	<i>F</i>	<i>p</i>	$\eta_p^2$
Group main effect	11.00	2.31	.156	.174
Time of assessment main effect	16.48	0.38	.632	.033
Group X time interaction	16.48	0.86	.412	.072

*Note.* Greenhouse-Geisser corrected effects are reported.



*Figure 1.* The effect of condition (immediate treatment vs. delayed treatment) on scores of the mindfulness facet, observing, over time. The scale reflects participants' mean rating (1 = never or rarely true; 5 = very often or always true). For each group, the effect (i.e., Cohen's *d*) from time 1 to time 2 is represented graphically on the left, the effect from time 2 to time 3 is represented graphically in the middle, and the effect from time 1 to time 4 is represented graphically on the right.

Overall, the immediate treatment group experienced a large increase in observing scores from T1 to time T4 ( $d = .92$ ), but the delayed treatment group only exhibited a small effect from T1 to T4 ( $d = .27$ ). Although the trend in the immediate intervention group is consistent with an intervention effect, the effect was not replicated in the delayed

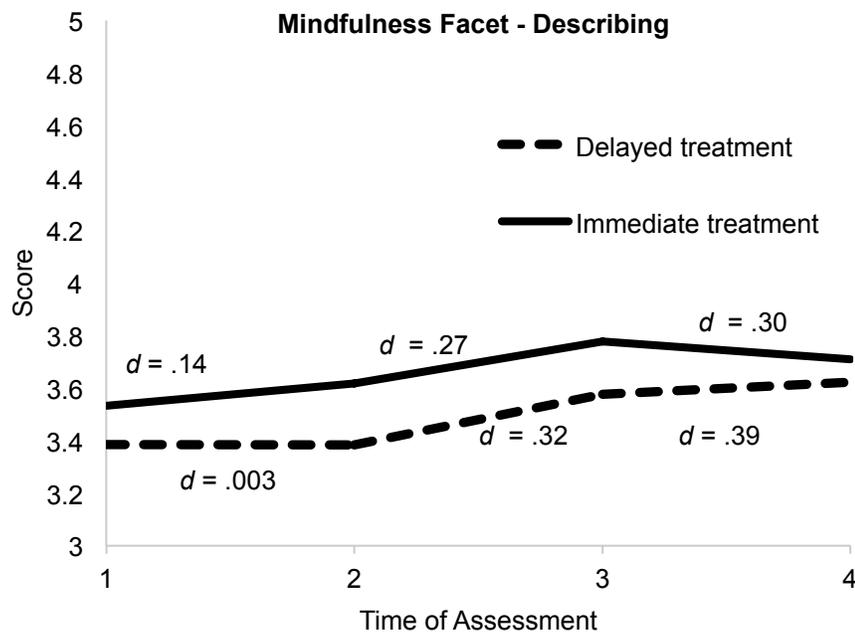
treatment group from T2 to T3. These data limit confidence in the effect of the intervention.

**Describing.** As displayed in Table 7 below, none of the effects were statistically significant and  $\eta_p^2$  ranged from .02 to .10.

Table 7  
*ANOVA Summary Table for Mindfulness Facet – Describing*

	<i>df</i>	<i>F</i>	<i>p</i>	$\eta_p^2$
Group main effect	11.00	0.31	.591	.027
Time of assessment main effect	27.86	1.21	.320	.099
Group X time interaction	27.86	0.18	.885	.016

*Note.* Greenhouse-Geisser corrected effects are reported.



*Figure 2.* The effect of condition (immediate treatment vs. delayed treatment) on scores of the mindfulness facet, describing, over time. The scale reflects participants' mean rating (1 = never or rarely true; 5 = very often or always true). For each group, the effect (i.e., Cohen's *d*) from time 1 to time 2 is represented graphically on the left, the effect from time 2 to time 3 is represented graphically in the middle, and the effect from time 1 to time 4 is represented graphically on the right.

Overall, both the immediate treatment group and delayed treatment group experienced a small increase in describing scores from T1 to T4, *d*'s = .30 and .39,

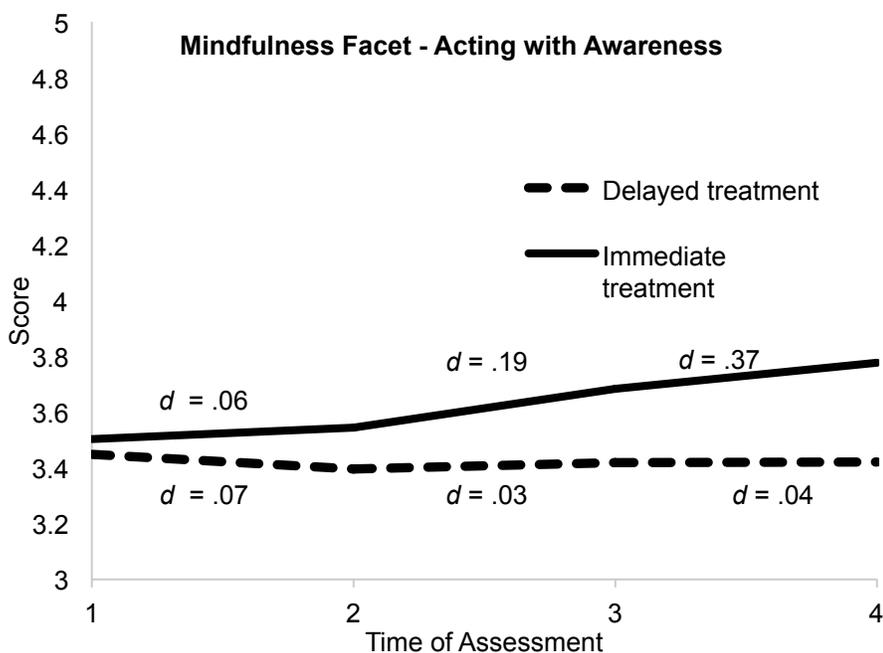
respectively. The delayed treatment group experienced a small effect from T2 to T3 ( $d = .32$ ), which is consistent with an intervention effect. However, the immediate treatment group did not display an intervention effect from T1 to T2 ( $d = .14$ ). Furthermore, the immediate treatment group displayed a similar effect from T2 to T3 ( $d = .27$ ) as the delayed group. These data limit confidence in the effect of the intervention.

**Acting with Awareness.** As displayed in Table 8 below, none of the effects were statistically significant and  $\eta_p^2$  ranged from .01 to .08.

Table 8  
*ANOVA Summary Table for Mindfulness Facet – Acting with Awareness*

	<i>df</i>	<i>F</i>	<i>p</i>	$\eta_p^2$
Group main effect	11.00	.375	.553	.033
Time of assessment main effect	23.56	.147	.877	.013
Group X time interaction	23.56	.955	.405	.080

*Note.* Greenhouse-Geisser corrected effects are reported.



*Figure 3.* The effect of condition (immediate treatment vs. delayed treatment) on scores of the mindfulness facet, acting with awareness, over time. The scale reflects participants' mean rating (1 = never or rarely true; 5 = very often or always true). For each group, the effect (i.e., Cohen's  $d$ ) from time 1 to time 2 is represented graphically on the left, the effect from time 2 to time 3 is represented graphically in the middle, and the effect from time 1 to time 4 is represented graphically on the right.

Overall, the immediate treatment group experienced a small change in acting with awareness scores from T1 to T4 ( $d = .37$ ) and the delayed treatment group exhibited no change from T1 to T4 ( $d = .04$ ). Despite the immediate treatment group exhibiting a small change in scores, they did not display a treatment effect from T1 to T2 ( $d = .06$ ). Similarly, the delayed treatment group did not display a treatment effect from T2 to T3 ( $d = .03$ ). As such, neither group experienced an increase in acting with awareness scores as a result of participating in the intervention. These data limit confidence in the effect of the intervention.

**Non-Judgment.** As displayed in Table 9 below, none of the effects were statistically significant and  $\eta_p^2$  ranged from .04 to .14.

Table 9  
*ANOVA Summary Table for Mindfulness Facet – Non-Judgment*

	<i>df</i>	<i>F</i>	<i>p</i>	$\eta_p^2$
Group main effect	11.00	1.82	.204	.142
Time of assessment main effect	19.98	1.35	.280	.109
Group X time interaction	19.98	0.44	.633	.038

*Note.* Greenhouse-Geisser corrected effects are reported.

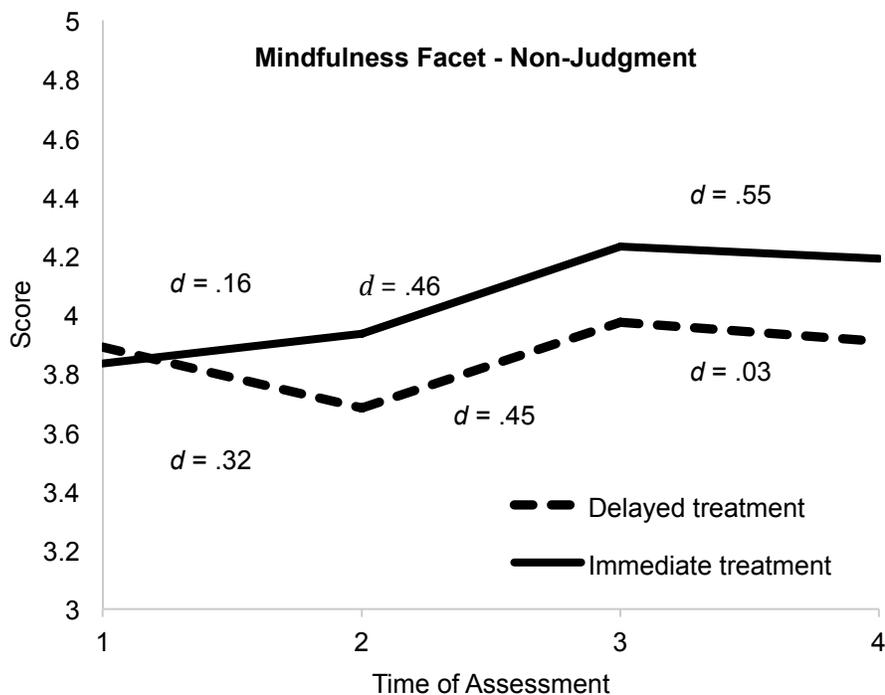


Figure 4. The effect of condition (immediate treatment vs. delayed treatment) on scores of the mindfulness facet, non-judgment, over time. The scale reflects participants' mean rating (1 = never or rarely true; 5 = very often or always true). For each group, the effect (i.e., Cohen's  $d$ ) from time 1 to time 2 is represented graphically on the left, the effect from time 2 to time 3 is represented graphically in the middle, and the effect from time 1 to time 4 is represented graphically on the right.

Overall, the immediate treatment group experienced a moderate increase in non-judgment scores from T1 to T4 ( $d = .55$ ), but the delayed treatment group did not exhibit an effect from T1 to T4 ( $d = .03$ ). Interestingly, both groups exhibited a moderate increase in scores from T2 to time T3 (Immediate treatment  $d = .46$ , Delayed treatment  $d = .45$ ). However, it is unlikely that the delayed treatment group experienced a treatment effect because the immediate treatment group did not experience an increase immediately after their participation in the intervention ( $d = .16$ ). In addition, the delayed treatment group exhibited a moderate drop in scores from T1 to T2 ( $d = .32$ ). As such, even though the delayed treatment group experienced an increase in non-judgment scores after completing the intervention, it was similar to their mean score at T1. It appears that the mean of the non-judgment score for the delayed treatment at T4 ( $M = 3.91$ ) was similar to

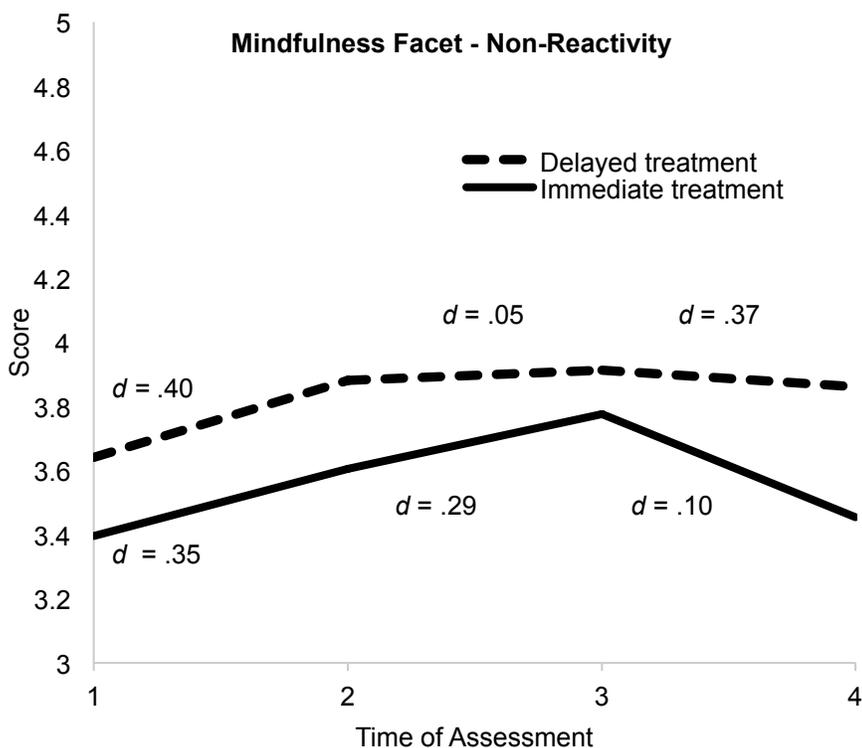
their score at T1 ( $M = 3.89$ ). These data limit confidence in the effect of the intervention.

**Non-Reactivity.** As displayed in Table 10 below, none of the effects were statistically significant and  $\eta_p^2$  ranged from .03 to .14.

Table 10  
*ANOVA Summary Table for Mindfulness Facet – Non-Reactivity*

	<i>df</i>	<i>F</i>	<i>p</i>	$\eta_p^2$
Group main effect	11.00	1.73	.216	.136
Time of assessment main effect	27.71	0.96	.415	.080
Group X time interaction	27.71	0.31	.787	.027

*Note.* Greenhouse-Geisser corrected effects are reported.



*Figure 5.* The effect of condition (immediate treatment vs. delayed treatment) on scores of the mindfulness facet, non-reactivity, over time. The scale reflects participants' mean rating (1 = never or rarely true; 5 = very often or always true). For each group, the effect (i.e., Cohen's  $d$ ) from time 1 to time 2 is represented graphically on the left, the effect from time 2 to time 3 is represented graphically in the middle, and the effect from time 1 to time 4 is represented graphically on the right.

Overall, the delayed treatment group experienced a small increase in non-reactivity scores from T1 to T4 ( $d = .37$ ), but the immediate treatment group exhibited

minimal change from T1 to T4 ( $d = .10$ ). An examination of the figure suggested that both groups exhibited moderate effects from T1 to T2, (immediate treatment  $d = .35$ , delayed treatment  $d = .40$ ). However, since both groups exhibited this effect, the change in the immediate treatment group cannot be attributed to the intervention. Furthermore, the delayed treatment group did not exhibit a change from T2 to T3 ( $d = .05$ ). This suggests that participation in the intervention did not result in a change in non-reactivity scores. These data limit confidence in the effect of the intervention.

### Feasibility and Acceptability of the Intervention

See Table 11 and Table 12 for attendance information for the immediate treatment group and delayed treatment group, respectively.

Table 11  
*Immediate Treatment Group Attendance Rates (n = 11)*

	Week 1	Week 2	Week 3	Week 4	Week 5	Total # Attended
Participant 1	1	1	1	1	0	4
Participant 2	1	1	1	0	1	4
Participant 3	1	1	1	1	0	4
Participant 4	1	1	1	1	1	5
Participant 5	1	1	1	1	1	5
Participant 6	1	1	1	1	1	5
Participant 7	1	1	1	1	1	5
Participant 8	1	1	1	0	1	4
Participant 9	1	1	1	0	1	4
Participant 10	1	1	0	1	1	4
Participant 11	1	0	1	1	0	3
Total # in group	11	10	10	8	8	

Note. 0 = did not attend session, 1 = did attend session.

Table 12  
*Delayed Treatment Group Attendance Rates (n = 8)*

	Week 1	Week 2	Week 3	Week 4	Week 5	Total # Attended
Participant 1	1	0	1	1	1	4
Participant 2	1	1	1	0	1	4
Participant 3	1	1	1	1	1	5
Participant 4	1	1	1	1	1	5
Participant 5	1	1	0	1	1	4
Participant 6	1	1	1	1	1	5
Participant 7	1	1	0	1	0	3
Participant 8	1	1	1	1	1	5
Total # in group	8	7	6	7	7	

Note. 0 = did not attend session, 1 = did attend session.

Overall, participants in the immediate treatment group attended 85% of the sessions ( $M = 4.27$ ,  $SD = .65$ ) and participants in the delayed treatment group attended 88% of the sessions ( $M = 4.38$ ,  $SD = .74$ ). Participants reported missing sessions due to family visiting, illness, or forgetting the session. These attendance rates are similar to the trend of high attendance rates in mindfulness intervention studies for older adults.

In general, participants reported that they practiced mindfulness techniques outside of the group. Participants ( $n = 11$ ) in the immediate treatment group reported practicing mindfulness techniques an average of 4.46 days a week (range 0-7,  $SD = 2.50$ ) at T2, an average of 4.0 days a week (range 0-7,  $SD = 3.10$ ) at T3, and an average of 3.82 days at T4 (range 0-7,  $SD = 2.68$ ). Participants in the delayed treatment group were only assessed on mindfulness practice at two time points due to not learning mindfulness techniques until after the immediate treatment group completed the intervention. Participants in the delayed treatment group reported practicing mindfulness techniques an average of 4.13 days a week at T3 ( $n = 8$ , range 0-7,  $SD = 2.59$ ) and 2.00 days a week at T4 ( $n = 7$ , range 0-5,  $SD = 2.31$ ). There was no significant difference or effects between the groups at T3 [ $t(17) = -.093$ ,  $p = .927$ ,  $d = .04$ ]. There was no significant difference between the groups at T4 [ $t(16) = 1.478$ ,  $p = .159$ ]; however, there was a large effect ( $d = .71$ ). This suggests that the immediate treatment group spent a significantly larger portion of their week practicing mindfulness techniques compared to the delayed group. This could suggest that the groups differed in their receptiveness and the value that they placed on the intervention.

All participants were asked to rate their level of satisfaction with the intervention on four characteristics: overall group experience, meditations (e.g., body scan), informal

mindfulness activities (e.g., awareness of moving), and co-facilitators. Overall, all participants endorsed high levels of satisfaction on all intervention components.

Furthermore, participants reported that they were very likely to practice what they learned from the intervention in the future. For mean ratings, see Table 13.

Table 13  
*Satisfaction Ratings as a Function of Condition*  
(1 = Extremely Unsatisfied; 4 = Extremely Satisfied)

	Immediate ( <i>n</i> = 11)		Delayed ( <i>n</i> = 8)		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Overall	3.73	0.47	3.71	0.49	.06	.956	-.03
Meditations	3.55	0.52	3.63	0.52	-0.33	.747	.15
Informal Techniques	3.64	0.50	3.63	0.52	0.05	.962	-.02
Co-facilitators	3.80	0.42	4.00	0.00	-1.33	.201	.63
Future practice <sup>1</sup>	3.27	0.79	3.62	0.52	-1.10	.286	.51

<sup>1</sup>Rating scale was 1 = very unlikely to practice; 4 = very likely to practice.

As displayed in the above table, there were no significant differences between the groups on these outcomes; however, there were a few moderate effects. Specifically, the delayed treatment group reported a higher mean score of satisfaction with the co-facilitators ( $d = .63$ ) and a higher likelihood to practice mindfulness techniques learned from the group in the future ( $d = .51$ ). These results are not consistent with the actual practice logs. It is possible the delayed treatment group was more likely to want to answer in a manner that would make them look better to the co-facilitators.

Overall, older adults had a high level of attendance to the mindfulness groups, practiced the techniques learned, and exhibited high levels of satisfaction with the intervention.

### **Mindfulness Narrative**

**Pre-test.** Participants were asked two open-ended questions prior to the start of

the intervention: 1) “What do you hope to get out of the group?” and 2) “What would success from this group look like?”. See Appendix E for a list of the responses. In general, participants reported wanting to learn how to live in the present moment, develop a better understanding of their emotions, and improve coping with stress. Furthermore, several participants did not know what to expect out of the group and several expected the group to improve their memory and focus. In addition, participants reported that success would include successful practice of mindfulness techniques, improved focus, increased appreciation and understanding of others.

**Post-test.** Participants were asked two open-ended questions after completion of the intervention: 1) “How is life the same or different after completing the group?” and 2) “What did you get out of the group?”. See Appendix F for a list of the responses. In general, participants reported being more aware of their experiences, an improved ability to cope with stressful situations, increased comfort with life, and an increase in awareness of others. Furthermore, participants reported feeling connected with others, learning how to incorporate techniques (e.g., STOP), and having a deeper understanding of mindfulness.

## Chapter VI: Discussion

Given the lack of research in the area (Geiger et al., 2015), the purpose of the current study was to add to the present literature base on mindfulness-based interventions with older adults. There were two primary aims of the current study: (1) to examine the effects of a mindfulness-based intervention on several primary outcomes (e.g., mindfulness, psychological well-being, cognitive emotional regulation, depression, stress, anxiety); and (2) examine the feasibility and acceptability of the intervention. The first aim was evaluated by estimating a series of two by four mixed model analysis of covariance models. The second aim was evaluated by examining attrition, attendance rates, satisfaction scores, and practice logs.

### Primary Outcomes

The first aim of the current study was to examine the effects that a mindfulness-based intervention for older adults has on several variables. Specifically, that scores on negative outcomes (e.g., depression, anxiety, stress) would decrease and that levels of positive outcomes (e.g., psychological well-being, emotional regulation) would increase. In addition, it was expected that participation in the mindfulness-based intervention would result in increased levels of the five facets of mindfulness (e.g., observing, describing, acting with awareness, non-judgment, non-reactivity).

Due to the groups having larger differences on several variables at baseline (e.g., depression, anxiety, stress, cognitive emotional regulation, psychological well-being), these variables were included as covariates in further analyses. As a result, these primary outcomes were not examined and the question of whether the present mindfulness-based intervention had an impact on these outcomes was not probed. In order to assess if the

lack of significant effects was due to an outlier (i.e. participant with a low score on the MoCa), analyses were run a second time; however, results were not different from the conclusions described previously.

**Mindfulness.** In order to assess if there was an immediate treatment effect, the change from T1 to T2 in the immediate treatment group was compared to the change from T1 to T2 in the delayed treatment group. There only appeared to be a large change on the *Observing* facet of mindfulness. Furthermore, it is unlikely that a treatment effect was present if the immediate treatment group only displayed a change on one facet of mindfulness. Similarly, there was a lack of a treatment effect in the delayed treatment group from T2 to T3.

In general, baseline scores of mindfulness in this sample of older adults were high compared to a general community of adults (Baer et al., 2008). On *Acting with Awareness* and *Non-Reactivity* subscales, participants had scores similar to experienced meditators at baseline. On the *Observing* and *Non-Judgment* subscales, participants had scores similar to highly educated individuals at baseline. Finally, on the *Describing* subscale, participants had scores similar to the general community at baseline. This suggests that the current sample had high levels of mindfulness to begin with and may not have had as much room to grow. It appears that the immediate treatment group did experience a small to large amount of change from T1 to T4 ( $d$ 's range from .10 to .92), but the changes did not occur on a timeline that is consistent with an intervention effect.

In general, older adults typically have lower levels of baseline mindfulness in the studies where treatment gains are illustrated (Cash et al., 2015; Moss et al., 2015; Splevins et al., 2009). Similar to several prior studies (e.g., Morone et al., 2009; Mularski,

2009) there were no reported changes in the mindfulness scores. However, similar to the results found in Morone et al. (2009), it is possible that a *ceiling effect* was present and limited the amount of change on mindfulness that could have been displayed.

Based on the prior literature, effects were largest in designs that lacked control (e.g., single group designs) and were much smaller in designs that exerted more control (e.g., randomized controlled trials with an active control group). The presence of an active control group most likely produced smaller effects relative to no control groups because of the nature of the groups. Specifically, all of the prior studies utilized an active control group that was matched to the comparison group on time and attention. Furthermore, the active control groups typically had benefits such as a relaxation component (e.g., Mallya & Fiocco, 2015), social support (e.g., Mularski et al., 2009; Palta et al., 2012), or health education (e.g., Morone et al., 2009; Teixeira, 2010).

Similarly, prior studies that contained high levels of attrition exhibited larger effects than the studies that had lower levels of attrition. Participants that dropped out of the study may have not benefited from the intervention and their responses were not taken into account. In general, the studies did not analyze data from participants that dropped out. Two studies found no significant pretest differences between dropouts and treatment completers (e.g., O'Connor et al., 2014; Young & Baime, 2010). Some studies found that dropouts were more like to be male (e.g., Creswell et al., 2012), older (e.g., Morone et al., 2009), and less educated (e.g., Morone et al., 2008). Participants who stayed in the study may have been more motivated and engaged in the intervention. The lack of a treatment effect in the current study is similar to the lack of a treatment effect found in prior studies that had more control (e.g., Gallegos et al., 2013b; Mularski et al.,

2009; Teixeira, 2010) and lower levels of attrition (e.g., Mallya & Fiocco, 2015; Moynihan et al., 2013; Palta et al., 2012).

Another possible explanation for the lack of intervention effects in the current study has to do with reductions in intervention dose and required practice. The majority of the prior studies implemented at least 8 weeks of a mindfulness-based intervention (Geiger et al., 2015). Similar to the study that implemented a 4-week mindfulness program (i.e., Teixeira, 2010), the current study failed to observe significant effects on outcomes. It is possible that the intervention dose (e.g., 5 sessions) was not enough for the participants to experience a significant change in mindfulness scores. In addition to not having the typical 8-session intervention, participants in the current study were not required to practice exercises for a minimum of 45-minutes daily (e.g., Shapiro et al., 1998); they were encouraged to practice for at least five minutes a day. It is possible that there may have been an intervention effect if the current study modeled previous mindfulness research in the amount of content delivered and required mindfulness practice at home.

It is likely that the higher functioning at baseline, the low dose of the intervention, and low practice requirements all impacted the lack of a treatment effect in the current study. It is likely that the ceiling effect had a significant impact on how much the participants could benefit from partaking in the mindfulness-based intervention. Since participants had high levels of mindfulness and were relatively considered high functioning (e.g., high socioeconomic status), it is possible that the amount of change they could exhibit was limited. Essentially, they were doing well before participating in the intervention and had little room to grow on the outcome measures. However, it is

possible that clinical benefits of mindfulness might be subtler with these participants because of their higher levels of functioning. It is possible that these benefits may accrue over time as participants have more opportunities to practice mindfulness in stressful situations. Specifically, the effects of the intervention might be observed when older adults are under high stress times (e.g., illnesses, loss of loved ones).

### **Feasibility and Acceptability**

In healthy adults, the average attrition rate for mindfulness-based interventions is 18 percent (Khoury et al., 2015). For older adults, the average attrition rate for mindfulness-based interventions is 23 percent (Geiger et al., 2015). In the current study, the attrition rate was 0 percent. Furthermore, 17 (89%) participants attended at least 80% of the intervention sessions (i.e. 4 out of 5 weeks). The remaining two participants attended 60% of the intervention sessions (i.e. 3 out of 5 weeks). This suggests that older adults in the current study may have valued the groups and may have found some benefit in attending the sessions.

In addition, the intervention was delivered in the retirement community where participants were dwelling. As such, the current study probably had fewer barriers associated with sustained participation. Furthermore, participants in the current study reported higher levels of education compared to participants in prior studies (Geiger et al., 2015). Participants in the current study may have exhibited higher levels of engagement and motivation compared to participants in previous studies. Also, studies in which the population had specific health issues such as back pain (e.g., Morone et al., 2008); diabetic neuropathy (e.g., Teixeira, 2010); clinical depression (e.g., Meeten et al., 2014); and Parkinson's disease (e.g., Cash et al., 2015) were more likely to display significant

effects. Participants in the current study were relatively healthy and high functioning.

Finally, participants reported high levels of satisfaction with their overall group experience, the co-facilitators, and the mindfulness techniques, across both informal (e.g., anchors to current experience) and formal (e.g., body scan) data sources. They also reported qualitative data suggesting that they internalized the concepts of mindfulness and hoped to continue to use the skills learned to cope with their daily stressors. Previous research suggests that older adults may largely benefit from the social nature of attending a mindfulness-based group (e.g., Mallya & Fiocco, 2015). Similarly, participants in the current study expressed an increased level of closeness with their fellow group members. Furthermore, the sample in the current study has access to a ready-made social world at the retirement community. Since they have the ability to attend numerous classes and events, it is possible that they are already experiencing benefits on several psychological facets (e.g., depression, stress) due to the level of social support and social connection they receive on a daily basis.

Moreover, these high levels of satisfaction may have impacted the participants' mindfulness practice at home. Following completion of the intervention, both groups reported a continued mindfulness practice. This is similar to the previous research in that participants incorporate mindfulness and mediation into their lives even after completing the intervention. Similar to prior studies, it is possible that long-term practice could lead to positive outcomes that were not assessed due to the short-term nature of the present study (e.g., 15 weeks).

### **Impact of Age**

The age of the participants could have influenced the high levels of feasibility and

acceptability in the current study. The “maturity principle” states that individuals are likely to be more agreeable, conscientious, and emotionally stable as they age (McAdams & Olson, 2010). The older adults in the current study may have attended the majority of the sessions and completed all of the assessments due to their perceived responsibility of needing to complete all parts of the research study. In addition, these traits could have impacted the increased practice rates after the completion of the intervention.

The systematic difference in age between the two groups could have resulted in a cohort effect, or, the “ways that successive generational groups differ from one another” (Knight & McCallum, 1998, p. 15). Research suggests that younger cohorts of older adults have a higher prevalence of psychological problems (e.g., substance use, depression) compared to older cohorts (Satre, Knight, & David, 2006). Since the delayed treatment group was significantly younger, this could explain why they endorsed higher levels of anxiety and stress at baseline.

Based on the maturity principle, the significantly older immediate treatment group may have exhibited higher levels of agreeableness and conscientiousness. Although neither group appeared to have experienced an intervention effect, the immediate treatment group did appear to have a larger change in mindfulness scores over time. This is similar to the prior research in which studies with older samples (e.g., Ernst, 2008; Lenze et al., 2014; Moss et al., 2015; O’Connor et al., 2014) were more likely to have significant effects on outcomes. These personality traits may be linked to these outcomes.

Finally, older adults tend to have more life experiences that they can draw upon when dealing with stressors (Knight & McCallum, 1998). These life experiences could help older adults develop coping strategies that they use later in life. As such, since older

adults likely have established coping practices and higher levels of emotional stability, they may already possess the skills taught in mindfulness-based interventions. This could lead to the lack of significant results found in many studies of mindfulness-based interventions with older adults. Furthermore, this could help explain why older adults in the current study had similar levels of mindfulness compared to experienced meditators.

### **Limitations**

Although the current study had several strengths, a number of limitations are worth noting. First, one important limitation of the current study is that there were only 19 participants, which placed constraints on the complexity of the analyses that could be conducted (e.g., formal tests of moderation and mediation were not undertaken).

Recruiting more participants would have increased the power of statistical tests and allowed for more complex analytical options.

Second, the breakdown of random assignment threatened the internal validity of the study. Specifically, there were several significant systematic differences between the groups at baseline. However, although a majority of the participants chose the group that they wanted to partake in, participants did not significantly differ on baseline measures of expectation of benefit scores or on motivation to participate in the intervention.

Third, there were limits on the generalizability of the sample. While the population of interest is older adults, a more specific description of the sample would be older adult Caucasian women with college or graduate degrees. The intervention may have a different impact on males, individuals with a different cultural background, or individuals with less education.

Finally, it is possible that there was a diffusion of treatment threat to internal

validity. It is possible that participants in the immediate treatment group may have shared skills or techniques learned with participants in the delayed treatment group. This could have attenuated the effects of the intervention and impacted its efficacy. It is possible that participants in the delayed treatment group were exposed to and practiced mindfulness skills before taking part in the intervention. In addition, some participants in the delayed group may have went in to the intervention with expectations (based on what they may have heard) and could have been disappointed if they did not share the same experience as the immediate treatment group.

### **Strengths**

The current study had several strengths. A major strength of this study was its design characteristics; specifically, the use of a wait-list control group. The wait-list control group helped control for the passage of time and history threats to internal validity. The wait-list control group allowed for all participants to experience the intervention. The implementation of a wait-list control group made it easier to determine if improvements would have occurred in the absence of the intervention.

The current study added to the present literature base by incorporating a mindfulness measure at all assessment time points. If the participants in the current study exhibited a significant change in outcomes, the addition of the mindfulness measure could have ruled out if changes were due to non-specific treatment elements (e.g., therapeutic attention, social support).

Furthermore, the use of a second follow-up assessment in the immediate treatment group could have helped to show if any gains made following completion of the intervention were maintained. Another strength of this study was the intervention's

fidelity of implementation. Several graduate students monitored each group session and evaluated how closely the co-facilitators followed the script and intervention manual. All note takers agreed that the session content was delivered during all sessions.

Finally, the present study added to this literature by collecting participant satisfaction data as well as monitoring practice and attendance rates. In addition, a brief voluntary focus group was conducted several months following the completion of the study where participants could provide their feedback on the group and participation in the study. There was a 100% response rate and the rate of attendance was high and supported the notion that mindfulness-based interventions for older adults are feasible and acceptable (Geiger et al., 2015).

### **Future Directions**

Future studies should continue to examine the change of mindfulness over time, implement a control group, and have multiple follow-up assessments. Recruiting a larger sample of participants would help future investigators evaluate potential mediators (e.g., psychological well-being, emotion regulation) or moderators (e.g., age, prior meditation experience). Future studies should attempt to recruit a more diverse sample in order to examine possible subgroup differences (e.g., males, ethnic/racial diversity). Due to the high feasibility and low attrition rates of mindfulness-based interventions in this population, future research should incorporate longer follow-up periods. In order to assess the impact that the maturity principle has on the outcomes of a mindfulness-based intervention, measures of personality characteristics should be included in future studies. Finally, future studies should compare a 5-session mindfulness-based intervention to an 8-session mindfulness-based intervention to examine if the amount of time spent in the

group impacts outcomes.

## **Conclusions**

In general, the results are consistent with the prior literature in that there is insufficient evidence that mindfulness-based interventions have positive effects on psychological outcomes for older adults. Furthermore, the results from the current study do not coincide with prior evidence of a moderate treatment effect on increasing mindfulness levels; however, this could be due to the high levels of mindfulness that the participants exhibited at baseline. In addition, the majority of studies in which older adults have large effects on mindfulness are those in which the participants had low levels of mindfulness at baseline and a health concern. The current study had stronger levels of control and low levels of attrition, which could have played a significant role in the lack of an intervention effect.

The results are consistent with the established feasibility and acceptability of mindfulness-based interventions for an older adult population. In the current study, all participants responded at all assessment time points and they attended the majority of the sessions offered. Participants also reported having a positive experience following completion of the intervention and a majority reported that they continued their practice of mindfulness. This is consistent with the maturity principle in that older adults have higher levels of agreeableness and conscientiousness. Although there were no treatment effects on the outcomes in this study, it is possible that the older adults experienced improvements in physical outcomes (e.g., heart rate, blood pressure) due to participation in the intervention and further mindfulness practice.

Since older adults do not receive an adequate amount of psychological care

(American Psychological Association, 2014), it is imperative to continue to evaluate the effects of mindfulness-based interventions. Based on the literature, it seems that mindfulness-based interventions are more helpful for lower functioning older adults (e.g., presenting with a clinical or physical problem). However, mindfulness-based interventions for older adults are worth delivering because the participants enjoy the attending the groups. In addition, the mindfulness skills learned from the intervention could provide additional coping strategies and support that older adults can utilize in times of stress. Even if they do not experience significant changes over the course of the intervention, older adults may learn to use mindfulness techniques when faced with the challenges of aging (e.g., losing a loved one, medical concerns, cognitive changes). By having these strategies at hand, older adults may be able to strengthen their current coping practices when faced with life transitions. Overall, both the prior research and current study suggest that older adults value mindfulness-based interventions and that participation in a mindfulness-based intervention is still better than no intervention at all.

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Appendix A  
Brief Informational Session Handout

## **Mindfulness Group**

- **Who are we?**
  - We are a research team from Nova Southeastern University made up of faculty and doctoral students. We have adapted an existing mindfulness intervention to fit the needs of adults ages 60 and older.
  
- **What is mindfulness and how will it help you?**
  - Mindfulness is the ability to focus on the present moment in a non-judgmental manner. It includes a collection of meditation and other formal and informal methods of practice.
  - Mindfulness has been associated with a plethora of positive outcomes – including decreases in stress and worry, and increases in psychological well-being.
  
- **What is expected of me?**
  - Survey Completion
    - 4 surveys (administered once every 5 weeks)
      - Survey 1: Before the group begins
      - Survey 2: After the final group ends
      - Survey 3: 5 weeks after the group ends
      - Survey 4: 5 weeks after prior survey
  - Group Completion
    - You will be randomly assigned to either a mindfulness group that starts immediately (within the next few weeks) or a group that starts 5 weeks after the first group concludes. We expect you to attend these sessions. Each session will last approximately 75 minutes and occur once a week over the course of 5 weeks. There are a total of 5 sessions.
  
- **What will I get out of this?**
  - For each survey you complete, you will receive a **\$20 gift card**. You can receive a **maximum of \$80 in gift cards** if you complete all 4 surveys.

Appendix B  
Intervention Manual

## **Session 1 – Introduction**

*Purpose:* To introduce the participants to the group, explain the concept of mindfulness, and introduce basic mindfulness practices to the members.

*Activities:* Mindful breathing, Anchors to current experience

*Materials:* Group schedule, Principles of Mindfulness Handout, CD with meditations/Track List, Anchors to Current Experience Handout, Monitoring Log

*Procedure:*

### **1. Introduction (10 minutes)**

- a. Introduce co-facilitators
  - i. **CO-FACILITATOR A:** Hello, my name is \_\_\_\_\_. I am currently a doctoral student in clinical psychology and am interested in mindfulness and its impact on functioning.
  - ii. **CO-FACILITATOR B:** Hello, my name is \_\_\_\_\_. I am also currently a doctoral student in clinical psychology and am interested in mindfulness.
  - iii. **CO-FACILITATOR A:** We would also like to introduce \_\_\_\_\_, who will be taking notes and helping us monitor what happens during the groups.
- b. Have the participants introduce themselves
  - i. **CO-FACILITATOR B:** Next, we would like you to introduce yourselves. Please tell us your name and something that you enjoy doing so we can get to know one another.
- c. Discussion of group rules (e.g., confidentiality)
  - i. **CO-FACILITATOR A:** We would like to let all of you know that everything that is said in this group will remain confidential. We ask that you please do not discuss what happens in group outside of group. We can't guarantee that another member won't break confidentiality; we just ask all of you to please respect others and don't share anything outside of group. If we hear talk of anyone wanting to hurt themselves or someone else and of we hear of any reported abuse (e.g., child, disabled, older adult) then we are required by law to break confidentiality. Also, we ask that you respect each other and allow everyone a chance to talk.
- d. Present overview of group schedule (hand out schedule)
  - i. **CO-FACILITATOR B:** Here is the overview of the group. You can find the dates and times for the sessions.

## 2. Basic Rationale and Goals of Treatment (5 minutes)

- a. Explanation from co-facilitators
  - i. **CO-FACILITATOR A:** Now we are going to tell you the basic purpose and goals of this group. As you know, life is full of many stressors. One day you might wake up with aches and pains that weren't there the day before. Or maybe you miss your grandchild who lives in a different state. Maybe you're feeling down or are worried about something. These are all things that many of us feel on a day-to-day basis. What's so great about mindfulness is that it has been shown to bring about positive effects for a lot of different outcomes. Mindfulness can help to reduce stress, anxiety, depression, as well as increase mood, self-esteem, and overall well-being. Also, people who practice mindfulness are less likely to feel lonely and have increased communication in relationships.
  - ii. **CO-FACILITATOR B:** We have a few different goals for this intervention.
    1. First, we want to teach you ways of practicing mindfulness informally (e.g., anytime and anyplace).
    2. Second, we want to be able to teach you formal ways of practicing mindfulness. This could include setting aside time to practice a technique.
    3. Third, we want to help you learn how to use mindfulness to cope with daily stressors. We hope that it will help improve your mood and decrease any stress. We hope that we provide you with enhanced tools to deal with your daily life.

## 3. Psychoeducation on Definition of Mindfulness (15 minutes)

- a. Mindfulness Definition
  - i. **CO-FACILITATOR A:** We are going to start with explaining a little more about what mindfulness is. Mindfulness is the ability to have recognition of the present moment. In addition, it involves having a lack of worry and rumination on the past or the future.
    1. Discussion:
      - a. Does anyone feel like this concept of worry and rumination is something that they do a lot?
      - b. **Note:** (Try to encourage participants to share a few examples – this will help create a sense of belonging/relating to others)
- b. Now we are going to discuss several characteristics that describe mindfulness.
  - i. **CO-FACILITATOR B:** Being aware – Paying more attention to things in our life. The idea here is to get ourselves off of autopilot, which is more like being asleep.

- ii. **CO-FACILITATOR A:** Beginner’s mind – The ability to see things as new and fresh, as if for the first time. Think of how a young child approaches her or his world, with curiosity and eagerness. Children are great examples of Beginner’s mind because they are much earlier in their journeys in life.
  - iii. **CO-FACILITATOR B:** Non-judgment – Being an unbiased observer of your own experiences; not labeling things as good or bad. As Hamlet noted, “Things are neither good nor bad, but thinking makes it so.” Although this quote might be a little extreme, it highlights a typical element of our thinking – the labeling of experiences / thoughts / feelings as good or bad. By incorporating the principle of non-judgment, we seek to get away from this dichotomy of good or bad.
  - iv. **CO-FACILITATOR A:** Acceptance – living in the present moment. Acceptance is the culmination of being aware, beginner’s mind, and non-judgment. Through acceptance, we experience things in our life as they are—without need for judgment.
  - v. **CO-FACILITATOR B:** Self-compassion – Love for yourself without self-blame or criticism. As we go deeper in our mindfulness practice, our self-compassion grows.
  - vi. **CO-FACILITATOR A:** Non-striving – Not trying to get away from where you are.
- c. Summary
- i. **CO-FACILITATOR A:** The overall purpose of mindfulness is to pay attention to our thoughts, feelings, behaviors, and sensations as they occur in a non-judgmental way.
  - ii. **CO-FACILITATOR B:** Discussion
    1. Does anyone have any questions or thoughts about these concepts?
    2. Did any of these concepts jump out at anyone?
    3. Do you think incorporating these concepts into your life might be hard or easy?

#### 4. Activities (25 minutes)

- a. Formal Technique – Mindful Breathing
  - i. **CO-FACILITATOR A:** Psychoeducation
    1. Now we are going to practice our first formal technique of mindfulness. In general, breathing is a way to practice

being aware of and “anchoring” yourself in the present moment. This is a technique that you can use to recognize how you are feeling in the current moment (e.g., physically, emotionally, mentally). Remember, this is a skill and will take practice. It is normal if you are not able to do this immediately. Remember, distractions are normal. If you find yourself becoming distracted by your thoughts, just return your focus back to your breath. Also, if you find that this is too hard, we can modify it. If you have any medical concerns (e.g., heart/respiratory problems) please don’t overdo it. Only do what you are comfortable doing. (Co-facilitator B) is going to practice and model the technique as we do it. If at any point you are not sure what you should be doing, look at (Co-facilitator B) for an example.

ii. **CO-FACILITATOR A:** Practice

1. I want everyone to get as comfortable as you can in your chair. You might want to begin with both feet squarely on the floor with your hands on your legs or sitting comfortably in your lap. With your eyes open initially, take a moment to notice your immediate environment – mostly what is in front of you. Try not to get too distracted by background noise. Let it come and go. Next, take in a couple of deep breaths – in through the nose and out through the mouth. We will call the inhale the ‘in-breath’ and the exhale the ‘out-breath.’ As you breathe in, try and notice your abdomen or chest filling with air and expanding. As you breathe out, try and notice your body relaxing/softening. On your third or fourth out-breath, close your eyes. Return your breath to its natural pattern and breathe how you normally would. Keep your focus on your breath and how it feels to breathe in and out. Once your eyes are closed, begin to count your breaths silently – one on the in-breath and two on the out-breath. Silently count up to the number 10 and then start counting over again at number one. Continue this for a couple of minutes. (Wait 2 minutes) When you are ready, you may open your eyes and bring yourself back into your environment.

iii. **CO-FACILITATOR A:** Reflection and Discussion

1. Once folks are oriented, check-in with them and see what the experience was like for them. What was it like? How did your body feel? What did you like about it? Was there anything you disliked about it?

b. Informal Technique – Anchors to Current Experience

- i. **CO-FACILITATOR B: Psychoeducation**
  1. We are now going to move on to our next activity. We are going to talk about being present or anchored to the present moment. Has anyone ever had an experience where you drove somewhere and didn't really remember getting there? A lot of the times, we are walking (or driving) through life on autopilot and not paying much attention along the way. In lots of ways, being on autopilot is the opposite of being mindful. As such, we are hoping to give you some strategies that can help you spend less time on autopilot and more time being mindful. Next, we are going to talk about three ways to increase mindfulness.
  
- ii. **CO-FACILITATOR B: Practice**
  1. "What do you see?" Identify three things that you are currently able to see
    - a. Share example and ask Co-Facilitator A to share examples
    - b. Ask for a volunteer to share what they see
  2. One way to be mindful is to check in with our body and how we feel in the moment. When you adjust your body position (e.g., move in your chair and raise out of a sitting position be begin walking) think of how your joints and limbs move. When you walk be aware of the weight of your body on the chair.
    - a. Share example and ask Co-Facilitator A to share examples
    - b. Have them practice moving in their seat and notice what it feels like to move
  3. Be aware of your steps when walking (e.g., what do your feet feel like as they land on the pavement on every step?). Be aware of the weight of your body on the floor.
    - a. Share example and ask Co-Facilitator A to share examples
  
- iii. **CO-FACILITATOR B: Reflection and Discussion**
  1. What was that like?
  2. Any comments?

## 5. Overview and Discussion (15 minutes)

- a. Provide a general summary
  - i. **CO-FACILITATOR B: We've done a lot today...**
    1. Mindfulness is the ability to focus on the present moment, without ruminating on the past or worrying about the future
      - a. Being aware, beginner's mind, non-judgment, acceptance, self-compassion, non-striving

2. Formal technique – mindful breathing
  3. Informal technique – anchors to current experience (focus on senses)
- b. Reflect on activities (Note: If the discussion was rich before this part, you can briefly just ask in general about their thoughts about what was done today)
- i. **BOTH CO-FACILATORS**
    1. What did you think of the principles of mindfulness? Did any stick out?
    2. What did you think about the breathing meditation?
    3. What did you think about being mindful during common moments?
    4. Any difficulties?
      - a. Note: We should anticipate that this is going to feel hokey and possibly unnatural to some people, so should comment on this explicitly toward the end of the session and encourage participants to hang in there.
- c. Regular Practice
- i. **CO-FACILITATOR A**
    1. Importance: A skill that needs to be practiced (e.g., like riding a bike)
    2. Hand out CD with meditations and inform them of track number with mindful breathing
    3. Set up a standard time to practice
      - a. Set alarm or other reminders
    4. Assignment: Practice one of the techniques learned today for at least 5 minutes a day. (Hand out monitoring log)

## 6. Closing Activity (5 minutes)

- a. **CO-FACILITATOR B** will lead the mindful breathing exercise from above to end the group

## 7. Remind of date and time of next group

## **Session 2 – Introduction to Stress and Coping**

Purpose: To educate on the impact of stress and ways to cope.

Activities: Mindful breathing, Body Scan

Materials: STOP technique handout, Coping Strategies Handout, Monitoring log

Procedure:

### **1. Opening (10 minutes)**

- a. Introduction
  - i. **CO-FACILITATOR A:** Hi everyone, welcome back to the group. Before we start lets remind each other of our names (go around room). We appreciate that you came back for our second session! Before we go over your practice, does anyone have any comments about what we did last week or want to talk about the experiences they had after we ended the group last week?
- b. Practice Discussion
  - i. **CO-FACILITATOR A**
    1. Was everyone able to practice?
    2. Discuss any difficulties or barriers that may have come up for participants.
- c. Opening Activity
  - i. **CO-FACILITATOR B:** Mindful breathing (script from previous week):
    1. Before we get started, lets take a few minutes to practice the mindful breathing technique we worked on last week. Remember, Co-facilitator A will be modeling this so if you are unsure of what to do, have a look at Co-facilitator A.
  - ii. **CO-FACILITATOR B:** Practice
    1. Use script from previous week
  - iii. **CO-FACILITATOR A:** Reflection and Discussion
    1. Once folks are oriented, check-in with them and see what the experience was like for them. What was it like? How did your body feel? What did you like about it? Was there anything you disliked about it? Was it easier today than last time?
    2. Note: Remind them that the more they practice, the easier it will get. Also, remind them that even a few minutes a day can result in gains.

### **2. Psychoeducation on Stress (15 minutes)**

- a. Introduction of Stress Cycle
  - i. **CO-FACILITATOR B:** We are now going to talk about stress. In

general, our thoughts, feelings, and behaviors can impact our levels of stress. Specifically, how we respond to our environment can impact the way we feel after.

ii. **CO-FACILITATOR B:** Discussion

1. Will somebody share with us a source of stress in his or her life?
2. What are some typical reactions to stress?
3. When you are stressed, what are you thinking? What are you emotionally feeling? What are the body sensations that you are experiencing?

b. Coping and Aging

i. **CO-FACILITATOR A:** There are specific situations that you may face as you grow older. For example, you may be experiencing more medical concerns and age related stressors (e.g., friends/siblings passing away, medication side effects).

ii. **CO-FACILITATOR A:** Discussion

1. Is anyone willing to discuss a daily stressor in their life?
2. What are some optimal and less than optimal coping strategies?
  - a. Less than optimal coping strategies:
    - i. Avoidance
    - ii. Isolation
    - iii. Resignation (e.g., “there is nothing I can do, so why even try”)
    - iv. Escapism (e.g., substance use)
  - b. Optimal coping strategies:
    - i. Problem solving
    - ii. Seeking information
    - iii. Cognitive restructuring (e.g., seeing multiple perspectives)
    - iv. Seeking support
3. In what ways do you typically cope when dealing with age-related stress?
4. How can you incorporate some of the techniques and principles of mindfulness we have been working on to cope with stress? (If they are unable to come up with any, prompt with these ideas)
  - a. Mindful breathing to calm down and become aware of how we are feeling
  - b. Non-striving – not trying to change how you feel
  - c. Acceptance – accept how you feel with non-judgment
  - d. Self-compassion

## e. Awareness

**3. Activities (30 minutes)**

## a. Informal Technique – STOP Technique

i. **CO-FACILITATOR B:** Psychoeducation

1. We are now going to discuss a mindfulness technique that can be used all the time. In general, we tend to go about our day without stopping and becoming aware of the present moment and what we are doing. One way to practice mindfulness, without having to sit down and take a lot of time out of your day is to practice something called the STOP technique. This is similar to the STOP sign in traffic.

ii. **CO-FACILITATOR B:** Practice

1. Multiple times throughout the day practice this technique
  - a. S = Stop
  - b. T = Take a breath
  - c. O = Observe (describe what you are currently experiencing, you are an objective observer)
  - d. P = Proceed
2. Remember, you can do this without anyone even noticing! You don't have to worry about calling attention to yourself or being uncomfortable in a public place. Simply say the STOP technique in your head. This can help us with not reacting in ways that we may later regret.
3. This technique can be used in a variety of situations. It is a reminder to “put the breaks on” when you get riled up emotionally. The core issue that we are addressing here is “escalation.”
  - a. Interpersonal – can help prevent you from acting in a way that you would regret (e.g., maybe when arguing with a person)
    - i. Ask other co-leader to provide an example
  - b. Intrapersonal – can help prevent from over-reacting in a stressful situation
    - i. Ask other co-leader to provide an example
4. This technique can also just be used periodically throughout the day to check in with ourselves. This can allow us to become aware and not be on auto-pilot.

iii. **CO-FACILITATOR B:** Reflection and Discussion

1. Does anyone have an example of a time today where this would have been helpful?

## b. Formal Technique – Body Scan

i. **CO-FACILITATOR A:** Psychoeducation

1. We are now going to move on to a formal mindfulness

technique. One way that we are able to practice mindfulness is through a formal meditation called “Body Scan.” It allows us to be aware of what we are feeling in our body in the present moment. There are lots of different ways to pay attention to our surroundings. In some ways, our most immediate surrounding is our own body! The Body Scan meditation is designed to help us connect with our body’s sensations in a mindful and non-judgmental way. The goal of this meditation is to observe what we are experiencing in our body, not changing it.

2. Sit down in a comfortable position. Minimize all distractions. Also, if you find that this is too hard, we can modify it. If you have any medical concerns (e.g., heart/respiratory problems) please don’t overdo it. Only do what you are comfortable doing. Look at Co-facilitator B if you are not sure what you should be doing. We are going to start with becoming aware of various body parts. We will be starting with the head and moving down to the toes.

ii. **CO-FACILITATOR A:** Practice

1. This guided body scan meditation is intended to help you enter a very deep state of relaxation. What you’ll be doing is becoming aware of each passing moment and just accepting what is happening within you, seeing it as it is. Let go of the tendency of wanting things to be different from how they are now and allow things to be exactly as you find them. Close your eyes and let your arms rest comfortably. Slowly bring your attention to the fact that you are breathing. Not trying to control your breath in any way, but simply experiencing it as the air moves in and out of your body. Now bringing your attention to the top of your head, become aware of whatever sensations are there. If you are registering a blank as you tune in, then just experience nothing. Becoming aware of your face now, slowly move down to your jaw and chin. Focus on the jaw and the chin, just experience them as they are. Now slowly move down to the base of your head and the top of your neck. As you breathe in, become aware of the sensations that you experience when you are at the base of your head and the top of your neck. Slowly move down to the neck and shoulder area. Slowly pass through your arms and down to your fingertips. Sometimes people feel pain and pressure in their joints. Focus on moving from your shoulder to your elbow. From your elbow to your wrist and forearm area. Go into your hands and all the way to the tips of your fingers. Focus on these areas and the relaxation you

experience when you breathe in and out. Slowly move from your fingertips, up to your wrist and forearm. Up to your elbow. And back to your shoulder. Be aware of what you feel when you pass through these areas. After working your way back to your shoulder area, slowly move your attention down your torso. Focus on the sensations in the top of your chest and the top of your back. Become aware of the sensations in the top of your chest and back, experiencing and accepting what you feel here and breathing into it, then breathing out from it. Slowly move down to your abdominal area and lower back. Breathe in and out. Let your abdominal area and lower back relax. Shift your attention to your hips. Breathe in and out. Focus on letting the tension in your hips relax. Let any tension release as you breathe out. Focus on the front and back of your thighs. Slowly pass through your thighs, down to your knees, to your calves and shins, down to your ankles, feet, and the tips of your toes. As you breathe in, imagine your breath moving all the way down to your feet and then when you reach your feet, begin your outbreath and let it move all the way up your body and out your nose. Allow yourself to be present in the moment, content to just be, and to just be right here as you are right now. As the exercise ends, bring your awareness back to your body again, feeling the whole of it. You may want to wiggle your toes and fingers. Allow this calmness and this centeredness to remain with you when you move. When you are ready, you may open your eyes.

iii. **CO-FACILITATOR A:** Reflection and Discussion

1. Once folks are oriented, check-in with them and see what the experience was like for them. What was it like? How did your body feel? What did you like about it? Was there anything you disliked about it? Do you think that this is something you could do next time?
2. Remind them that this is a skill that takes time.

**4. Overview and Discussion (15 minutes)**

- a. Provide a general summary
  - i. **CO-FACILITATOR B:** We've done a lot today...
    1. Reviewed mindful breathing
    2. How to use mindfulness when dealing with stressful situations
    3. STOP technique
    4. Body scan
- b. Reflect on activities (Note: If the discussion was rich before this part, you

can briefly just ask in general about their thoughts about what was done today)

i. **CO-FACILITATOR A**

1. What did you think of the STOP technique?
2. What did you think of the Body Scan?
3. Any difficulties?

c. Regular Practice

i. **CO-FACILITATOR B**

1. Importance: A skill that needs to be practiced (e.g., like riding a bike)
2. Inform them of track number on CD with body scan
3. Set up a standard time to practice
  - a. Set alarm or other reminders
3. Assignment: Practice any mindfulness technique (even from prior group) for at least 5 minutes a day.
  - a. Hand out new monitoring log. Encourage continuing filling out monitoring log.

**5. Remind of date and time of next group**

### **Session 3 – Stress and Ways of Thinking**

Purpose: To fully educate on the stress cycle and unhealthy ways of thinking and to continue meditation practice

Activities: Body scan, Rumination activity

Materials: Thought Traps handout, Monitoring Log

Procedure:

#### **1. Opening (20 minutes)**

- a. Introduction
  - i. **CO-FACILITATOR A:** Hi everyone, welcome back to the group. Lets remind everyone of our names. Before we go over the practice, does anyone have any comments about what we did last week or want to talk about the experiences they had after we ended the group last week?
- b. Practice Discussion
  - i. **CO-FACILITATOR B:**
    1. Was everyone able to practice?
    2. Discuss any difficulties or barriers that may have come up for participants.
- c. Opening Activity
  - i. **CO-FACILITATOR A:** Body Scan/Breathing (script from previous week): We are going to open up today with the body scan exercise combined with the breathing exercise. Sit down in a comfortable position. Minimize all distractions. Also, if you find that this is too hard, we can modify it. If you have any medical concerns (e.g., heart/respiratory problems) please don't overdo it. Only do what you are comfortable doing. Look at Co-facilitator B if you are not sure what you should be doing.
  - ii. **CO-FACILITATOR A:** Practice
    1. I want everyone to get as comfortable as you can in your chair. You might want to begin with both feet squarely on the floor with your hands on your legs or sitting comfortably in your lap. With your eyes open initially, take a moment to notice your immediate environment – mostly what is in front of you. Next, take in a couple of deep breaths – in through the nose and out through the mouth. We will call the inhale the 'in-breath' and the exhale the 'out-breath.' As you breathe in, try and notice your abdomen or chest filling with air and expanding. As you breathe out, try and notice your body relaxing/softening. On your third or fourth out-breath, close your eyes. Return your breath to its natural pattern and

breath how you normally would. Keep your focus on your breath and how it feels to breathe in and out. Now bringing your attention to the top of your head, become aware of whatever sensations are there. If you are registering a blank as you tune in, then just experience nothing. Becoming aware of your face now, slowly move down to your jaw and chin. Focus on the jaw and the chin, just experience them as they are. Now slowly move down to the base of your head and the top of your neck. As you breathe in, become aware of the sensations that you experience when you are at the base of your head and the top of your neck. Slowly move down to the neck and shoulder area. Slowly pass through your arms and down to your fingertips. Sometimes people feel pain and pressure in their joints. Focus on moving from your shoulder to your elbow. From your elbow to your wrist and forearm area. Go into your hands and all the way to the tips of your fingers. Focus on these areas and the relaxation you experience when you breathe in and out. Slowly move from your fingertips, up to your wrist and forearm. Up to your elbow. And back to your shoulder. Be aware of what you feel when you pass through these areas. After working your way back to your shoulder area, slowly move your attention down your torso. Focus on the sensations in the top of your chest and the top of your back. Become aware of the sensations in the top of your chest and back, experiencing and accepting what you feel here and breathing into it, then breathing out from it. Slowly move down to your abdominal area and lower back. Breathe in and out. Let your abdominal area and lower back relax. Shift your attention to your hips. Breathe in and out. Focus on letting the tension in your hips relax. Let any tension release as you breathe out. Focus on the front and back of your thighs. Slowly pass through your thighs, down to your knees, to your calves and shins, down to your ankles, feet, and the tips of your toes. As you breathe in, imagine your breath moving all the way down to your feet and then when you reach your feet, begin your outbreath and let it move all the way up your body and out your nose. Allow yourself to be present in the moment, content to just be, and to just be right here as you are right now. As the exercise ends, bring your awareness back to your body again, feeling the whole of it. You may want to wiggle your toes and fingers. Allow this calmness and this centeredness to remain with you when you move. When you are ready, you may open your eyes.

iii. **CO-FACILITATOR A:** Reflection and Discussion

1. Once folks are oriented, check-in with them and see what the experience was like for them. What was it like? How did your body feel? What did you like about it? Was there anything you disliked about it? Was it easier today than last time?
2. Remind them that the more they practice, the easier it will get.

## 2. Psychoeducation on Stress Cycle Continued (25 minutes)

- a. The Stress of Thinking
  - iv. **CO-FACILITATOR B:** We are now going to move on and talk a little more about stress. Similar to what we spoke about last week, we can often engage in unhelpful patterns of thinking without putting some distance between us and our thoughts. Our thoughts can sometimes directly impact how we are experiencing situations and can increase our stress levels.
  - v. It is important to remember that these thoughts never define who we are. They're just thoughts. For example, let's say you spend an hour writing out a grocery list. You get to the supermarket and reach into your pocket and realize you left the list on the kitchen table. What's a thought that might pop into your head?
  - vi. One thought could be, "I'm so stupid!" It is important to remember that you are not stupid, maybe you did a stupid/silly/forgetful thing, but that doesn't mean you are a stupid person. In these instances, when we make mistakes or fall short in some way, a great opportunity arises to practice the mindfulness concepts of non-judgment and self-compassion. For example, upon realizing that we left the shopping list at home, rather than say, "I left my list at home. I can't believe it. How stupid of me. I can't seem to do anything right today" we can say, "I must have left the list at home. Oh well, everyone makes mistakes. I guess I get to look around the store and see what catches my eye."
  - vii. We are trying to loosen the connection between our thoughts and our identity. The goal of what we are working on today is trying to dig deeply into the relationship with our own thoughts and that we "shouldn't believe everything we think."
- b. Thought Traps
  - i. **CO-FACILITATOR A:** Here are some more examples of unhelpful patterns of thinking
    1. Catastrophizing – Imagining the worst possible outcomes
    2. Exaggerating the negative
    3. Discounting the positive
    4. Unhappy guessing – Involving knowing what other people are thinking with no evidence

ii. **CO-FACILITATOR A:** Discussion

1. Does anyone have an example of experiencing one of these thought patterns?
2. Has anyone experienced these types of thoughts when practicing the exercises from these groups?
3. Can anyone think of a technique that we practiced that would help with these thought traps? (e.g., STOP technique)

iii. **CO-FACILITATOR A:** Rumination Example

1. Sometimes we think about things over and over again, or we start worrying and get really stressed out. We call that ruminating. It happens when you think about something over and over again to the point where it really starts impacting your mood, and even the course of your day! Mindfulness can be viewed as the “antidote” to rumination.

**3. Activities (15 minutes)**

a. Informal/Formal Technique (depending on setting) – Thoughts on Clouds

i. **CO-FACILITATOR B:** Psychoeducation

1. One way to practice not ruminating on thoughts and not letting them identify you is by imagining them floating by without judging them. When you are practicing meditations and mindfulness, you may find that it is very easy to become distracted by your thoughts. This is normal and very common. When this happens, it is important to acknowledge these thoughts as they arise and then return your attention back to your breathing. We are going to practice an exercise that can help with this rumination.
2. You can practice this with the CD (formally) or throughout the day by reminding yourself of the clouds/leaves/waves. Remember to look at the other co-facilitator as a model during this exercise.

ii. **CO-FACILITATOR B:** Practice

1. Close your eyes and sit in a comfortable position. Allow yourself to bring your awareness to your breath wherever you feel it in your body. It may be at the nose, neck, chest, belly, or somewhere else. As you breathe in and out naturally, be aware of breathing in, and as you breathe out, be aware of breathing out. Simply maintain this awareness of the breath, breathing in and breathing out. Visualize yourself looking up at a calm light blue sky with puffy white clouds floating by. For the next few minutes, take each thought that enters your mind and place it on a cloud.

Let it float by with each thought – enjoyable, painful, or neutral. Even if you have joyous thoughts, put them on a cloud and let them float by and drift away. If your thoughts stop, continue to watch the clouds floating by. Sooner or later, your thoughts will start up again. Allow the clouds to float by at their own pace. Don't try to speed them up or rush your thoughts along. You're not trying to get rid of your thoughts, but rather you are allowing them to come and go at their own pace. If your mind says "this is dumb," "I'm bored," or "I'm not doing this right," place those thoughts on the clouds too, and let them float by. If a cloud gets stuck, allow it to stay until it is ready to float by. If the thought comes up again, watch it float by a second time. If a difficult or painful feeling comes up, simply acknowledge it and place it on the cloud. Watch it float by. From time to time, your thoughts may distract you from being present in this exercise. This is normal. As soon as you realize you have been distracted and/or your mind has wandered off, bring your attention back to the clouds and continue watching the thoughts float by. Continue placing your thoughts on the clouds for a couple of minutes. (Wait 3 minutes). When you are ready, you may open your eyes and bring yourself back into your environment.

iii. **CO-FACILITATOR B:** Reflection and Discussion

1. Once folks are oriented, check-in with them and see what the experience was like for them. What was it like? How did your body feel? What did you like about it? Was there anything you disliked about it?

**4. Overview and Discussion (15 minutes)**

- a. Provide a general summary
  - i. **CO-FACILITATOR A:** We've done a lot today...
    1. Reviewed body scan
    2. Stress cycle
    3. Thought traps
    4. Mindfulness exercise on rumination
- b. Reflect on activities
  - i. **CO-FACILITATOR A:** (Note: If the discussion was rich before this part, you can briefly just ask in general about their thoughts about what was done today)
    1. What did you think about our discussion on stress?
    2. What did you think about thought traps?
    3. What did you think about the mindfulness exercise on rumination?

4. Any difficulties?

c. Regular Practice

i. **CO-FACILITATOR A**

1. Importance: A skill that needs to be practiced (e.g., like riding a bike)
2. Inform them of track number on cd with Thoughts on Clouds
3. Set up a standard time to practice
  - a. Set alarm or other reminders
4. Assignment: Practice one of the techniques learned today for at least 5 minutes a day. (Hand out monitoring log)

**5. Remind of date and time of next group**

## **Session 4 – Values and Self-Compassion**

Purpose: To explore values and cultivate self-compassion

Activities: Rumination activity, loving-kindness meditation

Materials: Values handouts, Monitoring Log

Procedure:

### **1. Opening (15 minutes)**

- a. Introduction
  - i. **CO-FACILITATOR A:** Hi everyone, welcome back to the group. Lets remind each other of our names. Before we go over the practice, does anyone have any comments about what we did last week or want to talk about the experiences they had after we ended the group last week?
- b. Practice Discussion
  - i. **CO-FACILITATOR A**
    1. Was everyone able to practice?
    2. Discuss any difficulties or barriers that may have come up for participants.
- c. Opening Activity
  - i. **CO-FACILITATOR B:** Thoughts on Clouds (script from previous week): We are going to open up today with the rumination exercise. Remember to look at the other co-facilitator as a model during this exercise. Sit down in a comfortable position. Minimize all distractions. Also, if you find that this is too hard, we can modify it. If you have any medical concerns (e.g., heart/respiratory problems) please don't overdo it. Only do what you are comfortable doing. Look at Co-facilitator A if you are not sure what you should be doing.
  - ii. **CO-FACILITATOR B:** Practice
    1. Use script from previous week
  - iii. **CO-FACILITATOR B:** Reflection and Discussion
    1. Once folks are oriented, check-in with them and see what the experience was like for them. What was it like? How did your body feel? What did you like about it? Was there anything you disliked about it? Was it easier today than last time?
    2. Remind them that the more they practice, the easier it will get.

### **2. Psychoeducation on Values (5 minutes)**

a. Values

- i. **CO-FACILITATOR A:** In general, values are the principles that give meaning to our lives and guide our behaviors. Although they evolve over time through the accumulation of our lived experiences, they are enduring.
- ii. **CO-FACILITATOR A:** Discussion
  1. Would anyone be willing to share one of their values with us? (they can use the values handout to help identify some)
  2. Some examples of values include, being an accepting person, being patient, having meaningful relationships with your family, and being authentic, with yourself and others.

3. Activities (40 minutes)

a. Informal Technique – Values Identification

i. **CO-FACILITATOR B:** Instructions

- Bulls eye worksheet
  - a. This worksheet has four important areas of life. Work/education, leisure, relationships, and personal growth/health. Write your personal values in each of these four areas. There are no right or wrong answers. (Hand out a blank bulls eye worksheet for them to add their own areas)
  - b. Read through your values. Make an “X” in each area of the dartboard. The closer the X is to the center, the more you are living in accordance with your values. The further the X is from the center, the more inconsistently you are living with your values.

ii. **CO-FACILITATOR B:** Discussion

- Are you behaving in ways that are in accordance with your values?
- What are some ways to live more in line with your values?

b. Formal Technique – Loving-Kindness Meditation

i. **CO-FACILITATOR A:** Psychoeducation

- One way to practice mindfulness is focusing on how you feel about yourself. Often times, we tend to judge ourselves instead of accepting who we are. It is important to not just be compassionate towards others, but to also be compassionate to yourself. We will be working on a formal meditation that may seem difficult at first, but is something that can help cultivate self-compassion over time. Sit in a comfortable position, minimize distractions.

ii. **CO-FACILITATOR A: Practice**

- In this meditation on loving kindness, allow yourself to switch from the usual mode of doing to a mode of non-doing. Of simply being. Close your eyes. As your body becomes still, bring your attention to the fact that you are breathing. And become aware of the movement of your breath as it comes into your body and as it leaves your body. Not manipulating the breath in any way or trying to change it. Simply being aware of it and of the feelings associated with breathing. And observing the breath deep down in your belly. Feeling the abdomen as it expands gently on the in breath, and as it falls back towards your spine on the outbreath. Being totally here in each moment with each breath. Not trying to do anything, not trying to get any place, simply being with your breath. Giving full care and attention to each in breath and to each outbreath. As they follow one after the other in a never ending cycle and flow. If distracting thoughts arise, acknowledge them, then return to the practice. And now bringing to mind someone for whom you have deep feelings of love. Seeing or sensing this person and noticing your feelings for them arise in your body. It may be simply a smile that spreads across your face, or your chest becomes warm. Whatever the effects, allow them to be felt. Now letting go of this person in your imagination, and keeping in awareness the feelings that have arisen. Bring yourself to mind now. And seeing if you can offer loving kindness to yourself, by letting these words become your words... ***May I be happy, May I ride the waves of my life, May I live in peace. No matter what I am given.***

And noticing the feelings that arise and letting them be, as you look within yourself with mindfulness and equanimity. When you are comfortable, try offering loving kindness to someone who supports you, who has always “been on your side.” Bringing this person to mind, imagining them perhaps across from you, and letting these words become your words... ***May you be happy, May you be healthy, May you ride the waves of your life, May you live in peace, No matter what you are given.***

Once your feelings flow easily to a loved one, turn your attention now to someone with whom you have difficulty - it’s best not to start with the most difficult person, but perhaps someone who brings up feelings or irritation or annoyance. And seeing if you can let these words become your words as you keep this person in awareness... ***May***

*you be happy, May you be healthy, May you ride the waves of your life, May you live in peace, No matter what you are given.*

Notice the sensations and feelings that arise within you.

And seeing if you can just allow them and let them be. And now bringing to mind the broader community of which you are a part. You might imagine your family, your workmates, your neighbors, or fan out your attention until you include all persons and creatures on the planet. And including yourself in this offering of loving kindness, as you let these words become your words... *May we be happy, May we be healthy, May we ride the waves of your life, May we live in peace, No matter what we are given.*

Notice the sensations and feelings that arise within you.

Sitting with them for a few moments. (Wait 2 minutes).

And when you are ready, letting yourself feel again your physical presence, sensations of your body, feet, upper torso, neck and head, beginning to notice the movement of your own breath, bringing awareness to your body as a whole. When you are ready, open your eyes.

iii. **CO-FACILITATOR A:** Reflection and Discussion

- Once folks are oriented, check-in with them and see what the experience was like for them. What was it like? How did your body feel? What did you like about it? Was there anything you disliked about it?

**4. Overview and Discussion (15 minutes)**

- a. Provide a general summary
  - i. **CO-FACILITATOR B:** We've done a lot today...
    3. Rumination exercise review
    4. Discussed our values and how we are living our life
    5. Loving-kindness meditation
- b. Reflect on activities
  - i. **CO-FACILITATOR B:** (Note: If the discussion was rich before this part, you can briefly just ask in general about their thoughts about what was done today)
    1. What did you think of exploring your values?
    2. What did you think of the loving-kindness meditation?
    3. Any difficulties?
- c. Regular Practice
  - i. **CO-FACILITATOR B**
    1. Importance: A skill that needs to be practiced (e.g., like riding a bike)
    2. Inform them of track number on CD with Loving-Kindness

Meditation

3. Set up a standard time to practice
  - a. Set alarm or other reminders
4. Assignment: Practice one of the techniques learned today for at least 5 minutes a day. (Hand out monitoring log)

**5. Remind of date and time of next group**

## Session 5 – Conclusion

Purpose: To process group experience, discuss future growth, evaluate impact of group, practice skills

Activities: All previous meditations

Materials: Goals Handout

Procedure:

### 1. Opening (15 minutes)

- a. Introduction
  - i. **CO-FACILITATOR A:** Thank you everyone for joining us for our last session! We really appreciate you making it all the way to the end and participating these last few weeks.
- b. Practice Discussion
  - i. **CO-FACILITATOR A:**
    1. Was everyone able to practice?
    2. Discuss any difficulties or barriers that may have come up for participants
- c. Opening Activity
  - i. **CO-FACILITATOR B:** Loving-Kindness (script from previous week): We are going to open up today with the loving-kindness meditation. Remember to look at the other co-facilitator as a model during this exercise. Sit down in a comfortable position. Minimize all distractions. Also, if you find that this is too hard, we can modify it. If you have any medical concerns (e.g., heart/respiratory problems) please don't overdo it. Only do what you are comfortable doing. Look at Co-facilitator A if you are not sure what you should be doing.
  - ii. **CO-FACILITATOR B:** Practice
    1. Use script from previous week
  - iii. **CO-FACILITATOR B:** Reflection and Discussion
    1. Once folks are oriented, check-in with them and see what the experience was like for them. What was it like? How did your body feel? What did you like about it? Was there anything you disliked about it? Was it easier today than last time?

### 2. Wrap up and review main concepts (40 minutes)

- a. Mindfulness
  - i. **CO-FACILITATOR A:** Characteristics of Mindfulness (ask a group member to explain each one first)

1. Being aware – Paying more attention to things in our life.  
The idea here is to get ourselves off of autopilot, which is more like being asleep.
2. Beginner’s mind – The ability to see things as new and fresh, as if for the first time. Think of how a young child approaches her or his world, with curiosity and eagerness. Children are great examples of Beginner’s mind because they are much earlier in their journeys in life.
3. Non-judgment – Being an unbiased observer of your own experiences; not labeling things as good or bad. As Hamlet noted, “Things are neither good nor bad, but thinking makes it so.” Although this quote might be a little extreme, it highlights a typical element of our thinking – the labeling of experiences / thoughts / feelings as good or bad. By incorporating the principle of non-judgment, we seek to get away from this dichotomy of good or bad.
4. Acceptance – living in the present moment. Acceptance is the culmination of being aware, beginner’s mind, and non-judgment. Through acceptance, we experience things in our life as they are—without need for judgment.
5. Self-compassion – Love for yourself without self-blame or criticism. As we go deeper in our mindfulness practice, our self-compassion grows.
6. Non-striving – Not trying to get away from where you are.

ii. **CO-FACILITATOR A:** Anchors to current experience

1. Using our senses, what we hear, see, feel, touch, taste. When we walk we are aware and when we move we are aware.

b. Stress and Coping

i. **CO-FACILITATOR B:** Stop Technique

1. STOP Technique
  - a. S = Stop
  - b. T = Take a breath
  - c. O = Observe (describe what you are currently experiencing, you are an objective observer)
  - d. P = Proceed

ii. **CO-FACILITATOR B:** Thought Traps

1. Catastrophizing – Imagining the worst possible outcomes
2. Exaggerating the negative
3. Discounting the positive
4. Unhappy guessing – Involving knowing what other people are thinking with no evidence

c. Self-Compassion

- i. **CO-FACILITATOR A: Values**
      - 1. We used the bullseye worksheet to see if we were living our lives in accordance with our values
      - 2. Loving-Kindness Meditation
- 3. Discussion and Process
  - a. Practice Discussion
    - i. **CO-FACILITATOR B**
      - 1. How did you use the strategies to help practice?
      - 2. What was it like to practice the strategies and meditations?
      - 3. Were there any difficulties practicing?
  - b. Goal-Setting and Anticipating Roadblocks
    - i. **CO-FACILITATOR A**
      - 1. Set up a standard time to practice
      - 2. Ask members what their goals are and what they would like to continue to practice
      - 3. Hand out goal sheet
      - 4. Discuss any potential barriers to practicing
  - c. Process Group Experience
    - i. **BOTH CO-FACILITATORS**
      - 1. How does everyone feel about group ending
      - 2. Group co-facilitators say goodbye
      - 3. Give time for group members to say goodbye
- 4. **Closing Meditation**
  - a. Participants choose final meditation to end with
    - i. **CO-FACILITATOR A** leads meditation of group's choice
- 5. **Final goodbye from co-facilitators. Remind them of the assessments/gift card schedule.**

Appendix C  
Group Handouts

## Mindfulness Principles

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- **Being Aware:** Paying more attention to things in our life
- **Beginner's Mind:** The ability to see things as new and fresh, as if for the first time
- **Non-judgment:** Being an unbiased observer of your own experiences & not labeling things as good or bad
- **Acceptance:** Living in the present moment & experiencing things in our life as they are
- **Self-Compassion:** Love for yourself without self-blame or criticism
- **Non-Striving:** Not trying to get away from where you are

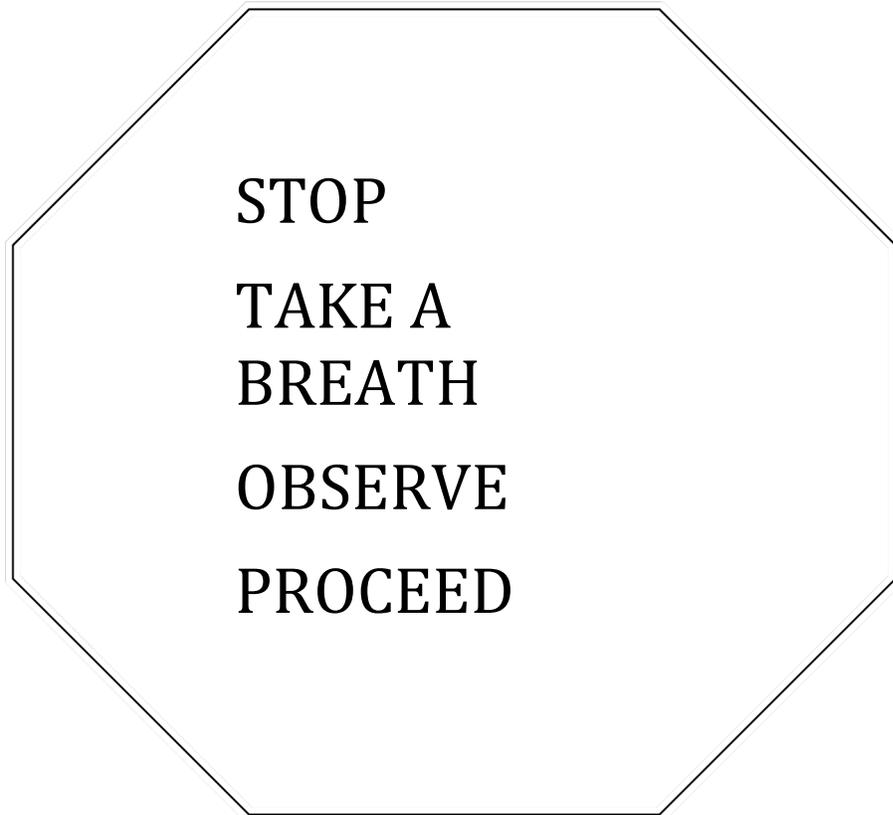
## **Anchors to Current Experience**

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- Identify 3 things that you can:
  - Hear
  - See
  - Touch
  - Taste
  - Smell
  
- Check in with your body to see how you feel physically and mentally. You might want to adjust your body position and notice how your joints and limbs move.
  
- Be aware of your steps when walking

# STOP Technique

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## **Mindful Coping Strategies**

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- Mindful breathing to calm down and become aware of how we are feeling
- Non-striving or not trying to change how we feel
- Accepting how you feel with non-judgment
- Self-compassion
- Awareness

## **General Coping Strategies**

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- Problem solving
- Seeking information
- Cognitive restructuring (e.g., seeing multiple perspectives)
- Seeking support

## Thought Traps

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- Catastrophizing – imagining the worst possible outcomes
- Exaggerating the negative
- Discounting the positive
- Unhappy guessing – believing you know what other people are thinking with no evidence

*You can use the STOP technique to combat these thought traps!*

### Values

Authenticity	Fame	Peace
Achievement	Friendships	Pleasure
Adventure	Fun	Poise
Authority	Growth	Popularity
Autonomy	Happiness	Recognition
Balance	Honesty	Religion
Beauty	Humor	Reputation
Boldness	Influence	Respect
Compassion	Inner Harmony	Responsibility
Challenge	Justice	Security
Citizenship	Kindness	Self-Respect
Community	Knowledge	Service
Competency	Leadership	Spirituality
Contribution	Learning	Stability
Creativity	Love	Success
Curiosity	Loyalty	Status
Determination	Meaningful Work	Trustworthiness
Fairness	Openness	Wealth
Faith	Optimism	Wisdom

## Goals Sheet

**Goal #1:** \_\_\_\_\_

*Type of meditation:* \_\_\_\_\_

*Length of practice:* \_\_\_\_\_

*When:* \_\_\_\_\_

**Goal #2:** \_\_\_\_\_

*Type of meditation:* \_\_\_\_\_

*Length of practice:* \_\_\_\_\_

*When:* \_\_\_\_\_

**Goal #3:** \_\_\_\_\_

*Type of meditation:* \_\_\_\_\_

*Length of practice:* \_\_\_\_\_

*When:* \_\_\_\_\_



Appendix D  
Assessment Timeline

### Assessment Timeline

Note: Assessments given to participants in both groups unless otherwise specified

- Screening
  - Demographics
  - *Montreal Cognitive Assessment*
  
- Assessment 1 (Universal Baseline)
  - *Cognitive Emotion Regulation Questionnaire*
  - *Five Facet Mindfulness Questionnaire*
  - *Ryff Scales of Psychological Well-being*
  - *Depression Anxiety Stress Scale-21*
  - *Motivation*
  - *Expectation for Benefit*
  - Mindfulness Narrative Pre (immediate treatment group)
  
- Assessment 2 (Week 5)
  - *Cognitive Emotion Regulation Questionnaire*
  - *Five Facet Mindfulness Questionnaire*
  - *Ryff Scales of Psychological Well-being*
  - *Depression Anxiety Stress Scale-21*
  - Mindfulness Narrative Pre (delayed treatment group)
  - Mindfulness Narrative Post (immediate treatment group)
  - Brief Satisfaction Survey (immediate treatment group)
  - Mindfulness Practice (immediate treatment group)
  
- Assessment 3 (Week 10)
  - *Cognitive Emotion Regulation Questionnaire*
  - *Five Facet Mindfulness Questionnaire*
  - *Ryff Scales of Psychological Well-being*
  - *Depression Anxiety Stress Scale-21*
  - Mindfulness Narrative Post (delayed treatment group)
  - Brief Satisfaction Survey (delayed treatment group)
  - Mindfulness Practice
  
- Assessment 4 (Week 15)
  - *Cognitive Emotion Regulation Questionnaire*
  - *Five Facet Mindfulness Questionnaire*
  - *Ryff Scales of Psychological Well-being*
  - *Depression Anxiety Stress Scale-21*
  - Mindfulness Practice

Appendix E

Mindfulness Narrative Pre-Test Responses

**Question 1: What do you hope to get out of the group?**

- 1) “Enhancing my self-awareness”
- 2) “I do hope to be able to be more alert and to be able to think more clearly.”
- 3) “Learn ways to handle and alleviate the tension in my body. Learn techniques to help me stay in the present, to be able to better prioritize the "things to do" that make me anxious (some of which are self-created). Hopefully, to have a stronger mind-body connection.”
- 4) “What is mindfulness, and how can it help me?”
- 5) “Improve mind sharpness, become more aware of things, be more alert to things”
- 6) “Improved focus, attention, decreased distraction - related forgetfulness. Learning new methods applicable to support goals of physical exercise and weight management.”
- 7) “Improving my memory”
- 8) “Ability to live in the present.”
- 9) “Find out what mindfulness means”
- 10) “Better understanding of my emotions.”
- 11) “Some insight into what I should be doing at this point in my life and how to accomplish it.”
- 12) “An enhanced ability to focus my mind better + be present in the moment.”
- 13) “An effective way of dealing with everyday pressures as they arise.”

**Question 2: What would success from this group look like?**

- 1) "Getting the most out of the years I have left"
- 2) "Satisfaction -- increased ability to think!"
- 3) "Being able to recreate the techniques I learn here when the class is over. Leaving the program with a commitment to follow through and use what I learn here. Being able to identify triggers that cause anxiety and lack of mindfulness."
- 4) "...being able to successfully apply techniques learned in this workshop to assist me in whatever ways possible..."
- 5) "I suppose I'll be better able to understand myself. (I don't mean to be evasive, but I'm sure some improvement will result)."
- 6) "Reduced wasting of time related to misplaced items, forgetfulness (example going someplace and forgetting to take along with me what I need). Reduced frustration. Increased awareness of my minute to minute actions and all the things listed in the mindfulness principles"
- 7) "Ability to appreciate my fellow residents more fully."
- 8) "Just being here"
- 9) "I would understand other's actions and reactions better."
- 10) "For me, an improved ability to focus"
- 11) "Relaxed lifestyle"
- 12) "I don't know what the group aim is beyond helping a professor to prove/disprove certain ideas."

Appendix F

Mindfulness Narrative Post-Test Responses

**Question 1: How is life the same/different after completing the group?**

- 1) “More aware of the experiences in my minute to minute, my perceptions of them. Reduced judgment, increasing self-compassion”
- 2) “I believe I am more comfortable with my life.”
- 3) “About the same. The tough part will be sticking with it.”
- 4) “In that I have been practicing most of the techniques introduced since I was 50 years old. They have saved my life.”
- 5) “I am more aware of my surroundings and feelings. I definitely am sleeping better at night! When faced with anxiety or when I am overwhelmed by my list of tasks, I can use the techniques (both formal and informal) to help calm my mind and realize I can accomplish whatever I need to do without stressing myself.”
- 6) “Different in that I know I have tools to help me deal with stress and anxiety.”
- 7) “About the same”
- 8) “Different! I have finally learned how to relax!”
- 9) “Heightened awareness of the various areas of mindfulness”
- 10) “I want to make a conscious effort to incorporate some of the things learned into my life.”
- 11) “More self inspection/awareness”
- 12) “I’m more aware of my thoughts”
- 13) “I will stop + take a deep breath when I am frustrated. I will seek to be nonjudgmental when others disappoint me. I will try to "let things go" more easily.”
- 14) “Try to be calm and realistically look at situations to resolve it or accept it. Less frustrated at not getting a resolution as soon as I would like.”
- 15) My life is the same. Mindfulness has reminded me to be more aware of my breath. It's not a new concept but certainly a reminder. Well, perhaps my life is different in that I am remembering to be mindful of my breath as I do my walks, and in doing so I am able to achieve a better routine/workout. Having a worksheet has forced me to be accountable, also, I am continuing to chronicle my walks.
- 16) Being more aware of others, their reactions to me, and mine to them.

**Question 2: What did you get out of the group?**

- 1) “Conviction that a commitment to daily practice is the way I will benefit most out of what I learned. Also, an appreciation for my group members and feel close to them.”
- 2) “A sense of oneness (sameness) with others. (We all are still finding our way).”
- 3) “The whole mindfulness concept and its application.”
- 4) “I enjoyed the refocusing and listening to others reactions to the concepts. Thank you.”
- 5) “It helped me realize how I can manage stress and sleeplessness. I also benefited from hearing the experiences of others. I loved this and will continue to utilize the techniques! Thanks!”
- 6) “Well, the tools as mentioned above. Then, a deeper understanding of the fact that stress and anxiety do not come from outside and descend upon me; it is largely generated by my reaction to what occurs outside of me.”
- 7) “It was very interesting....I have done the STOP application and breathing and counting before sleep”
- 8) “The techniques to visualize”
- 9) “Awareness - desire to expand understanding and improving various aspects of our study”
- 10) “Enjoyed the exercises (esp. breathing and body scan) and want to practice them. Also appreciated the efforts of the co-facilitators and interaction within the group.”
- 11) “Re-envision the value of what I had known”
- 12) “...a better understanding of others' feelings through their sharing in the groups.”
- 13) “Some different ideas in the way to see a situation. Sometimes I felt enlightened and other times I thought "what?".”
- 14) “There is greater camaraderie, I think. There is certainly that extraordinary lingo when we meet, and inside jokes that others don't get when we refer to the classes/meetings in their presence. We exposed ourselves in a bit in a way we might never have and we got to look at ourselves too, which we rarely need to at this stage of our lives. I am greatly encouraged to use the STOP technique rather than the knee-jerk.”
- 15) “Be more aware of the situation, and how I interact with others.”